WORKSHEETS

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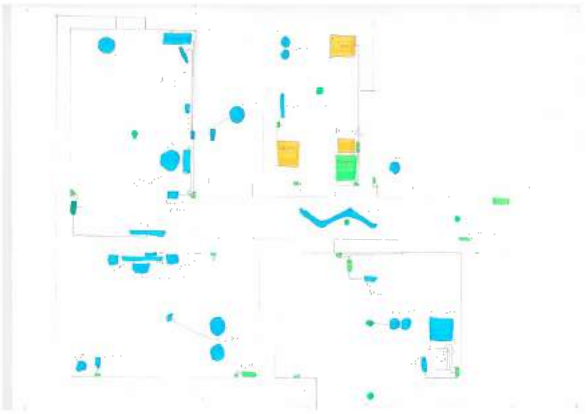
Initial ideation

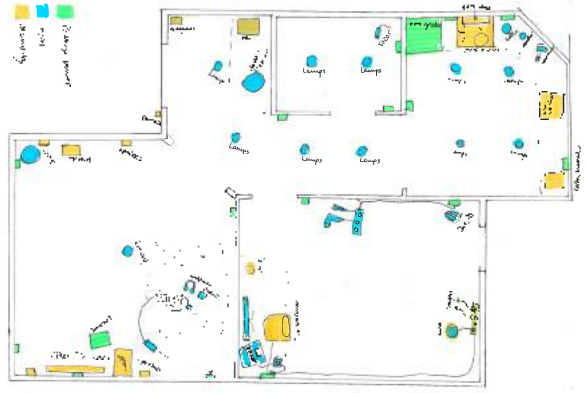
OBJECTIVE

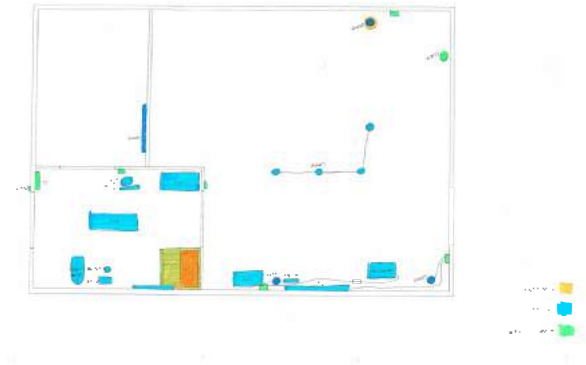
To find an angle on how and where to use the technology from RePower in private homes we sketch our apartments and note where wires and electronic devices is placed. We will use this to start a brainstorm and find at least 3 or more topics that can be interresting to work with.

EXPERIMENT/DATA

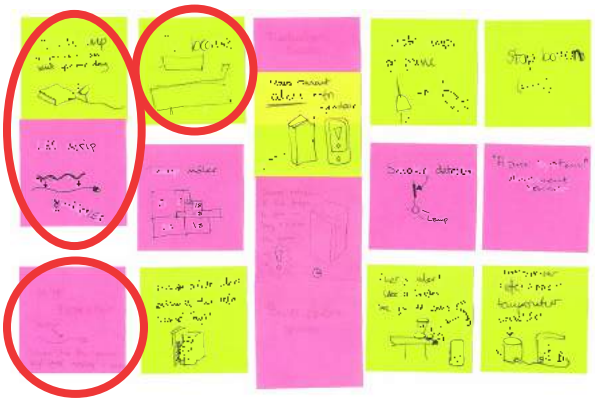
Mapping of our apartments

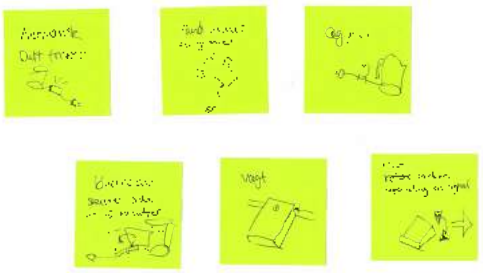






The brainstorm is based on 4 different focus points: Refrigerator (Always on), wifi router (Always on), lamps (on/off) and kitchenware (on/off). Each category got 5 minutes of interest.





EVALUATION

After brainstorming we discussed which concept that had the most potential and which ones we wanted to work more with. This led to 3 concepts: Lighting, wifi repeater and tv module.

REFLECTION

Having seen where there potentially could be a use for this technology and what it possibly can be used for. We should make further brainstorming and other ideation exercises to further investigate the potential of the technology.

SENSORS

OBJECTIVE

To get more insight regarding which sensors exist and what they can do - we examine the web.

EXPERIMENT/DATA

List of different sensors:
https://en.wikipedia.org/wiki/List_of_sensors

Microphone - https://en.wikipedia.org/wiki/Microphone
Small sensor that records sound.

Carbon monoxide detector - https://en.wikipedia.org/wiki/Carbon_monoxide_detector
CO detector is a device that detects the presence of the carbon monoxide (CO) gas in order to prevent carbon monoxide poisoning.

Hydrogen sensor - https://en.wikipedia.org/wiki/Hydrogen_sensor
A hydrogen sensor is a gas detector that detects the presence of hydrogen. They are considered low-cost, compact, durable, and easy to maintain as compared to conventional gas detecting instruments.

Infrared point sensor - https://en.wikipedia.org/wiki/Infrared_point_sensor
An infrared point sensor is a point gas detector based on the nondispersive infrared sensor technology.

Smoke detector - https://en.wikipedia.org/wiki/Smoke_detector
A smoke detector is a device that senses smoke, typically as an indicator of fire.

Hall effect sensor - https://en.wikipedia.org/wiki/Hall_effect_sensor#Hall_probe
A Hall effect sensor is a transducer that varies its output voltage in response to a magnetic field. Hall effect sensors are used for proximity switching, positioning, speed detection, and current sensing applications.

Capacitive displacement sensors - https://en.wikipedia.org/wiki/List_of_sensors
Capacitive displacement sensors are "non-contact devices capable of high-resolution measurement of the position and/or change of position of any conductive target".

Electro-optical sensor - https://en.wikipedia.org/wiki/Electro-optical_sensor
Electro-optical sensors are electronic detectors that convert light, or a change in light, into an electronic signal. They are used in many industrial and consumer applications, for example:

- Lamps that turn on automatically in response to darkness
- Position sensors that activate when an object interrupts a light beam
- Flash detection, to synchronize one photographic flash to another
- Photoelectric sensors that detect the distance, absence, or presence of an object

Photoresistor - https://en.wikipedia.org/wiki/Photoresistor
Photoresistors come in many types. Inexpensive cadmium sulphide cells can be found in many consumer items such as camera light meters, clock radios, alarm devices (as the detector for a light beam), night lights, outdoor clocks, solar street lamps and solar road studs, etc.

Infrared - https://en.wikipedia.org/wiki/Infrared
Applications

- Night vision
- Thermography
- Hyperspectral imaging
- Tracking
- Heating
- Communications

Tactile sensor - https://en.wikipedia.org/wiki/Tactile_sensor
Tactile sensors appear in everyday objects such as elevator buttons and lamps which dim or brighten by touching the base. There are also innumerable applications for tactile sensors of which most people are never aware.

Touch switch - https://en.wikipedia.org/wiki/Touch_switch
A touch switch is a type of switch that only has to be touched by an object to operate. It is used in many lamps and wall switches that have a metal exterior as well as on public computer terminals. A touchscreen includes an array of touch switches on a display. A touch switch is the simplest kind of tactile sensor.

Thermistor - https://en.wikipedia.org/wiki/Thermistor
Thermistors are widely used as inrush current limiter, temperature sensors (NTC type typically) and self-regulating heating elements.

Occupancy sensor - https://en.wikipedia.org/wiki/Occupancy_sensor
An occupancy sensor is a lighting control device that detects occupancy of a space by people and turns the lights on or off automatically, using infrared, ultrasonic or microwave technology. Occupancy sensors are typically used to save energy, provide automatic control, and comply with building codes.

Bluetooth LE - https://en.wikipedia.org/wiki/Bluetooth_low_energy
Bluetooth low energy is a wireless personal area network technology designed and marketed by the Bluetooth Special Interest Group aimed at novel applications in the healthcare, fitness, security, and home entertainment industries. Compared to Classic Bluetooth, Bluetooth Smart is intended to provide considerably reduced power consumption and cost while maintaining a similar communication range.

EVALUATION

After investigating a ton of sensors, the team made a list of the sensors that at this point are interesting and/or operates on the current that our technology can provide.
One of the major things that can be concluded is that Bluetooth LE can run on the current from our technology, this opens up for the possibility of sending data across devices.

REFLECTION

It has been a long and tedious process to investegate all kinds of sensors without having an idea of where to start. It could have been nice to have a book or other more detailed material, to get more exact information.

PEJ GRUPPEN-SCANDINAVIAN TREND AW 16/17

OBJECTIVE

The aim of this trend research was to understand and explore the upcoming trends and hereby the intention is to help direct the mode of expression during the concept development phase.

EXPERIMENT/DATA

All of the group members joined the design fair Formland in Herning the 5th of february, where Pernille Kirstine Møller (Trend Manager of Pej Gruppen-Scandinavian Trend Institute) had a 30-minutes lecture about Design Trends for Autumn and Winter 16/17. Pej Gruppen-Scandinavian Trend Institute is a company that is responsible for recognising, analysing and communicating key trend forecasts for the design and lifestyle industry every season (Tang, 2016).

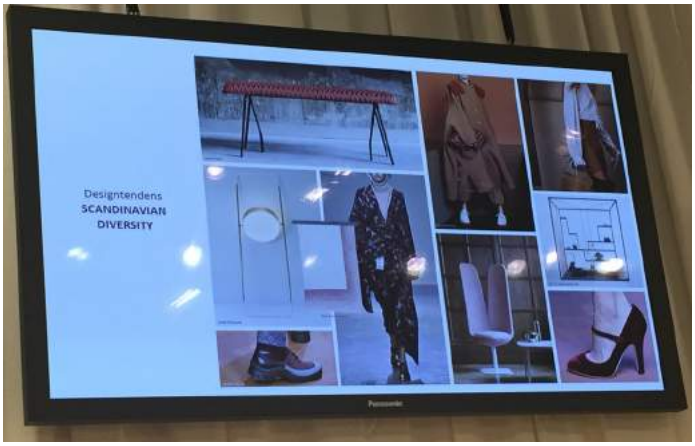
Rediscover

The main theme of AW 16/17 is Rediscover in terms of rediscover design's original DNA in a new world. It is about being inspired in new ways and explore new areas but also rediscovery of the previously uncovered, the match of something new and old. "Culture, nature and history are inexhaustible sources of inspiration for new explorers. Memories, rituals, symbols and religion are the fundamental values, which create authenticity, recognisability and relations. Together they create new value in a new period of time where technology and science both create and simplify the complex life" (Tang, 2016). Two new keywords are "calm fusion" and "complex simplicity". Calm Fusion includes digital detox, silence as the new luxury and fusions create balance and peace. Complex simplicity contains a holistic future with technology and biology and a new simplicity in design.

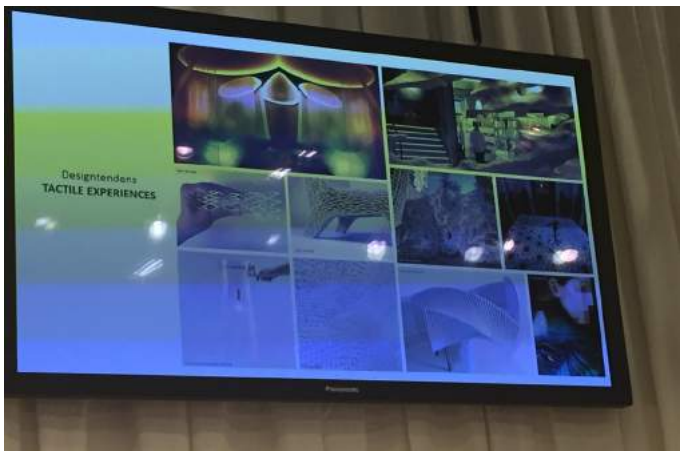
It is important to mention that rediscover does not mean something retro, revitalization, nostalgia and traditional but it is about rediscovering something forgotten and valuable.

Four Directions

The design trend themes and colours for Autumn-Winter 2016/17 was presented in four directions; Rediscover the classics, familiar, unknown and diversity. Of personal interests the group chose to aim the rediscover of the classics trend that lead to the colour choice of the group logo and presentation materials.

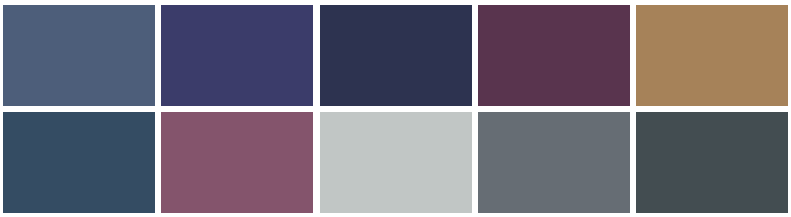


PEJ GRUPPEN-SCANDINAVIAN TREND AW 16/17



Rediscover the Classics
Classics is defined as new classics, thoughtful, craft, tailoring, mobility, construction, quality. ect. The colours are jewel toned to keep the calm fusion. "Interior and furniture must be precise to match the modern standards of quality, where multifunctionality, mobility and sustainability are alpha omega. At the same time, craftsmanship, tailoring and DIY (Do It Yourself) are reaching new levels. In the future, the possibilities within personalisation and involvement of customers in the design process will be bigger than ever, because of new digital directions." (Tang, 2016). The materials are soft materials (like felt, velours, wool leather, and fur) and craft rough materials (like wood, chrome and industrial interior) that are mixed with light and dark colours.

Colours swatches



EVALUATION

The TRIAKT group choose the trend theme rediscover the classics of personal interest that is marked as "I would like to buy something safe and mixed and/or borrowed but in a conscious way". The keywords are: Handcraft, Sustainability, Quality, functional/practical details and romantics cuts mixed with rough urbane and industrial details. Furthermore the future seems to lead to wise devices, tactile and familiar experiences.

REFLECTION

The documentation tool could have been better during the lecture. The group took a few notes and bad screenshot pictures of the slides because of a poor view but the PEJ Gruppen's webpage refilled the documentation.

CONCEPT KITCHEN 2025

OBJECTIVE

The aim was to do research on "The Concept Kitchen 2025" by IKEA, to get inspiration and an indication of how kitchens might change and adapt to future changes in the way we use kitchens.

EXPERIMENT/DATA

IKEA has, in cooperation with IDEO London and students from Lund and Eindhoven universities made a concept kitchen for 2025. The concept kitchen is based on 12 assumptions about how the world will be in 2025 (IKEA, 2015) http://www.conceptkitchen2025.com/future-scenarios.html

We'll be living more urban lives

Water and energy will again feel precious

Out of necessity, efficiency and reducing waste will be become embedded in everyday behaviour.

Food will be more expensive

As populations grow, and as developing countries' diets incorporate more meat, supply constraints will push the cost of food higher, by 40% according to some estimates.

We'll be more open to thinking 'protein', not meat

It's manifestly unsustainable for the whole world to eat as much red meat as the developed world currently enjoys. Developments in food processing and alternate protein sources will provide cost effective meat substitutes. Manufacturing desirability will be the key.

Our homes will become physically smaller

As populations age and we have less children, there will be a trend towards less people per household. Increasing real estate and transport costs in cities will favour denser living. Spaces will have to work harder in order to accommodate multiple uses by multiple people.

Atomised lives, social kitchens

Families will be living separate lives under the same roof. But kitchens will be the anchor of the house: the place where we will continue to gather to share food, drink and to get to know each other.

Working from home will be the norm

Better communication technologies and more flexible jobs will mean working from home will be standard for many. This has large ramifications for the way we treat the spaces within our home, as well as how we eat and organise our days.

Computers will be everywhere

Even simple devices will be equipped with sensors, CPUs and transmitting devices, allowing for communication with the user, but also with each other, creating self-regulating systems.

'Shopping' will mean 'home delivery'

Shopping will be seamless and impulsive. The physical act of going into a shop will be more about learning and exploration than purchasing. Instead, we will be able to purchase items digitally and have them delivered by robots, wherever we are, within minutes.

Global commerce, local community

To keep costs down, the world needs the efficiencies of scale that huge industries are able to provide. We will increasingly rely on global mega-systems such as Google, Amazon and IKEA. However we will continue to build our most important connections at the personal and community level.

Western culture will incorporate Eastern values

Asian populations are growing rapidly, both in size and in economic power, China especially. This influence will start to affect the culture of the West, as it appropriates new ideas from the East.

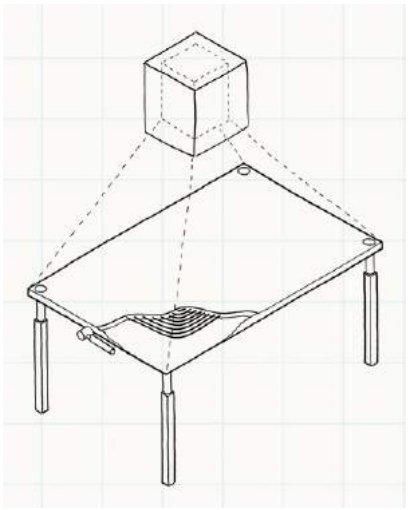
Taste preferences and rituals will be converging

Ideas and culture will spread across the world with less restrictions. Communication technologies and physical emigration will make tastes more diverse locally, but more homogeneous globally. We'll have more diversity, but less specialisation.

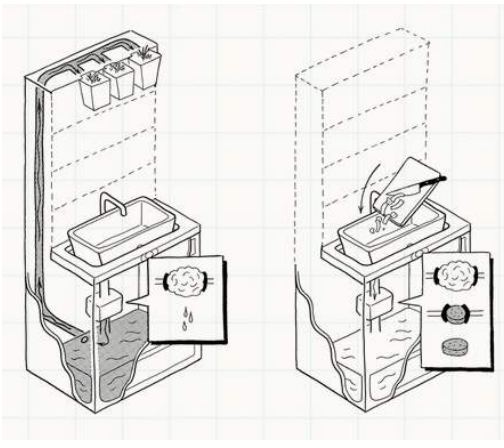
http://www.conceptkitchen2025.com/#Prototypes

"A table for living"

An intelligent table with induction coils underneath the surface and a camera and projector placed above the table. The table is designed to help and inspire people to cook and reduce waste by suggesting recipes, preparation methods and cooking instructions based on the ingredients placed on the table. When not in use for cooking, the table looks like a normal table surface, as the induction coils are hidden and can be used for other activities.



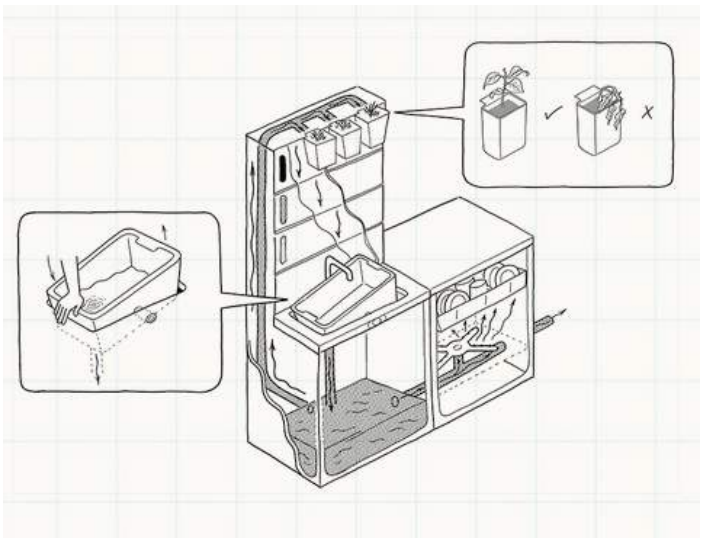
"Disposing thoughtfully"



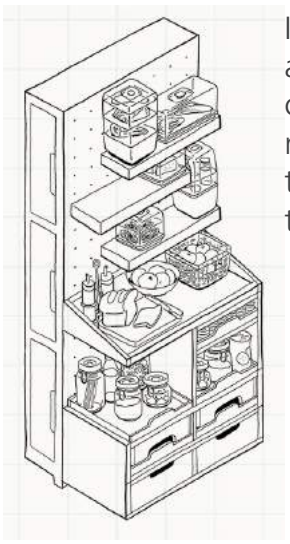
The waste and composting system makes it easy to recycle and dispose waste in a more sustainable and efficient way and raises the awareness of what is thrown away.
The waste is crushed, scanned to determine the material before it gets vacuum packed and sealed in a bio-polymer tube labeled with info about the waste and potential future use.
In the compost system, the organic waste is blended and pressed into dry pucks after the water has been extracted. The water is collected for nutrition for plants.

“Mindful water use”

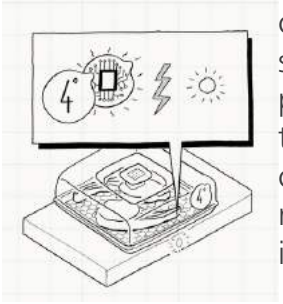
The idea of the sink is that it should make the user more conscious about water use. The sink basin has one drain in each end: one for “grey water”, which can be filtered and used for washing or watering plants, and one for “black water”, which is contaminated water. Tip the basin to one side to open one of the drains, tip it to the other side to open the other one.



“Storing visually”



In contrast to existing fridges that hides the food and waste energy, the Modern Pantry is a storage concept, where the food is stored in various containers suited for each type of food on open shelves to prevent overbuying and forgotten food that goes to waste. The shelves have sensors and induction cooling technology, which responds to RFID stickers on the packaging. The shelves read the signals and cool down the containers to the right temperature depending on the food inside.



EVALUATION

The 12 future scenarios will be useful to have in mind when designing a Miele product for the future. The focus on sustainability and the use of computer technologies are consistent with the thoughts the group member had about the future and are also a big part of the four concepts from Concept Kitchen 2025, where there is a huge focus on reducing waste and being more thoughtful about use of resources.

REFLECTION

The Concept Kitchen 2025 can be a great inspiration regarding finding a possible direction for the project, but more research on future trends is needed.

KITCHEN COMPANIES TRENDS

OBJECTIVE

The aim of this research is to define upcoming and new trends in relation to kitchen design and household appliances. The research contains visits to Danish kitchen stores in different customer segments (from high-end to low-end). The visited companies are Boform, Multifrom, Unoform, Tvis Kitchens, HTH, Designa and Ikea.

The focus of each visit is to describe new products, technologies and materials and further to interview salespersons in relation to their beliefs of the new trends, technologies, the internet of things and most importantly to describe the quality of Miele products and the products of competitors.

EXPERIMENT/DATA

The group has prepared interview questions and documented findings by taking notes, pictures and videos. Every group member join the kitchen store visits and interviews; one taking pictures, second taking notes and third observing.

TVIS KØKKENER

The first visit was TVIS kitchens. The visit was quickly done, as their exhibition was old and being rebuilt, therefore the salesperson recommended to visit Boform, Multiform and Unoform.

TVIS kitchens are fairly expensive and their customer segment are high-end customers but not the highest class.

Their newest products in terms of new technologies were light and sound control integrated into the tabletop as well as a knock-open and close function in dishwasher, but this feature did not work as smoothly as intended. Regarding materials, wood is the new thing and white surfaces without handles is still very modern.

Interview of salesperson:
The group got a lot of advise to improve the reseach and new catalogs. She comfirmed that products of Miele have a high level of quality. She also mentioned that Quookers and steamovens are very popular.

KITCHEN COMPANIES TRENDS

BOFORM
Boform is high class and very expensive. Everything is more or less tailor-made and focused on details and pure functions. The group talked to the sales woman who was an architect. She recommended their exhibition in Hellerup for more information because Aalborg's exhibition is fairly small.

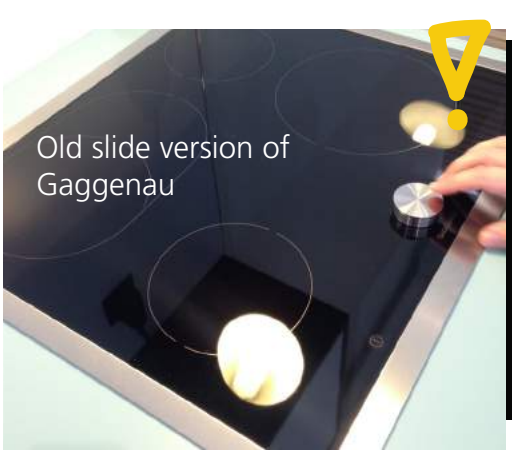
Interview with Dorthe Due Theilade, Architect and Export and Brand Manager at Boform
Boform mainly sells Miele products and Gaggenau products. The difference between Miele and Gaggenau is that Miele products often have multifunctions and are more advanced technically than Gaggenau, who focus on pure function and less is more principles. However, Gaggenau is more interesting designwise. Both companies live up to their reputation about high quality.

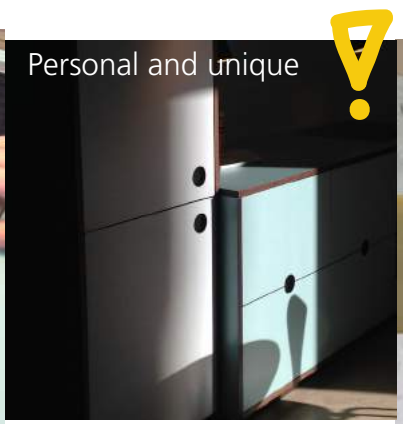
In general, Dorthe believes that people want to have the possibility to hide their kitchen when it is not in use and have a clean cabinet wall, which does not disturb and hides the mess. Therefore we see a tendency that people buy big kitchen cabinets like a wardrobe area.
There is also a tendency that "isolated kitchens" are coming back, as people are tired of noisy open-plan kitchens and want closed kitchens to reduce noise and make the kitchen more calm and quiet.

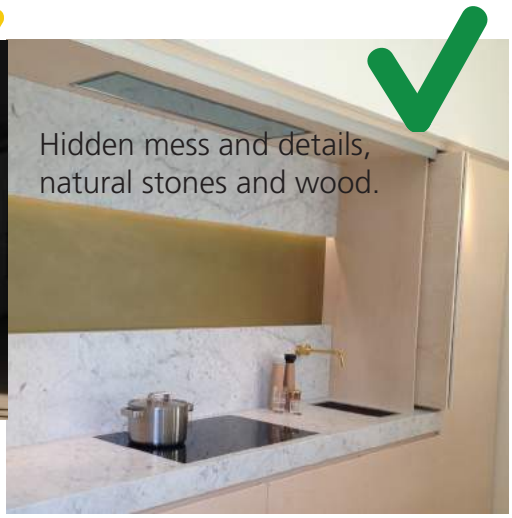
According to Dorthe, the trend in kitchen design is to use materials as wood and natural stones and combine them with tailor-made details to make a personal and unique look. Another popular material for table tops is Corian.
When the group asked her if she believes that the mobile phone will control everything in the future she said no. She has customers that want a faucet to be a simple faucet and to keep objects' original purpose instead of big data and multifunctions that are too time-consuming and complex.

Another up coming trend as reported by Dorthe is the flexible kitchen on wheels, inspired by the germans (who take their kitchen with them when moving into a new house).

Technology-wise, the zone-free induction cooking plate from Miele is new and popular.







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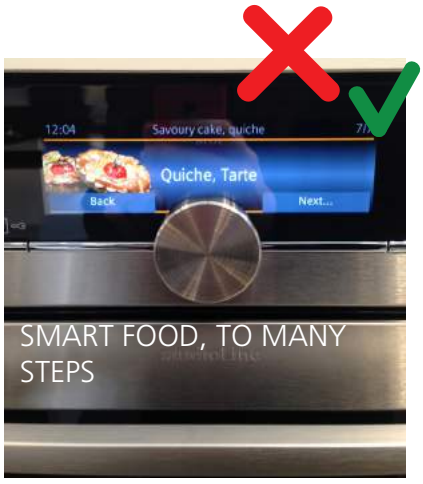
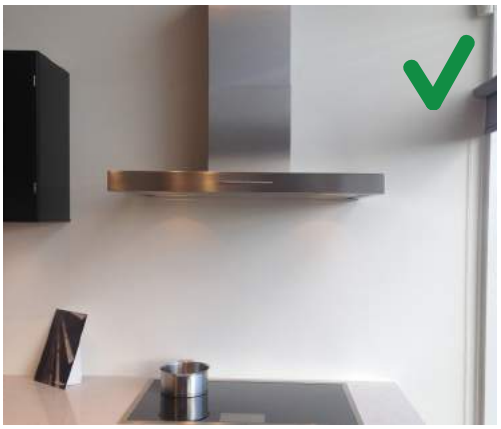
KITCHEN COMPANIES TRENDS

UNOFORM
Unoform has a high-end customer segment like Boform. Everything is more or less tailor-made and focus is on functionality and details to create a personal kitchen that suits the customer. Unoform and HTH are in the same building and cooperate, therefore the sales woman controls both departments. The sales woman is Sandie Lindholm Johannessen (HTH Kitchen Designer Consultant). In the HTH segment, Miele is the expensive high-end brand, while it is in the lower end for the Unoform segment.

She could easily see that the mobile phone can control everything in the kitchen, a lot of products can already be controlled by smartphones and tablets for example new ovens from Siemens.

She comfirmed the trend with hidden technology solutions and cabinet wall look to create a calmer look when not in use. Miele has just launched a new fridge with a built-in door as the first on the market. In relation to fridges, Unoform has also wider fridges than normal. Also hidden rooms and shelves in cabinets was a new feature. Materials like corian is still a beststeller and wood appears as small details like shelves. According to Sandie, light wood is becoming more and more popular, which is also the case with steam ovens.
Handles on the cabinets are slowly coming back after years where no-handle cabinets have been very popular.





Corian variants

Wider fridge

Wood as details

Hidden solutions

T R I
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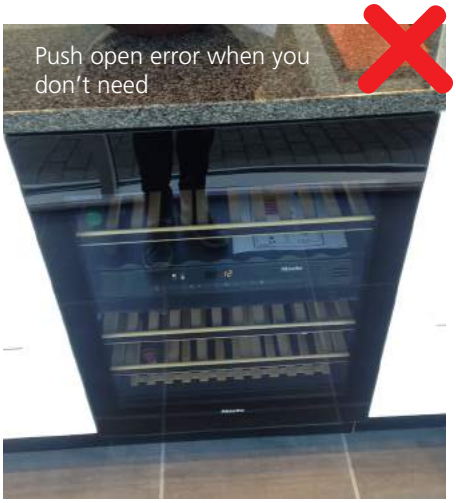
KITCHEN COMPANIES TRENDS

HTH
HTH has a mediocre customer segment that almost everyone can afford. In HTH it seems that the trend is mainly gadgets as light and movements that get the attention instead of the quality of the original product function. She adds that this type of customer is especially men.

The new cooker hood solutions placed in the tabletop (both from Miele and Gutmann) are not that efficient and are mainly sold as a emergency solution when it is the only possibility. As something new, HTH just launched a handicap kitchen series with flexibility as the main theme. It includes height adjustable tables and cabinets and floor cabinets on wheels.



T R I
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KITCHEN COMPANIES TRENDS

MULTIFORM

Multiform is a high-end brand with expensive quality products, like Boform and Unoform. The team spoke with Jannie Kjær, who is Joint Owner and Interior Designer at Multiform, Aalborg.
Regarding colours, the Jannie said that choice of colours are very different from customer to customer, but she had sold a lot of white ovens as they fit well into white kitchens. It was observed that many ovens were not just plain black, but had a hint of colour or another nuance than black. In her opinion, Miele have not developed much on their ovens lately as the last 3 series have been almost identical.

She predicts that rough structures, like driftwood and marble, and tin will be the next trends. More nature and that it does not have to be too delicate (fint). Use of real wood and not laminate.

She also said that cooker hoods should be as discreet as possible, but there is a lack of those on the market. A problem with cooker hoods hanging in the ceiling 2,7 meters up, is that the fat particles cool down and fall down again before the cooker hood catches them, making the cooker hoods ineffective. Miele have made a catalysator that catches the fat particles and burn them before they get out of the oven. Moreover, cooker hoods should ideally be turned on 15 minutes in advance before cooking in order to create the right air flow.

They also had a stove from AGA, which was an alternative stove with 3 types of ovens (simmer oven, baking oven and roasting oven), but they don't sell many of those. Quookers and oven might replace regular stoves and hotplates in the future.
She did not think that mobile kitchens would become popular in Denmark, as the Danes have too much space to bother about moving the kitchen when not in use.

T R I
A K T

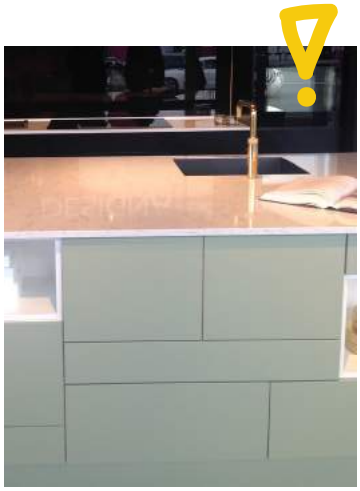
KITCHEN COMPANIES TRENDS

DESIGNA

White kitchens without handles are the bestsellers and Siemens is the brand they sell mostly.
Other brands to check out: Eico and Neff.

The salesman showed us an oven with 3 functions in one (regular-, microwave- and steam oven), but he was not excited about it as he would prefer to be able to use the regular oven and the microwave oven simultaniously.
When asked about the use of smartphones in the kitchen, he said that some oven already could be controlled through an app, so he thought it will become more and more used.

One of the newest features was a fridge that closed the door automatically after some time.



T R I
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KITCHEN COMPANIES TRENDS

EVALUATION

Trending: Matte and muted colours. Hide the kitchen behind big cupboard doors, making the kitchen look like cabinet walls when not in use. Natural materials such as wood and stone used for details will become popular. The white, neutral kitchen is still modern and popular.

White goods: Also matte and muted colours, which matches the cupboards gives a calm look.

Siemens and Miele are all-in on technology, big data, the internet of things and digital health, new user interfaces where the machine does the thinking and guides the user through the process. Gadgets and multifunctions are in focus.

Gaggenau is more into "less is more" and keeps the original purpose of the products. Focus is on making the original function as efficient as possible with an easy and quick interface, while still being interesting to look at design-wise.

REFLECTION

The research is based on subjective views and subjective evaluations of the products, some sales figures could have supported their statements and verified them.

Next step is to find more qualified research on the two main trends, as well as look at sales figures and visit high-end restaurants.

KITCHEN SURVEY

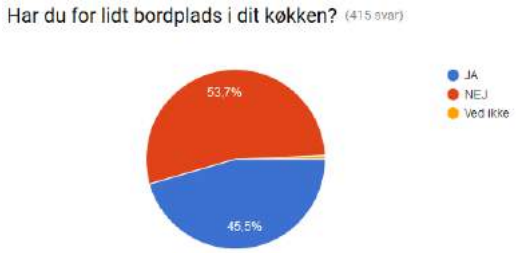
OBJECTIVE

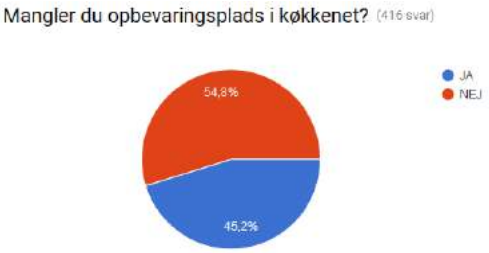
A survey about kitchen habits and problems/annoying situations people experience in the kitchen was conducted in order to find a possible problem statement to work with. Some of the questions were also asked to confirm or deny problems the group thought could be possible problems.

EXPERIMENT/DATA

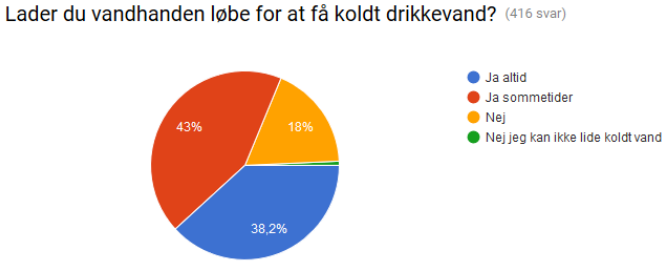
The survey had 416 respondents of which 76% were women and 24% were men. Almost 33% belong to the age group 26-35, 21% in the age group 18-25, 18,3% was between 36-45 years old, 17,5% between 46-54, 8,9% was 55 years old or older and 1,5% were under 18 years old.

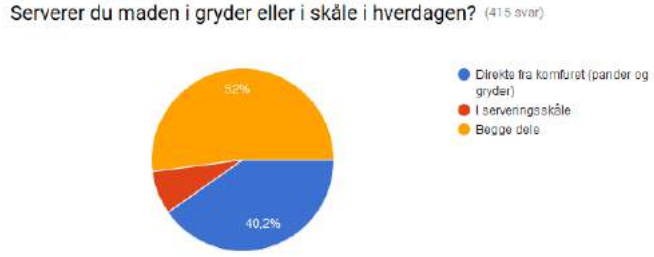
When asked about space on the kitchen table around 54% of the respondents said they did not have enough table space, while around 45% said they needed more storage space in the kitchen (mostly for kitchen machines, pot and pans, tableware and groceries).

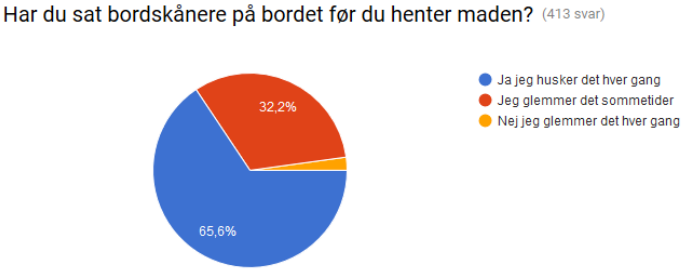




The group had a few ideas about what could be potential problem areas to work with, so the following questions were asked to get an indication if there was any truth in these assumptions.







The problem with cold food to quickly turned out not to be an issue for the majority. This was also the case with forgetting the dish mats, as most people remember them.
Around 80% of the respondents let the water run always or sometimes to get it cold. This could be an issue to work with.
The group also asked about the use of vacuum packing food, as this was thought to be more and more popular. However, it has not become normal to do so yet.

T R I
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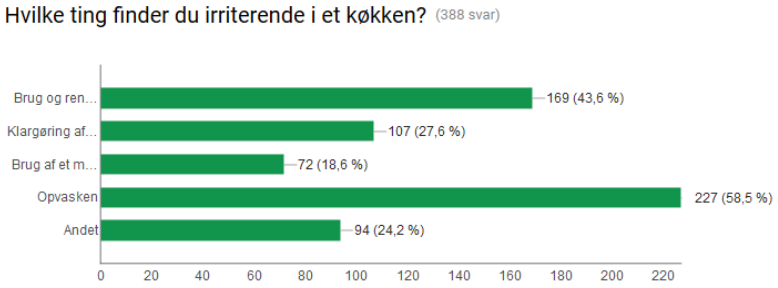
KITCHEN SURVEY

In the last part of the survey, the respondents were asked to mention all the problems and annoying situations they experience in the kitchen. Four suggestions was mentioned in the question, so the respondents could get an indication of what could be answered.



The suggestions written by the group was the things people found most annoying. The votes was distributed as follows: Almost 60% on dishwashing, 44% on use and cleaning of garlic crusher, 28% on preparation of beetroots, 19% on use of mandolin slicer and 24% on "other".

The issues mentioned by the respondents in the category "other" can be divided into 5 themes: organising, space, cleaning, cooking and others. The majority of annoying situations are related to cleaning, especially cleaning of ovens, cooker hoods, drain and the stove, as well as organising/poor storage solutions. Furthermore, too few power sockets, too low/high work height, inefficient cooker hoods and not enough space was mentioned many times.

EVALUATION

The results of the survey disproved some of the assumed problems, but it also uncovered new problems the group had not thought of.

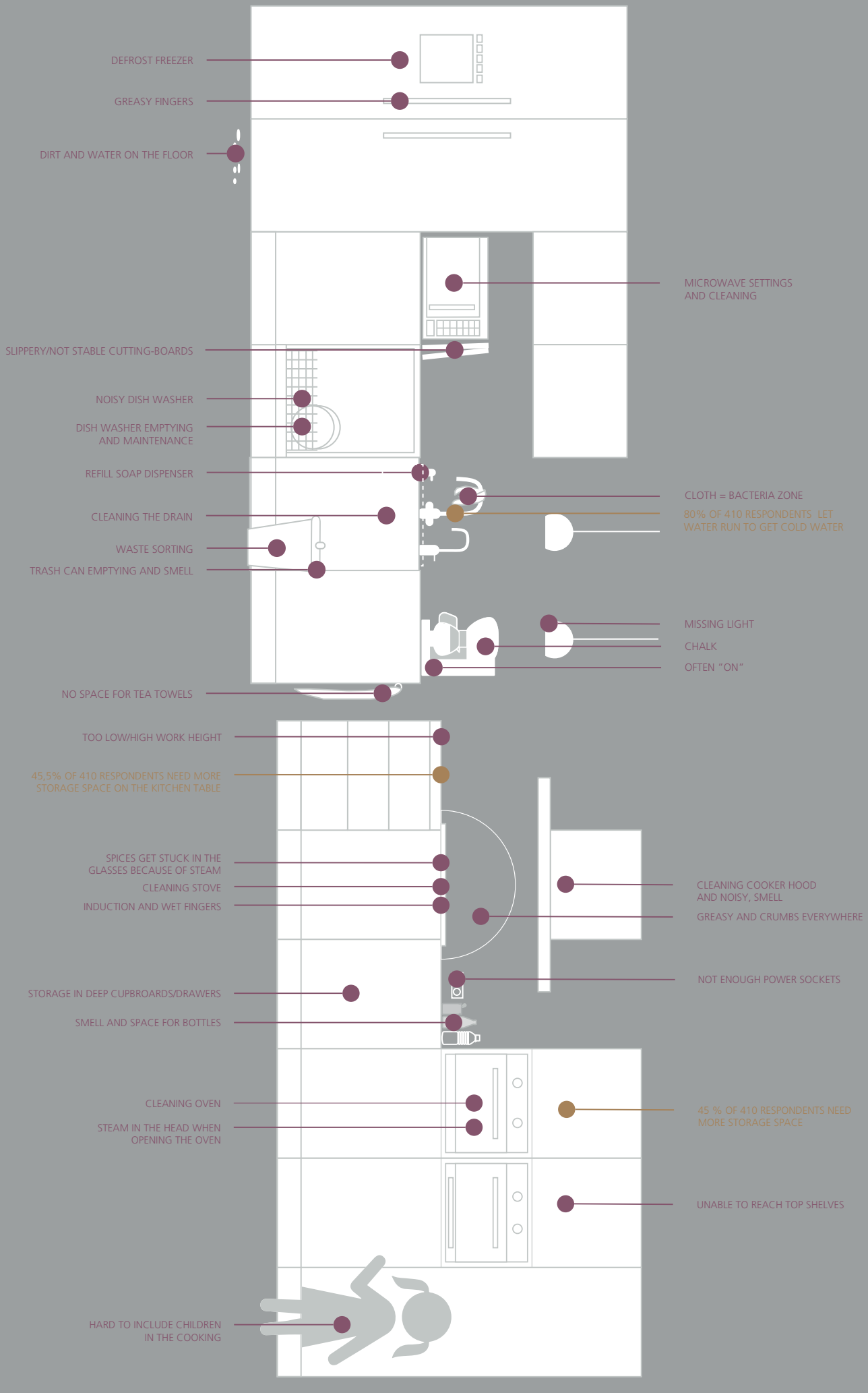
The biggest issues are lack of table space in the kitchen, waste of water (while waiting for it to become cold), problems with cooker hoods - both regarding cleaning and efficiency, dishwashing and cleaning garlic crushers.

Out of these problems, the cooker hood, dishwashing and maybe waste of water, are the most relevant to work with as those products are related to Miele's current product portfolio.

REFLECTION

The purpose of the survey was to uncover potential problems in the kitchen to work with.

The way the question about annoying situations was written (with multiple choice suggestions) gives an uneven distribution of answers as many of the respondents just chose some of those suggestions without mentioning any problems themselves. However, it might have been an advantage that the respondents had some suggestions to get inspired by when having to mention other problems.


DEFROST FREEZER
GREASY FINGERS
DIRT AND WATER ON THE FLOOR
MICROWAVE SETTINGS AND CLEANING
SLIPPERY/NOT STABLE CUTTING-BOARDS
NOISY DISH WASHER
DISH WASHER EMPTYING AND MAINTENANCE
REFILL SOAP DISPENSER
CLOTH = BACTERIA ZONE
CLEANING THE DRAIN
80% OF 410 RESPONDENTS LET WATER RUN TO GET COLD WATER
WASTE SORTING
TRASH CAN EMPTYING AND SMELL
MISSING LIGHT
CHALK
OFTEN "ON"
NO SPACE FOR TEA TOWELS
TOO LOW/HIGH WORK HEIGHT
45,5% OF 410 RESPONDENTS NEED MORE STORAGE SPACE ON THE KITCHEN TABLE
SPICES GET STUCK IN THE GLASSES BECAUSE OF STEAM
CLEANING STOVE
INDUCTION AND WET FINGERS
CLEANING COOKER HOOD AND NOISY, SMELL
GREASY AND CRUMBS EVERYWHERE
NOT ENOUGH POWER SOCKETS
STORAGE IN DEEP CUPBOARDS/DRAWERS
SMELL AND SPACE FOR BOTTLES
CLEANING OVEN
STEAM IN THE HEAD WHEN OPENING THE OVEN
45 % OF 410 RESPONDENTS NEED MORE STORAGE SPACE
UNABLE TO REACH TOP SHELVES
HARD TO INCLUDE CHILDREN IN THE COOKING

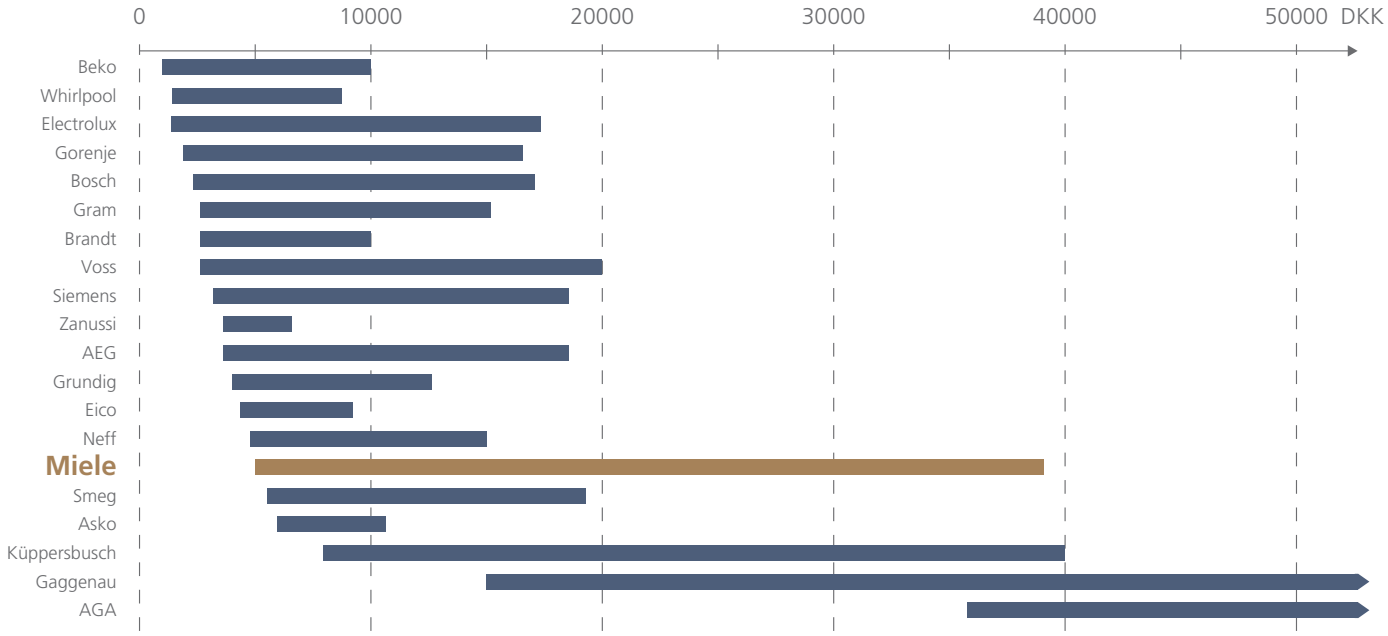
COMPETITORS (PRICE RANGE)

OBJECTIVE

The aim of this research was to map competitors regarding price range to get to know where Miele is placed in the market compared to other brands.

EXPERIMENT/DATA

To get a comparable foundation for the comparison, this research is focused on the price on ovens from some of the most common brands in domestic appliances. The prices are based on a search on built-in ovens at pricerunner.dk, which gave almost 1000 hits on ovens from brands in different prices ranges. 20 of the biggest brands were chosen for this comparison and their price range on built-in ovens can be seen below.



Source: http://www.pricerunner.dk/cl/105/Indbygningsovne

EVALUATION

The majority of brands have ovens in the price range from 1500 DKK to 15000-19000 DKK. Miele differ from the others, as they are the only ones covering a much wider price range from 5000 DKK up to almost 40000 DKK. Gaggenau is also standing out with a price range starting at 15000 DKK up to 67000 DKK (or maybe even higher). The same is the case with AGA and their price range from 38000 up to 135000 DKK. However, AGA does not make built-in ovens, but stoves, so they are a bit out of category, but was included because the brand was sold at Multiform and also cover the same need as a built-in oven.

REFLECTION

The prices were taken from the price comparison site pricerunner.dk, which might not have all models from each brand represented, so there is a possibility that some of the brands have ovens in their product selection, which are outside the price range shown here, if they are not for sale online.

EXISTING KITCHEN PRODUCTS

OBJECTIVE

The objective of this research is to map what kind of household appliances are avaiable on the market and in that way maybe find a gap or a tendency to have in mind when designing a future Miele product.

EXPERIMENT/DATA

EVALUATION

As shown above there is a tendency that household appliances only do one thing (shown in a red circle), only 16 of the 69 products are multifuncional (shown in a green circle). This accumulate a lot of different products that fills the storage in the kitchen, which was one of the problems from our survey.

REFLECTION

The research is based on a internet search which only shows a small selection of the products on the market.

This could indicate that we should look into making a product that combines some of them and thereby making a product that can do more the one thing.

T R I
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TYPES OF NEW HOUSES

OBJECTIVE

The objective is to get insight into the sizes and locations of kitchens in new houses today, 2016.

EXPERIMENT/DATA

Eurodan Huses, HusCompagniet and Danhaus was contacted. They all offer standard houses that can be customized to fulfill the customer's needs. Tommy Johansen, project estimator and constructor at Eurodan Huse, points out that the kitchen is nearly always centre in the house and works like an access route to many of the other rooms to avoid using to much space on hallways. The most popular and characteristic types of new houses are here pin pointed. The sizes of the kitchens are around 25-38 square meters. Julie Thorngaard Larsen from HusCompagniet and Mette Fredensborg from Danhaus confirms this. It is important to notice that there is a shift from open-plan kitchens, with kitchens and living rooms merged together in one room, to kitchens and living-rooms being separated into medium/ large kitchens and a separat living room, which indicates that the consumers want to have the possibility to isolate the kitchen atmosphere, such as cooking odour and noises, from the rest of the house.

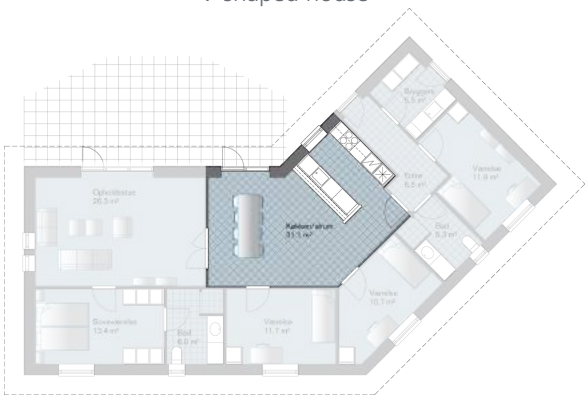
EVALUATION

The study shows that the kitchens tend to be-come larger in size, which means that table space is probably not a major problem in new kitchens.
At the same time there is a tendency to reduce noise by separating the open-plan kitchen more rooms, thereby creating more harmony in the home.

REFLECTION

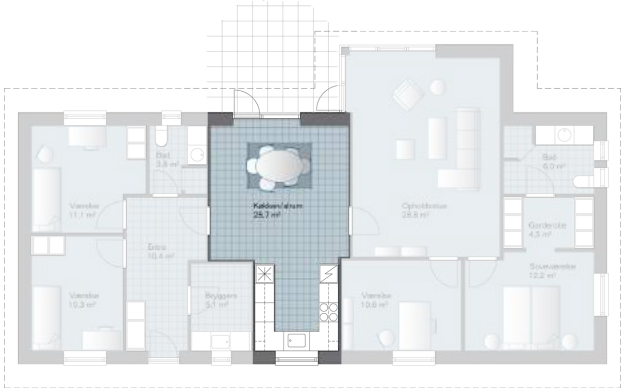
These companies do not fully reflect the target group we are trying to aim at, but they are a good benchmark for which trends that are emerging.

V-shaped house

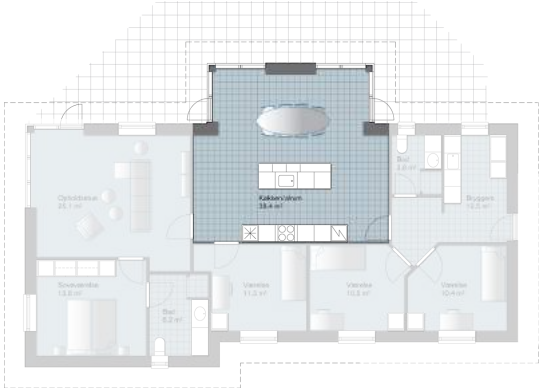


H-shaped house

L-shaped house



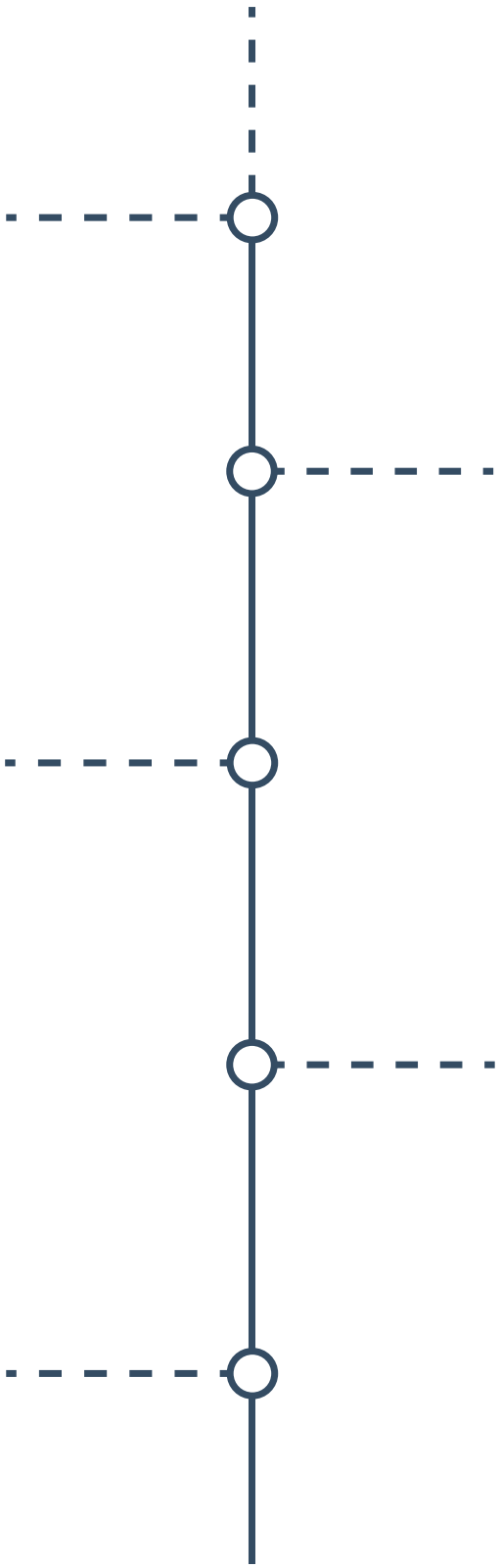
L-shaped house



TIMELINE

OBJECTIVE
Trends tend to run in a cycle, where old trends come back again and again and new things emanate from old things. Therefore, it is relevant to research on the development of the kitchen and kitchen appliances through history to get an overview of the changes and be able to identify a pattern that might give some clues to how kitchens will develop in the future.

EXPERIMENT/DATA
The history of the kitchen contains both design, social and gender history as those aspects have influenced the way kitchens have developed through time. It is particularly the evolution during the last 150 years that affects how kitchens are designed today. A lot of factors, such as the industrialisation, economic growth, improved living conditions, women entering the labour market and the welfare state, have all left their marks on how the kitchen is used and organized today (Engholm).



It was not until the middle of the 19th century that the modern kitchen made its entrance in Denmark, where the fireplace was replaced with a stove. It was initially only in richer homes, where they had enough space and maids to cook. Therefore, the kitchen was located in the basement or a back room far from the living rooms. In contrast to the rich homes, the kitchen in the homes of the working class was a central room as space was limited and the family cooked for themselves.

In the late 19th/early 20th century, kitchens are becoming smaller and its former functions are divided into several rooms. In the interwar period the preconditions turned and the kitchen's design should soon mirror new social and family norms.
During the 1930s, the kitchen undergoes a revolution regarding the layout inspired by lean thinking in the industry, resulting in a new and more convenient placement of the sink, stove and kitchen cabinets.
After World War II, an image of the perfect kitchen, inspired by the US market, was created. The dream of an electrical kitchen became fulfilled in most homes through the spreading of electrical household products.
In the middle of the 1960s, the kitchen opened up, as the liberation of the woman started, and the open-plan kitchens and cooking islands became the

TRIAKT

TIMELINE

favorite kitchen of the Danes, but first in the 1970s the kitchen became really multifunctional. In the late 20th century globalization had a big impact on Danish kitchens, as both the layout of the kitchen and the food became influenced by other parts of the world.

In the beginning of the 21st century the "conversation kitchen" was introduced by the kitchen company Kvik as part of their campaign for a kitchen that brings families together at a time where divorces and alternative family constellations are becoming more and more common.

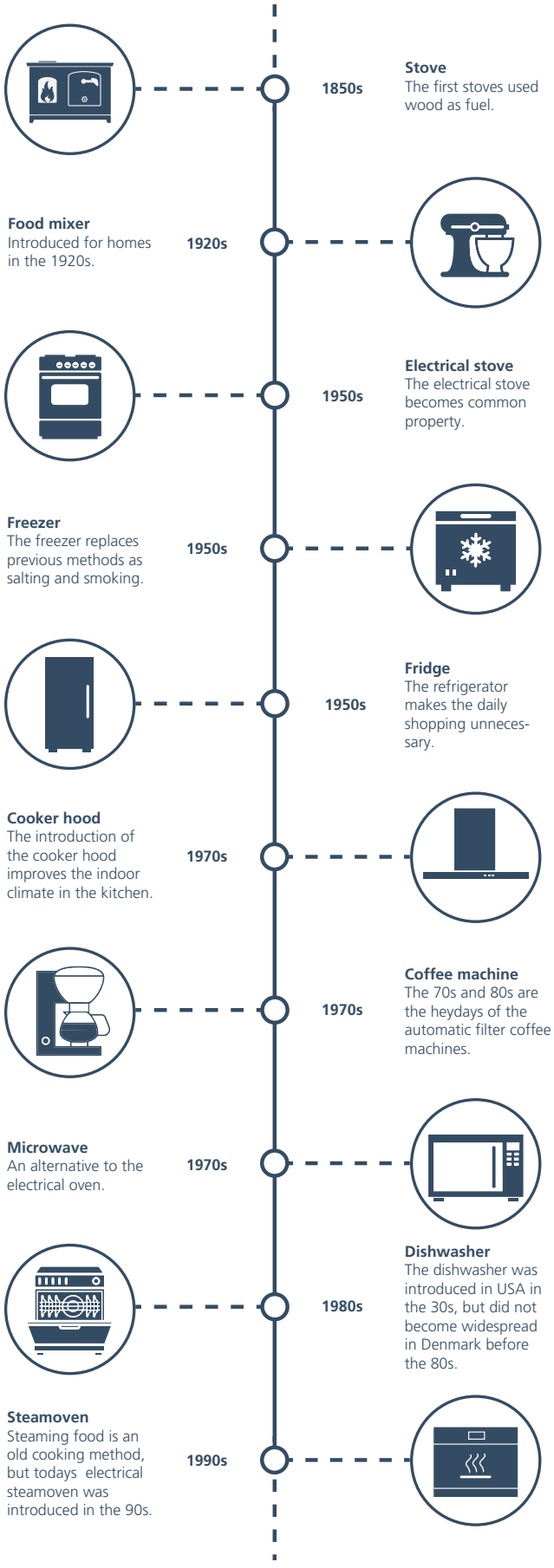
Regarding kitchen appliances, the number of these are naturally increasing in many homes as more and more devices are developed and introduced to the market. Furthermore, the kitchens become bigger and bigger, making more room for kitchen appliances. One of the selling points regarding kitchen appliances was about saving time, but in many cases the saved time was spent on cleaning and maintenance of the appliances instead of getting more spare time (Jakobsen, 2008), which somehow still is the case today.

EVALUATION

The research showed that the role of the kitchen has changed several times through history, influenced by changes in society. The kitchen has changed back and forth between smaller separated kitchens and bigger, more open kitchens where the kitchen also serve other purposes. Regarding kitchen appliances, the number of different tools increase with time and they become more and more advanced as technologies are developed.

REFLECTION

The task has been made from only desk research and one book, which is not fully evaluated.



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MAPPING OF ACTIVITY PATTERN

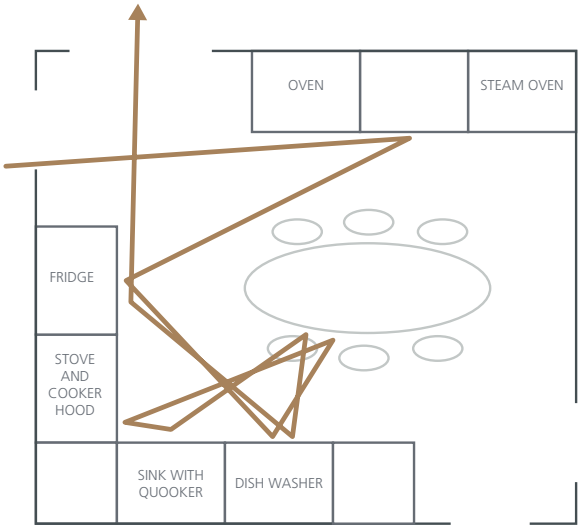
OBJECTIVE

To map activity patterns in the kitchen and investigate whether or not there is a problem to solve in order to see if the meal drawer concept is able to solve the problem or at least optimize the situation.

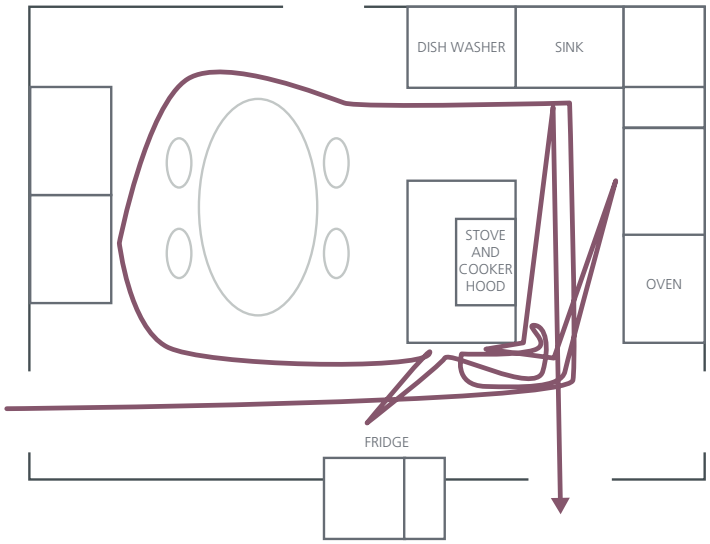
EXPERIMENT/DATA

The team mapped the activity patterns of 6 persons (both men and women, from 27 to 65 years old) during their morning routine.
Below is two of the activity patterns.

MALE, 58 YEARS OLD
14 sqm

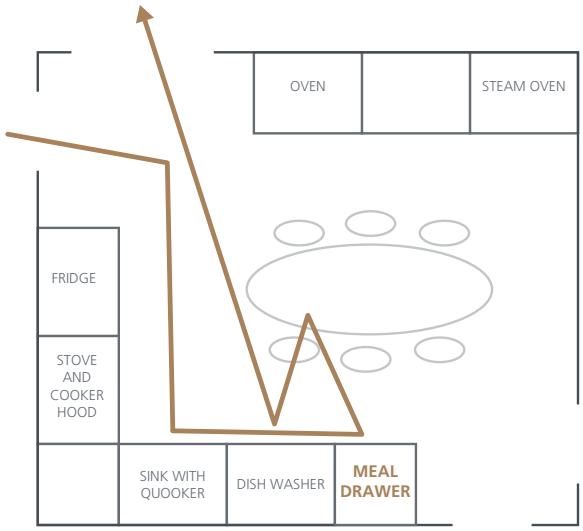


FEMALE, 53 YEARS OLD
18 sqm

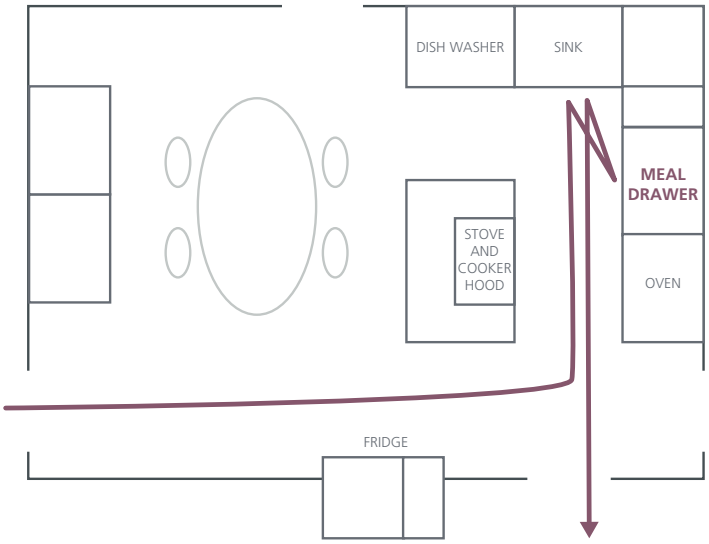


Possible scenarios: The same routines after implementation of the meal drawer.

MALE, 58 YEARS OLD
14 sqm



FEMALE, 53 YEARS OLD
18 sqm



T R I
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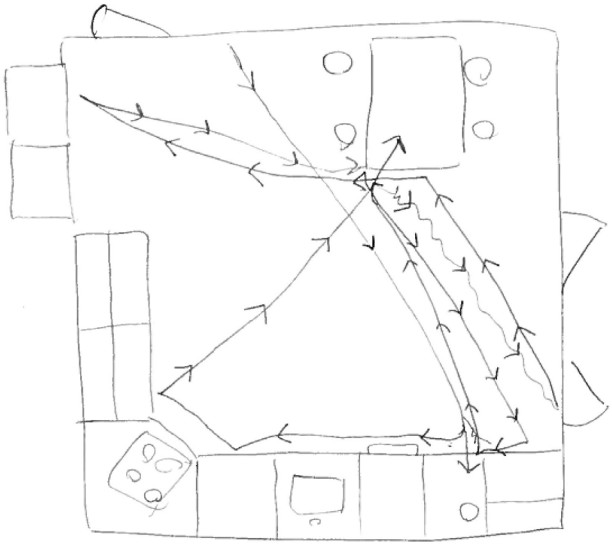
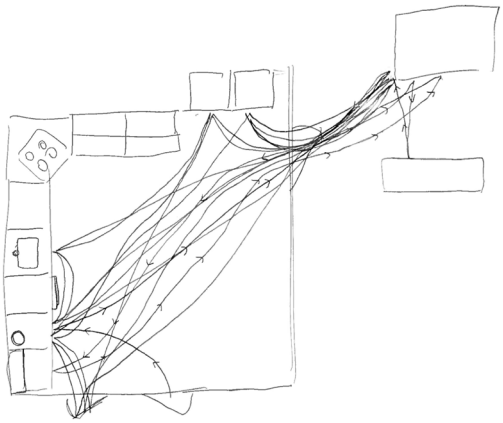
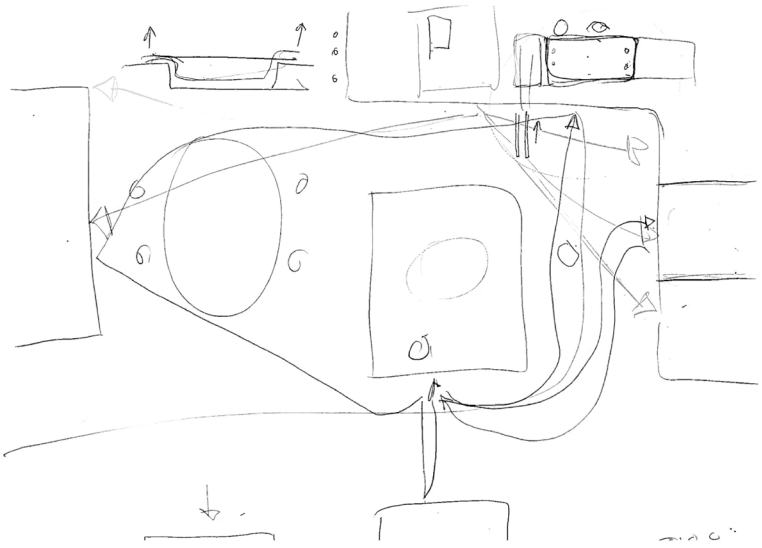
MAPPING OF ACTIVITY PATTERN







T R I
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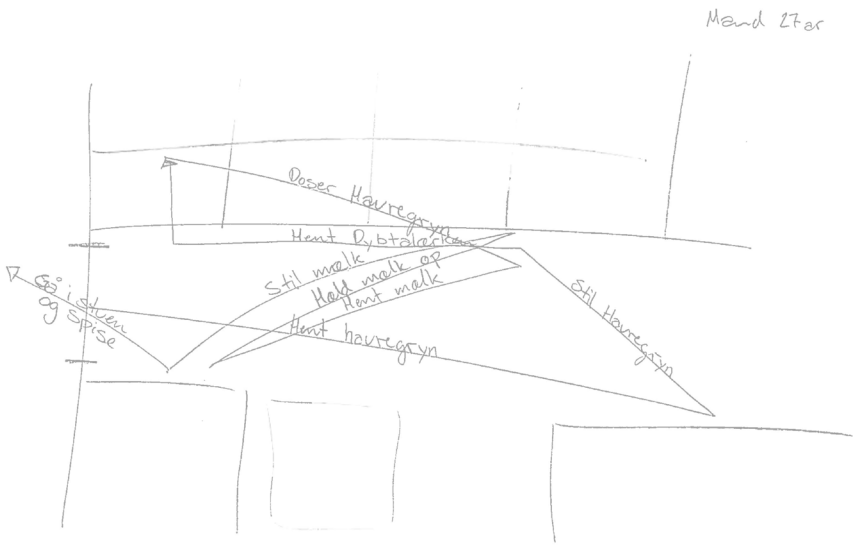
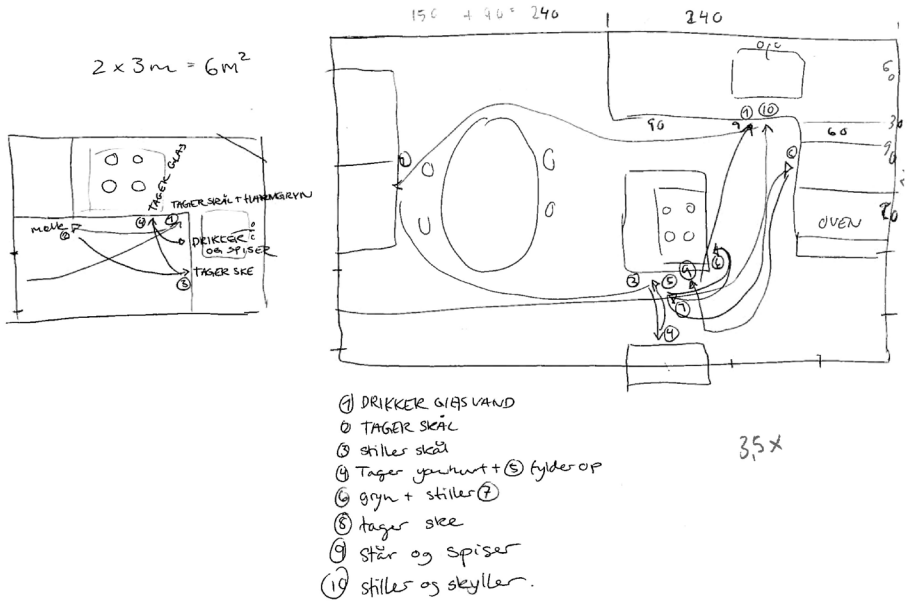
MAPPING OF ACTIVITY PATTERN





EVALUATION

The mappings showed that all the test persons walk back and forth a lot during their morning routine, so there is definitely opportunitites for optimizing the activity patterns in the kitchen.

REFLECTION

The test persons and their kitchens are not representative, but it gives an indication of a problem, even though it is just a small problem. However, the problem is rooted in organisation of things in the kitchen, which might not be a problem that is relevant to solve through design of domestic appliances, rather than kitchen units and layout.

T R I
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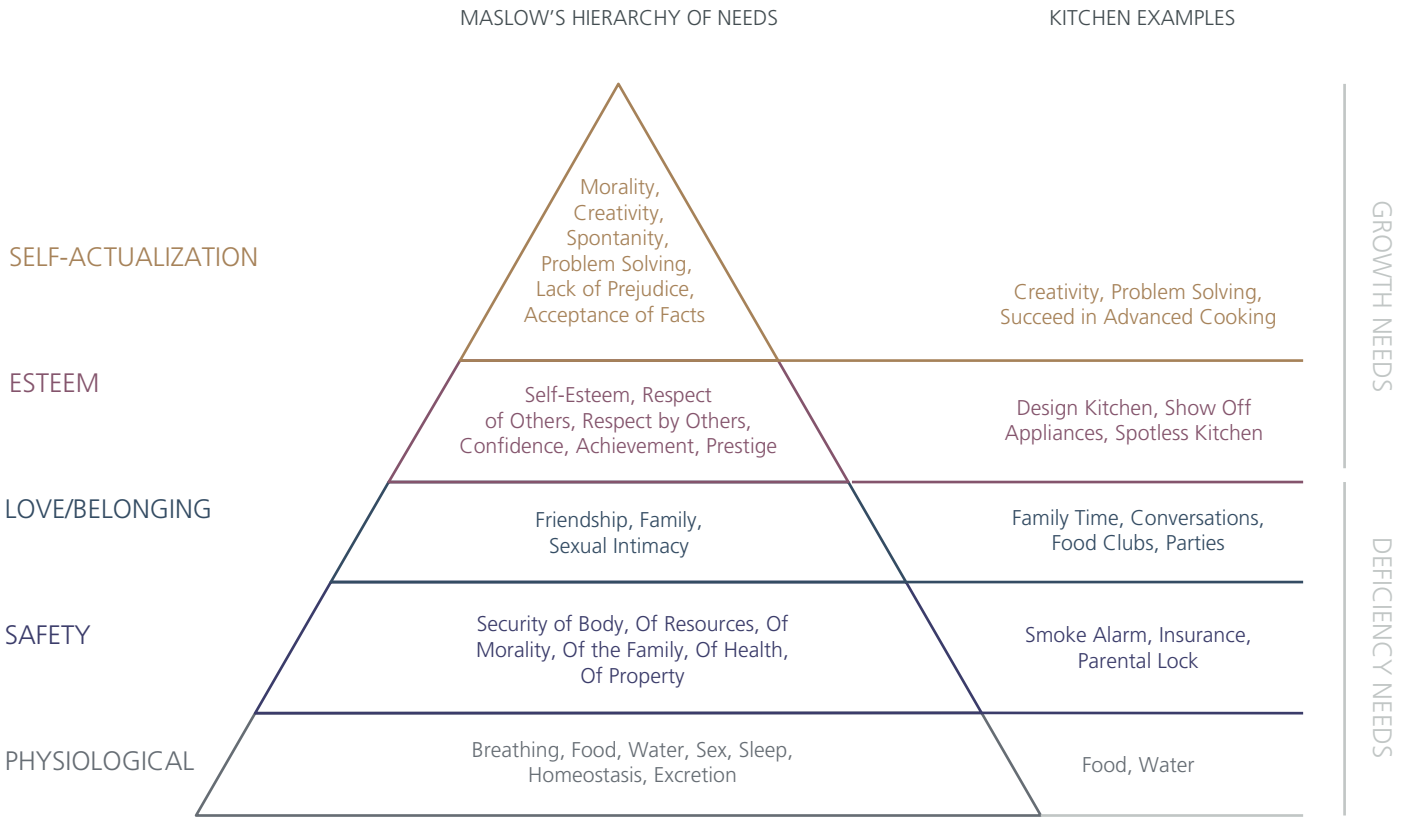
MASLOW'S HIERARCHY OF NEEDS

OBJECTIVE

To get a common ground to start from and a deeper understanding of what the kitchen term basically covers, the subject was investigated through literature and by using Maslow's hierarchy of needs (Maslow,1943) to systematically define what needs the kitchen potentially is able to fulfill in which situations. Thus, important factors to consider in the concept development are found.

EXPERIMENT/DATA



The kitchen is a place everyone associates with special memories and experiences, expectations and dreams. Kitchen processes are mostly characterized by being practical and functional, but does also contain emotional and social aspects (Engholm, 2008).
For clarity, the kitchen as a term is divided into two main categories, the physical and psychological aspects (overlaps can occur).

THE PHYSICAL ASPECTS

Basically, the kitchen is a place where you eat and drink to satisfy the most basic needs in the first level of the hierarchy of needs. The room contains physical objects; walls, ceiling, floor, supply and export of running water, heat, electricity, ventilation, specialized machinery, refrigerating storage room for raw materials, dining room and more objects are coming. Not only routines and habits directly related to cooking are happening in the kitchen, but also activities like doing work, homework and watching television, which indicate that the kitchen is a multifunctional common room for all family members (Salamon, 2008).

T R I
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MASLOW'S HIERARCHY OF NEEDS

Safety is an important part of the kitchen and in relation to Maslow's second level 'safety' the physical objects in the kitchen, which help to fulfill this need could be smoke alarms, as they give the owner a feeling of security. Likewise social events and family time, which can fulfill the third level in the hierarchy of needs, can both have physical aspects like close contact and psychological aspects in terms of the feelings that the activities provoke.

THE PSYCHOLOGICAL ASPECTS

As mentioned before, emotional and social aspects is a central part of the everyday life in the kitchen, but also culture is a main factor. The symbolic meanings and rules about handling of food vary from culture to culture, creating different mindsets about the kitchen depending of the culture you belong to. For example, there is a high hygiene level and focus on health in Denmark, which results in certain guidelines about handling of raw meat and vegetables. Additionally, some Danes often throw out food because of the expiration date even though it is still eatable. This is due to the symbolic meaning caused by rules and culture, but the behaviour can also be affected by social norms as unwritten rules, such as "you are not allowed to sit on the table", which of cause differ from family to family. Besides reflecting habits and cultural traditions, the kitchen also reflects the self-perception and dreams of the user. People, whose basic deficiency needs are fulfilled, will have a natural motivation to fulfill the growth needs, the esteem and self-actualization levels in Maslow's model. This can be done through meals and food, as these act as a stage for presentation of identity, prestige and storytelling, either consciously or unconsciously. An example could be the ecology enthusiast, whose kitchen and meals will reflect this identity as someone who care about the environment and animal welfare (Salamon, 2008).

Another psychological aspect is the kitchen as a place for social gatherings and the memories created in those situations. Common meals where the whole family is involved in the process is becoming more and more popular, which also affects the design of the modern kitchen where e.g. adjustable table heights and double sinks are ways to emphasize the kitchen as a social gathering place (Salamon, 2008).

EVALUATION

The kitchen is a complex matter, which is able to fulfill all levels in the hierarchy of needs. A lot of activities take place in the kitchen, not only cooking and eating, but also social gatherings and activities usually performed in other rooms. Kitchens tell a lot about the owner, as personality and values often are reflected in this room. The team should consider the different needs; Physiological, safety, social, esteem and self-actualization as well as memories, identity, symbolic meaning, culture, social norms and habits.

REFLECTION

Maslow's hierarchy of needs is used, which is a good indicator to show the aspects of human needs. The book "Design: Køkkenet" by Ida Engholm supports the other aspects in a kitchen and describes many of the factors that defines a kitchen. These methods are good indicators on what a kitchen is.

ENERGY CONSCIOUSNESS

OBJECTIVE: The objective is to get insight in people's relation to energy consumption to see if this is a future consumer need.

EXPERIMENT/DATA

The energy consumption in households is increasing in European countries, which might be a result of increased wealth and more luxurious lifestyles with higher demands regarding comfort and space, where a high amount of electronic devices and air conditioning are common (Ea Energianalyse, 2008).

As seen in fig. A, the amount of electrical devices has increased during the last 20 years (ElmodelBolig via Gram-Hanssen, 2005). However, the electrical devices hava been improved over the years, causing lower energy consumption for each individual appliance, see fig. B.
In 2015 the European Union presented new rules which purpose is to help Danes and other European citizens to reduce energy consumption by requiring manufacturers to produce smarter electronic appliances that are more energy efficient and even turn off or go on standby by themselves (Seerup, 2015).

Fig. A

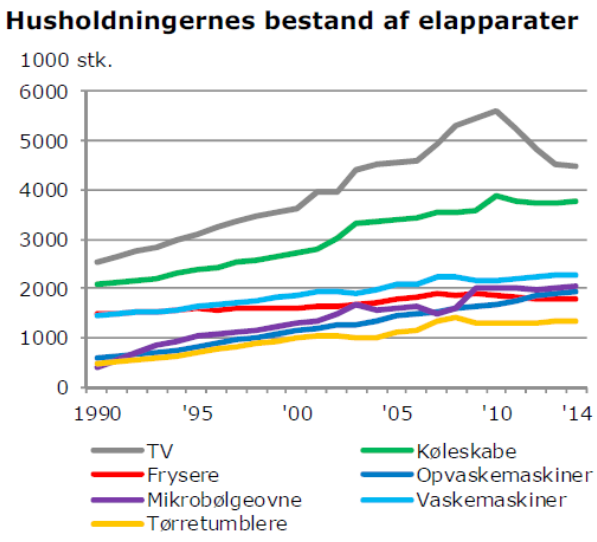
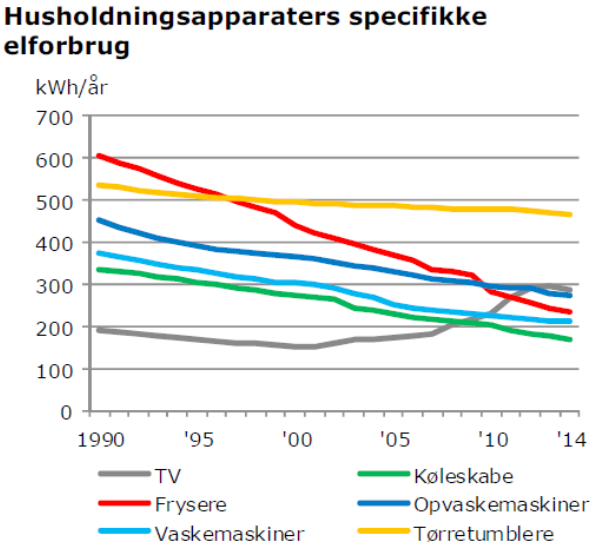


Fig. B



EVALUATION

The consumer's attitudes have changed to energy-conscious and environmentally conscious during the last couple of years, causing different interests like the Danish Government goal about green energy, personal interest and increasing the home value. This direction is still increasing and will be one thing the team will consider during concept development.

REFLECTION

It seems that the energy consumption is affected by the Danish Government visions which makes it convenient for the team to look at social and political aspects for the future.

FOODEXPO 2016

OBJECTIVE

The main objective was to get insight into new machines in professional kitchens as the professionals often are ahead of the private users and therefore might give a clue about what will become main features in kitchens in the future. The trend agency PEJ-gruppen had a lecture about the time spirit, the consumers today and food trends, which might be useful.

EXPERIMENT/DATA

According to the lecture by trend researcher, Louise Byg Kongsholm, from PEJ-gruppen the consumers behaviour is affected by the financial crisis: they act as professional buyers, checking prices and researching on items before buying and then go buy them cheaper on the internet. There is a tendency to price polarization luxury items in the top and cheap items in the bottom, but the middle part is missing. The definition of discount has changed, so discount becomes more luxurious and the consumers' expectations become higher as well.
Luxury is not necessarily expensive, material and tangible objects anymore, as luxury is characterised by what is for the few and very desireable. Luxury has become very individual and personal. Because people are busy and want to accomplish everything, there is never enough time on hand. Time and presence have become the new luxury. Earlier people had 1½-2 hours for themselves each day, this has now changed to only 20 minutes. The answer to the lack of time seems to be to make life more efficient, so the consumers look for solutions to optimize their lives in every aspect. Everything that can be measured is measured, there are apps for everything to control your life, but on the downside all these apps take time. The consequence of lack of time is stress and fast solutions, which results in the basic needs (food and sleep) are not fulfilled. This results in a food culture where ready-to-eat, fast food, semi-convenience food becomes the quick solution. A counter reaction to this is slow food and high involvement in cooking. Many consumers fits the 5/2 principle, which means that they use quick solutions and spend less time in the kitchen in the weekdays, but spend more time on cooking in the weekend to compensate for the lack of cooking on weekdays. There is a tendency to buy the "boring part", so the consumers only have to do the fun part by themselves and save time on the boring tasks.

Another lecture by Judith Kyst from Madkulturen gave some insight regarding Danish food/ cooking habits.
Young Danes:
- season their food more than the older generations.
- eat more raw vegetables and food from other cultures.
- search for inspiration more than using recipes and their fingertip knowledge is not so big, but they cook just as advanced meals as the older generations, who have more fingertip knowledge.

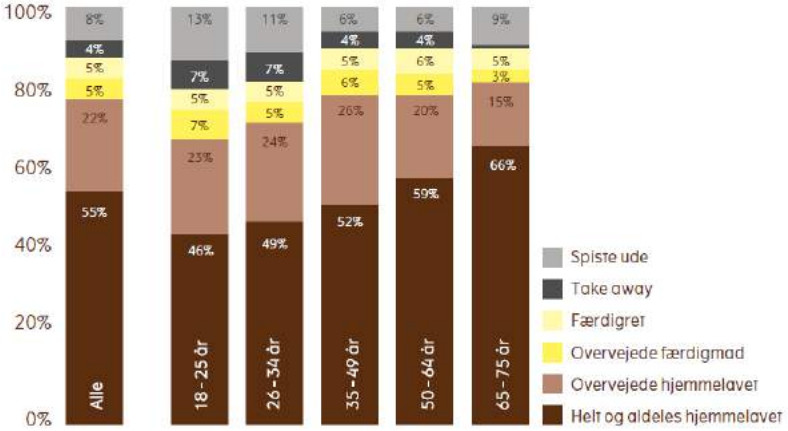
Families with children:
- cook from scratch 50% of the times - every third meal is made with semi-convenience food.
- are more willing to try new recipes and cook on a higher level than others.
- eat more "modern Danish" than families without children.

The age group up to 29 years old buy the highest amount of ecological goods. In the future: higher demand for ecological half-finished and finished products.

77% of all dinners are homemade or mostly homemade.

FOODEXPO 2016

Figur 18. **Hvor hjemmelavet er danskernes mad?**
Andele af måltider med forskellig tilberedningsprofil i forhold til alder



The findings from the research by Madkulturen is consistent with the tendencies PEJ-gruppen highlighted (e.g. time spent on cooking in weekdays vs. weekends + the use of semi-convenience food).

Regarding kitchen machines, a few caught our attention: Sous vide, vacuum packaging machines, a multifunctional pressure cooker/pan/pot/deep frier (from Frima) and a "fridge" for growing spices/greens for cooking (see photo).

EVALUATION

Time, sleep and presence are the new luxury because these things are in short supply for many people. Because of the lack of time, today's consumers look for ways to optimize their lives. Regarding food, this means that there is a tendency to buy semiconvenience food and take shortcuts in the kitchen, especially on weekdays. In the weekends it is more common to spend more time in the kitchen to "compensate" for the shortcuts during the week.

REFLECTION

Both the information from PEJ-gruppen and Madkulturen were consistent and they agreed on the general tendencies regarding the way Danes cook and eat.

The search for new tendencies in kitchen appliances did not give much new information as the team already knew sous vide and vacuumpacking machines. However, the "plant fridge" and multifunctional pan could give some inspiration.

INTERVIEW WITH CONSUMER 1

OBJECTIVE

The aim is to interview a target consumer that has a busy life to understand their problems and needs in a kitchen. The target consumer in this case is Lisbeth Østergaard, 53 years old, Catering Manager at Blå Kors Hjemmet Hobro, who has suffered from stress and still is a bit today. The kitchen is a kitchen-dining room.

EXPERIMENT/DATA

First question: Do you use the kitchen for anything else than cooking-related things?
"Yes, I sometimes watch TV while cooking, but also when my husband watch another TV program in the living room. We also talk and relax in the kitchen everyday after work. We have a card club every second week where we make dinner first and afterwards play board games in the kitchen. When my children lived at home they used the kitchen table for homework a lot and today I sometimes make work-related stuff there because of the great atmosphere and the great light."

Second question: Rate your appliances from 1 to 10, prize and why?
The owen: 20.000 DDK and rated 9;
Smart that the baking pan is to the side
The size of the owen is good (90 cm)
The location of the owen is perfect (placed on top of the table top)
To get a 10 it is missing self-cleaning function and cooker hood function, because it is a bit hard to clean and is a bit noisy.

Fridge and freezer: 25.000 DDK and rated 9;
Easy to clean
Beautiful look
To get a 10; fridge and freezer could be bigger so it was 60x60 instead of 40x50 and the front is esay to scratch.

Dishwasher: 20.000 DKK and rated 3:
custom-made to the kitchen
Beautiful
Good high for matching the socket
To get a 10; Stop always being broken, it is 90 cm wide but there is still no space, it is noisy and the front is very heavy, and the programs takes to long time.

Cooker hood: 20.000 DKK and rated 8:
Works very well
very easy to clean and to change the light spots
To get 10; it is very noisy and the height is wrong, you knock your head into the hood.

Stove: 20.000 DKK and rated 9;
very quick
work very well
To get 10: To little space between the marks of hotplates because her pans and pots are bigger than the marks, it requires a lot to clean it, (a new clean cloth every time), the

INTERVIEW WITH CONSUMER 1

induction function is annoying when your fingers are wet, so I have a cloth near to dry my hands everything i use the stove.

Sink: rated 3;
It works okay
For get a 10: The sink is too small, I would like to space enough so i can put a baking pan into the sink and clean it and i would like to have an integrated hand soap dispenser. The size in general are annoying and the small room to the side is more used for cloth and washing-up brush and is always dirty

Socket; rated 10; I love the high socket drawer (30 cm), there is room for everything.

EVALUATION

In general most of the problems in the kitchen is the interaction with the appliances and that a lot of them are noisy. It is noticed that other non-cooking related activities, such as tv-watching, social activities and work-related tasks, takes place in the kitchen dining room.

REFLECTION

This interview is based on a subject opinion and before the team can really conclude that other activities is happening in the kitchen in a lot of homes, the team needs to interview other homes with a kitchen-dining room.

T R I
A K T

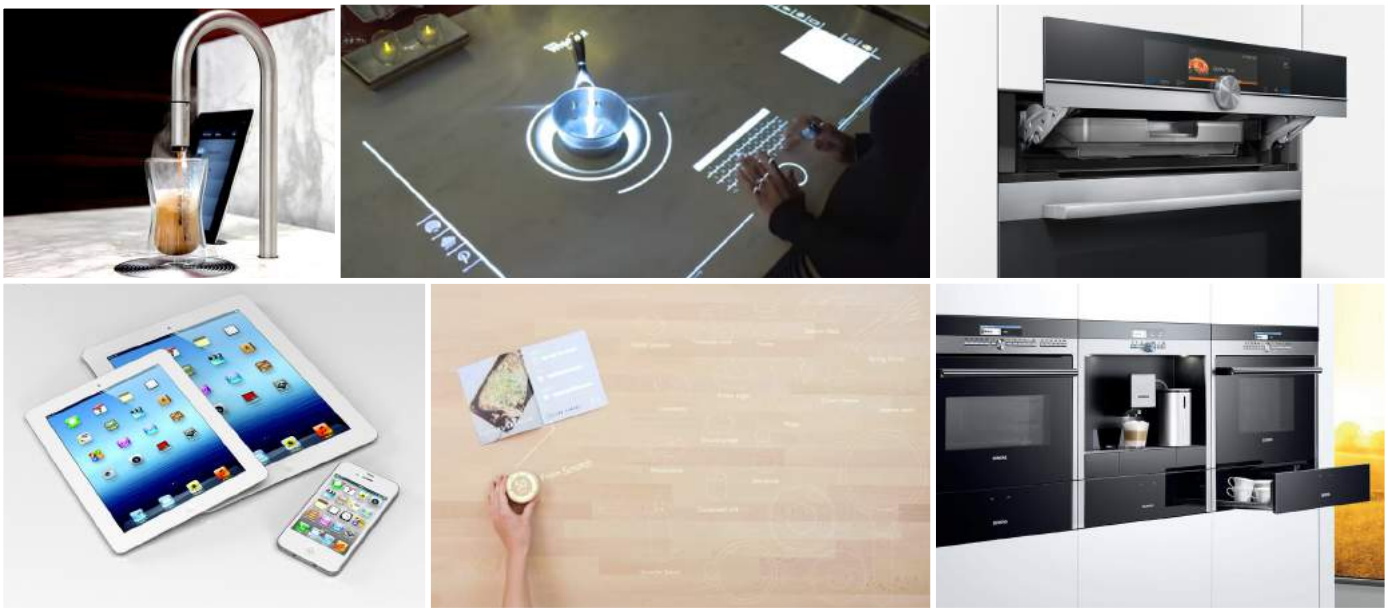
THREE DIRECTIONS PROS AND CONS

OBJECTIVE
The objective of this trend research was to gain an understanding of what the different trends consist of and what their strengths and weaknesses are. The intention was to get an mutual understanding before going to the concept development phase.

EXPERIMENT/DATA
All group members wrote down their understandig of the trend and compared it with the others.

SMART PRODUCTS

Capable of "independent thoughts", multifunctions, more functions



PROS

- Fits into the digital lifestyle
- Overview and organizing
  - Fridge
  - Drawer
- Control
  - On the go
  - Distance
- On/off automatic
- Capable of independent thoughts
  - "help"
  - Planning meals
- Timing (better)
- Multifunctions
  - More for the money

CONS

- "Stupidifies" people
- Unnecessary gadgets
  - Light
- Complex
- Intimidating
- Losing control
- Time consuming (programming)
- More electronics = more errors
- Noise

T R I
A K T

FUTURE KITCHEN TRENDS EXPLORATION

BACK TO BASICS

Cut down to the bone, keep original functions, less functions





PROS

- Simple
- Less time consuming
- Optimising the quality for function
- No noise
  - no extra info
- Fulfill basic needs
- Pleasant user experience
- Simple interface
- Require skills
- Less functions = Simple process
- What you see is what you get
- User is in control

CONS

- Require skills
  The user has to know everything (cooking techniques and methods)
- Time consuming (you have to be there)
- One function / less
- A lot of objects in the house (maybe?)

T R I
A K T

FUTURE KITCHEN TRENDS EXPLORATION

FLEXIBLE AND MOBILE

travel kitchen, design in motion, outside kitchen, micro-apartment stacks kitchen







PROS

- Less space required
- Indoor and outdoor
- Different setups
- Customizable
- Good for small spaces

CONS

- Higher risk of accident
  - Adaptation required
- Connectivity
- Fixed positions (maybe?)
- Less space
- Untraditional

EVALUATION

This short exercise cleared up some misunderstandings and helped clarifying the different trends.

REFLECTION

All three trends have many pros and cons. Maybe it is possible to mix them to get the best of both worlds.

INTERVIEW WITH AN ELECTRICIAN

To obtain indersider knowledge it is ideal to talk to an expert. Arne Hansen is an electrician and has installed several of Miele's products. He has more than 40 years of experience in the field.

EXPERIMENT/DATA

Do you as an electrician experiences any common problems with Miele products?
- No not really. It is among the best.
The heating element in washing machines do often break and must be replaced from time to time. But it may be due to different types of water, with different amount of limescale.

If you had to explain Miele products with 3-5 words, what do they stand for?
- Solid, durable, easy to operate, easy to service (when there is something to be changed/ checked.) Consumer friendly.

In which categories are Miele's products the best?
- Dish washer, dryer and washing machine .. hard to say one thing.
I do not know as much about their ovens or stoves.

What does Miele do well?
- They make good and durable products that is easy to operate.

What does Miele not do well?
- If you call their service as an electrician, then they are not too friendly to guide you through the problems you might have with anything of their machines. They just want you to call their own service people.

Are there something that they could learn from others?
- Their level of support towards installers. Siemens and Bosch are better at that point.

EVALUATION

This is consistent with what we had heard from others. Miele has good products with high durability. The only thing they are missing compared to competitors is better service towards installers.

REFLECTION

Knowing that installers agree with what the sales departments say and what Miele say, makes it easier to believe that Miele has good reliable products.

STRESS LEVEL

OBJECTIVE

To confirm the assumptions about rising stress levels and see if it is consistent with the lecture from PEJ-gruppen at Foodexpo.

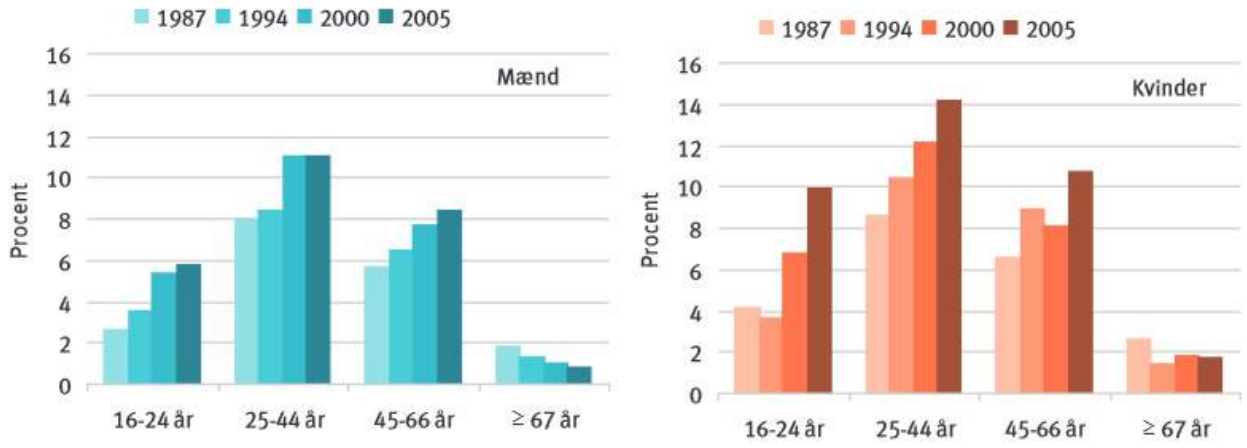
EXPERIMENT/DATA

According to the National Institute of Public Health, the general stress level is rising in Denmark. As seen on the illustration, the number of people who often feel stressed is increasing, especially in the employed age groups.

"Since 1987 there has been a rise of 50% in how big a part of the population who often feels stressed" (p.275, http://www.si-folkesundhed.dk/upload/kap_22_stress.pdf)

Stressors, which can cause stress, can be both physical and mental. Physical stressors can be trauma, heat, coldness and noise. Mental stressors can be quantitative (like big loads of work), cognitive (e.g. if you are required to remember a lot) or emotional (e.g. experiencing catastrophes, death etc.).
Both the duration and the volume are decisive for wheter or not the stressor results in stress.
http://www.si-folkesundhed.dk/upload/kap_22_stress.pdf (p. 276)
Illustration: http://www.si-folkesundhed.dk/upload/kap_22_stress.pdf (p. 284)

Figur 22.5. Udviklingen i andelen (%), der ofte føler sig stresset. 1987-2005.



According to Danish Health and Medicines Authority the tendency to be online and almost always available to reach no matter where you are and what you do, also contribute to the rising stress levels.
http://sundhedsstyrelsen.dk/da/udgivelser/2007/~/media/4D04513E8FAF4B938D5808A68E685AC8.ashx (p. 24)

EVALUATION

The assumptions about rising stress level in the Danish population was confirmed by public health authorities. It is worth noticing that noise can be a stressor when exposed to it for too long, as well as the fact that our increasingly digital lives also contributes to the rising stress level.

REFLECTION

The study shows that Danes are becoming more and more stressed, but it does not show anything about the target group that is selected in the project.

KITCHEN NOISE TEST 1

OBJECTIVE

The aim is to find out what the sound level in the kitchen is while a consumer is having a small family party saturday evening consisting of 5 persons. The tests are made during cooking (one and a half hours) and dinner (two hours) and after the dinner (30 minutes). They are measured with the app called "Decibel 10th - Professional Noise Meter"and each test is measured one meter from the sound source. The app shows a graph over the sound level in an amount of time and the maximum sound level and current.

EXPERIMENT/DATA

The kitchen has full gloss drawer fronts, big windows, tile foor and fridge made out of aluminium which reflects sound and increases the noise level.

During cooking

In this case there is one person in the kitchen preparing the meal with both the oven and cooker hood ON while she is cutting out the meat and placing the food in serving bowls. The graph below shows the sound level during these tasks which goes from 60 to 92 dB.

During cooking conversations

In this scenario a conversation is measured. The husband has mild tinnitus and often walks away from the kitchen during cooking because of the sound level (mostly the cooker hood) which is to confusing for him. The sound level is from 57 to 96 dB.

During dinner

There is a family dinner of 5 persons eating and talking in the living room where the cooker hood and oven is OFF. In the graph below you see that it varies a lot. The sound level is from 51 to 96 dB.

T R I
A K T

KITCHEN NOISE TEST 1

Cleaning

The first graph shows in the beginning the running water from the sink and a short conversation in the end which explains the maximum on 95. The second graph shows cleaning of pan and pots situation, where movements get higher each time the objects hit the sink or other objects. The cleaning process sound level is from 60 to 85 dB.

Dishwasher

The dishwasher sound level when it is ON is from 52 to 69 dB and has a monotonous sound.

EVALUATION

It can be concluded that when one person works in the kitchen alone the sound level varies and is relatively high, and placed in the red zone but as impulsive noise. A "normal" conversation is around 55-60 dB (Arbejdstilsynet, 2015) but while cooking the conversation increases radically and occurs in the red zone. The reasons for this high level is in this case mostly the noice from the cooker hood and the oven. The sounds from the sink when objects hit the surface and the running water also influence to a higher sound level.

REFLECTION

The team is aware of that some of the movement of the graph can lie in something else. The kitchen door was not closed to the living room where three persons was sitting and talking which contribute to the noise level in the kitchen during the tests of sounds while cooking. Furthermore the team assumes that the app/Iphone that was used is calibrated right, even though the team did reset the app before each test. The team is aware of that kitchen elements as full gloss fronts and doors, kitchen appliances made out of aluminium and tile foor reflects sound and increases the noise level.

FOUND NOISES IN KITCHEN

OBJECTIVE

The objective is to give an idea of what noise is versus sound and what types of noise exist. Through data from the kitchen survey, first consumer interview and walk around talk in group rooms, kitchen sounds and noises are divided into different types of noises, categorised by Videncenter for Arbejdsmiljø, 2016. The categories are wanted sounds, disruptive noise, impulsive noise and constant noise.

EXPERIMENT/DATA

EVALUATION

The wanted sounds are a mix between information sounds and low or calm sounds. Information sounds could be the news or entertainment. Wanted sounds are also more or less associated with memories which vary a lot. Disruptive noise can make the envoriment stressful, but is not harmful. Impulsive noise is short high sudden noises that stresses and surprises. Constant noise covers constant and continuous high noise that can give you a headache after a period of time.

Reflection

The team needs to research on the side-effects of these noises and consider to eliminate them and highlighting the wanted sounds if possible. The team is aware of the fact that only a few of the noises are measured and the rest are peoples opinions, which are subjective. Furthermore more noises in the kitchen can occur.

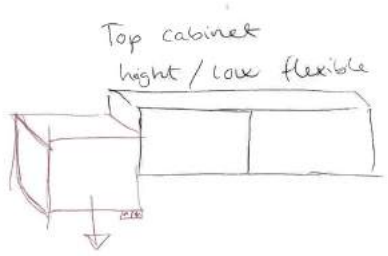
T R I
A K T

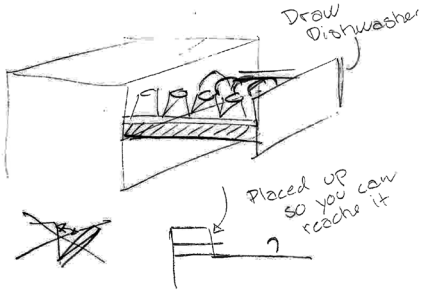
INITIAL IDEATION
- SKETCHING PHASE 1

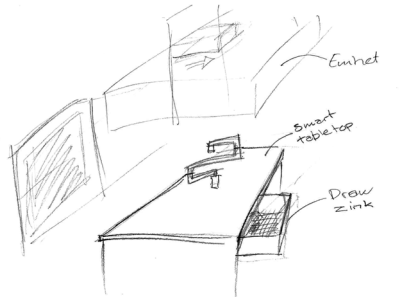
The objective of this first sketching phase was to come up with different concepts that could be presented at the first status seminar. The sketching phase was based on 3 mood boards that we had made earlier (Smart products, back to basics and flexible and mobile (Worksheet 17 - Three directions pros and cons)) and with the overall theme of calm fusion.

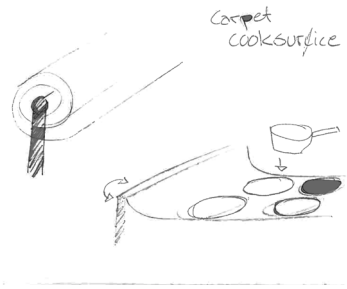
EXPERIMENT/DATA

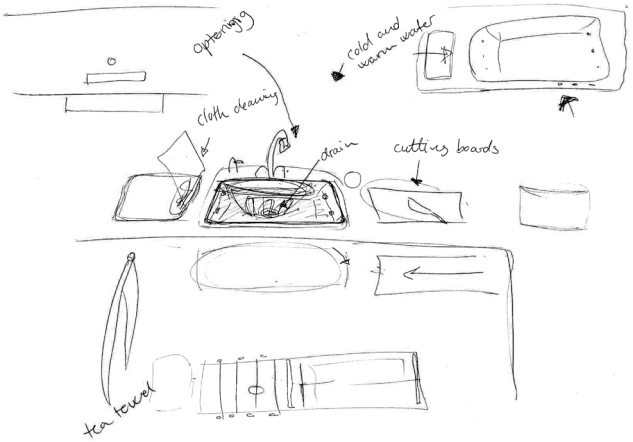
We started the sketching phase by sketching 5 minutes on each topic. Then we discussed the sketches and their potential. After 3 drawing sessions of 5 minutes, we started comparing the different ideas which resulted in a discussion-based drawing phase, where we came up with different ideas, drew and further developed them together.

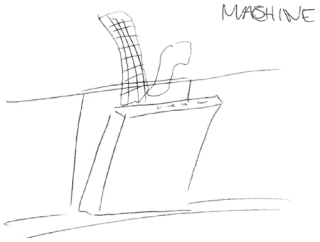


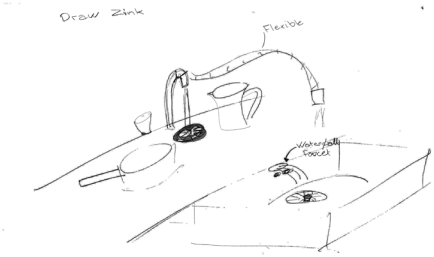


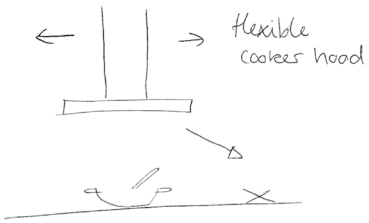


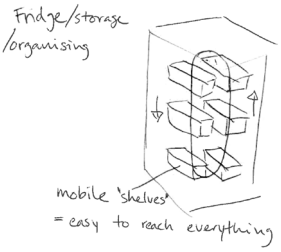


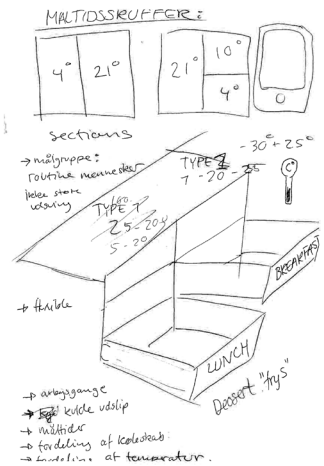












EVALUATION

After sketching we pointed out some of the concepts that had most potential.
The idea was to improve them further before presenting them on the first status seminar.

REFLECTION

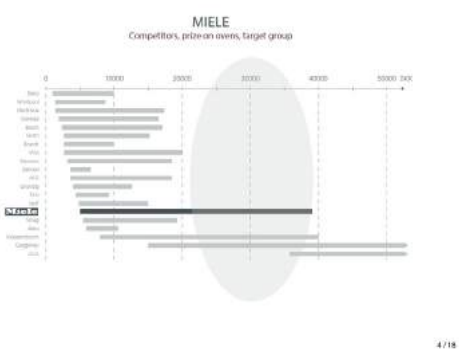
We had a hard time starting sketching as we did not make use of any sketching methods, which would be a god idea for the next sketching phase.

STATUS 1 - CONCEPTS

The objective of our first status seminar was to show what we wre working on and get feedback on our research and the two concepts we had worked on.

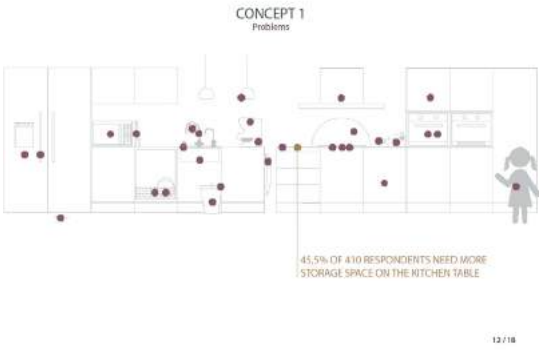
Feedback

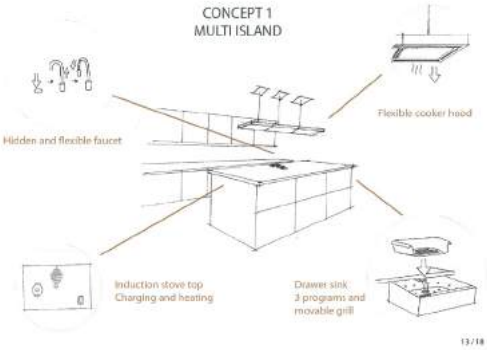
When participating in a competition, there might be some other aspects than in a normal project - look into that.
Which impact does the competition have for the project?



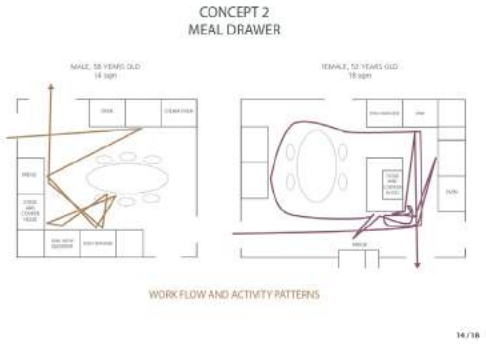
Maybe we could look into smaller kitchens, like apartment kitchens in Copenhagen. It's easier to scale up than down.
Looking at standard houses might not be the right thing, when aiming at a high end target group.

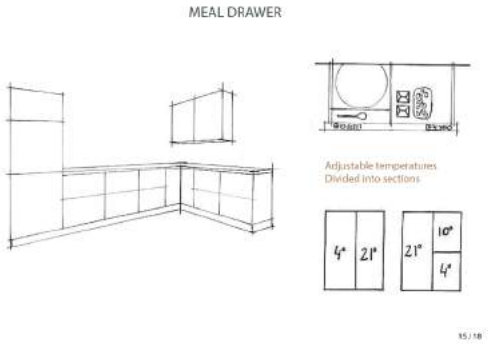
The three directions might be too open - specify and narrow them down.



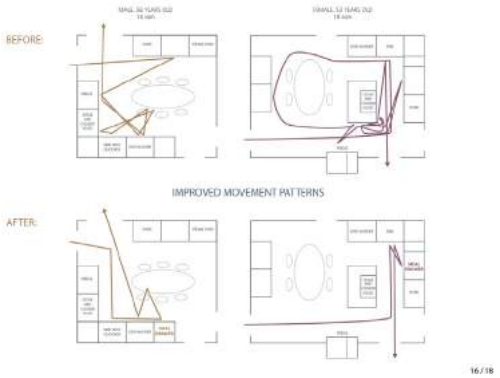


Some people have 2 dishwashers.
Be aware of not to make kitchen decor.





This might only solve something for methodical persons (organized persons).
People do not get enough exercise today, why make something that make them move less?
Maybe we should look in to thermo electric effect?



EVALUATION

It was made clear that we had to define the direction we want to go much more, clarify our target group and find out what the competition means for our project.

REFLECTION

At the next status we have to be more direct and not talk back at the audience to get more and better feedback.

FUTURE LIFESTYLES 2020

OBJECTIVE
The objective is to support the choice of target consumer by researching on possible future lifestyles through desk research.

EXPERIMENT/DATA
A report made for European Forum on Forward Looking Activities (EFFLA) by the research and strategy agency Wevolve describes four future lifestyles, which are likely to become dominating in Europe and the US in 2020 (Wevolve, 2013).

"Augmented and programmed lives"
This lifestyle evolves from the increasingly digital lives, where everyone are connected with everything through the internet and cloud services. Self-monitoring using tracking devices to become better and better, both physically and mentally, is increasing.
This lifestyle is reflected in the future kitchen concepts by IKEA and IDEO with e.g. an induction smart tabletop (Worksheet 5, Concept Kitchen 2025) and Whirlpool's concept of Interactive Kitchen of the Future with a smart sink combined with a dishwasher and a tracking display (Whirlpool, 2016) fit into this lifestyle.

"Culture of producing and sharing"
There will be a change from the consumer society to a producer society, where materialism and consumption recede into the background, while creating and sharing will become more prominent. The growing DIY culture and focus on sharing resources are central for this lifestyle.

"Resilient and proactive citizens"
A growing number of people are turning to a lifestyle based on the principle of resilience, adjusting to live in an unforeseeable and imbalanced world. As resources are not abundant, new ways of sharing and crowdfunding are emerging, and communities become more self-reliant with locally produced goods.

"The quest for purpose"
This lifestyle is re-evaluating what is important in life. The "enlightened consumption" is the base for a lifestyle where mindfulness, immaterial experiences as well as holistic wellbeing are important factors.

EVALUATION
The future lifestyles are supporting the chosen target consumer, especially the lifestyles "augmented and programmed lives" and "the quest of purpose", as the target consumer somehow shifts between these two almost opposite lifestyles; the consumer lives the digital lifestyle and then shifts to the more or less opposite, where focus is on mindfulness and presence, when the consumer needs a break from the digital lifestyle.

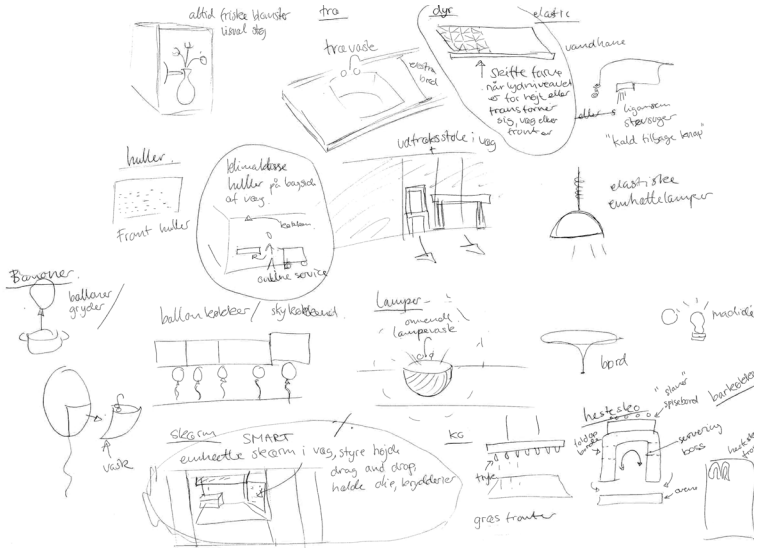
REFLECTION
The future lifestyles are taken from one single report, which source seems reliable and also fits with the lifestyles the team could imagine would be plausible as there are already signs of these directions. However, it might be a good idea to compare with other analyses of future lifestyles to confirm the first source.

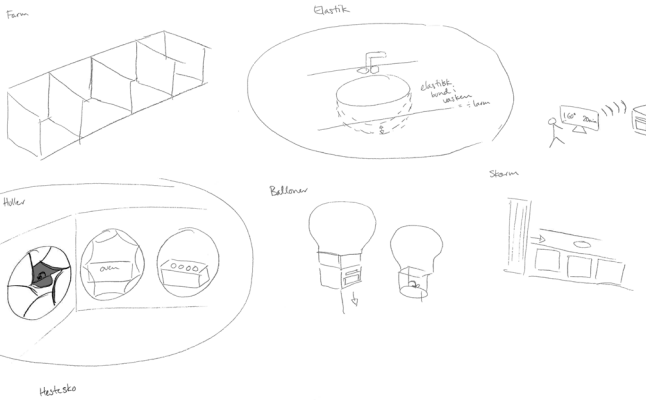
ASSOCIATION AND 5.3.5

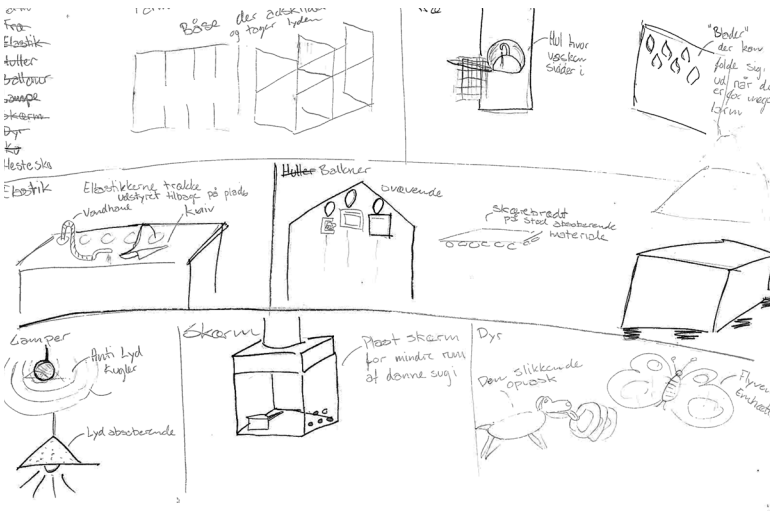
The objective of this sketching phase was to open our minds for new and interesting ideas. To accomplish this, two different methods were used (association technique and the 5.3.5 method). The sketching was based on our main theme Calm fusion and had visual and audible silence in focus.

EXPERIMENT/DATA

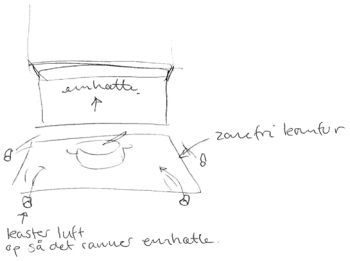
We started the sketching phase by making a list of 10 different words that was used in the association method, there were 2 minuntes of ideation on each word. When finished with this methode, we discussed all the new concepts, looking for something that could be used later.

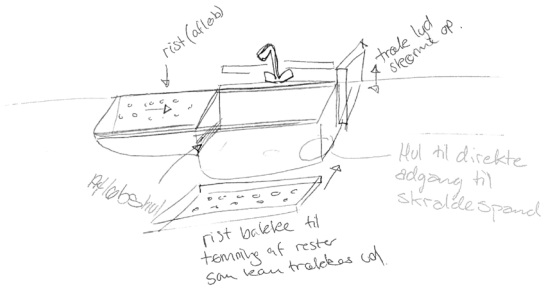


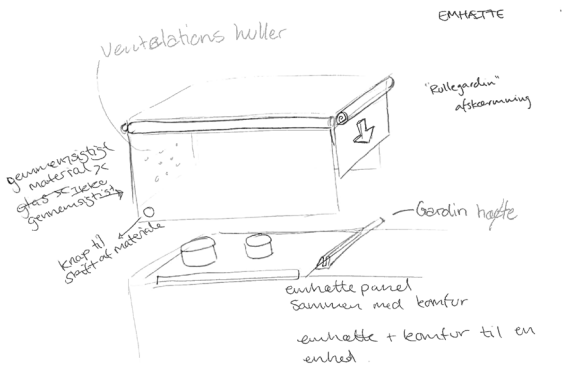


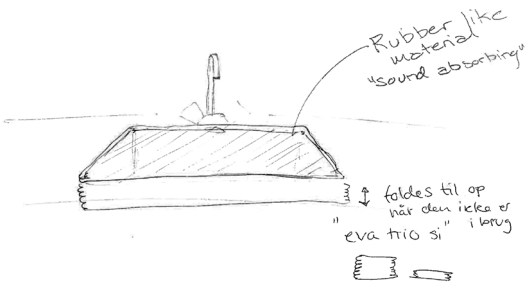


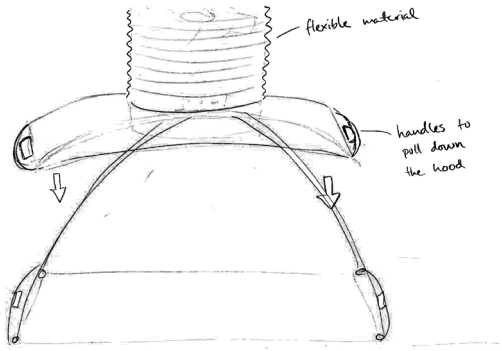
The second method used was the 5.3.5 method, where five people draw three drawings in five minutes and pass them on to the next person who continues the drawing. As we only were three persons, the method was modified to a 3.3.5 version. For this exercise there were made three keywords: Sink, cooker hood and free play.
When we were done with the exercise, the original author of each sketch did a presentation of the idea. We had a really interesting discussion and realized that more misunderstanding in the sketches occurred. However, the misunderstandings sometimes lead to new ideas.

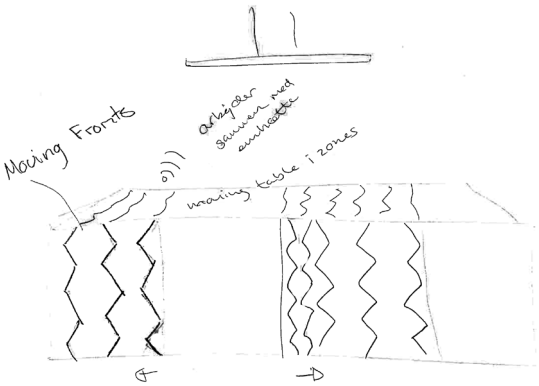


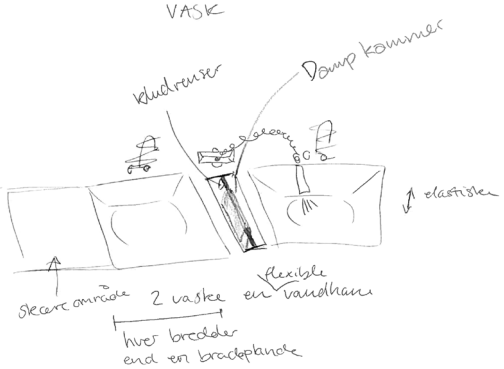




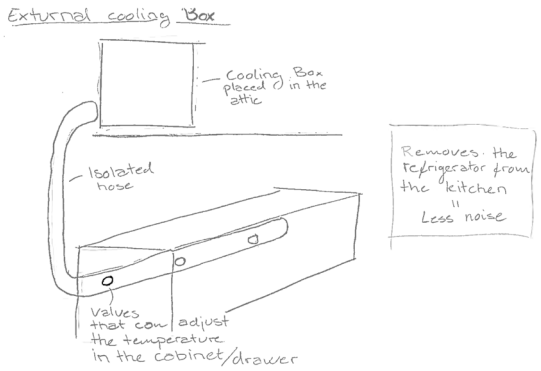


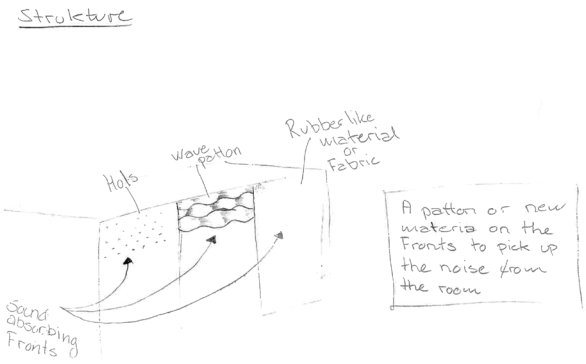


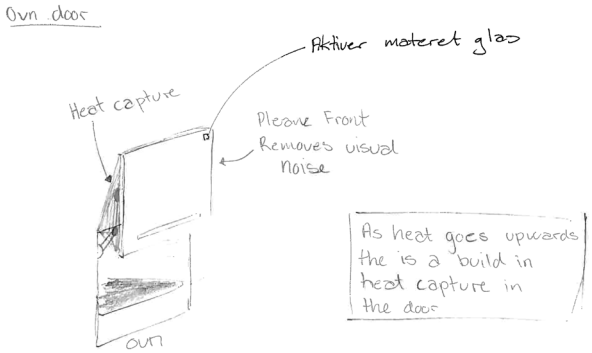


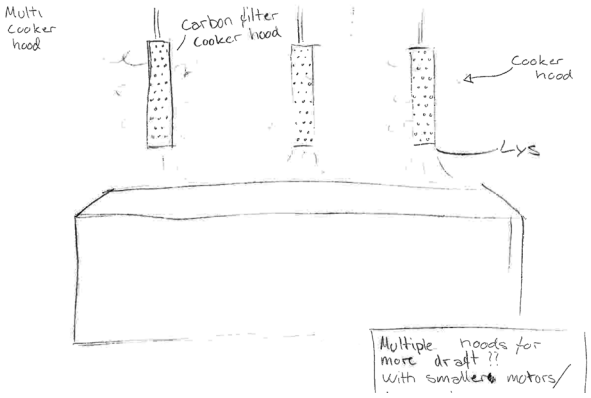


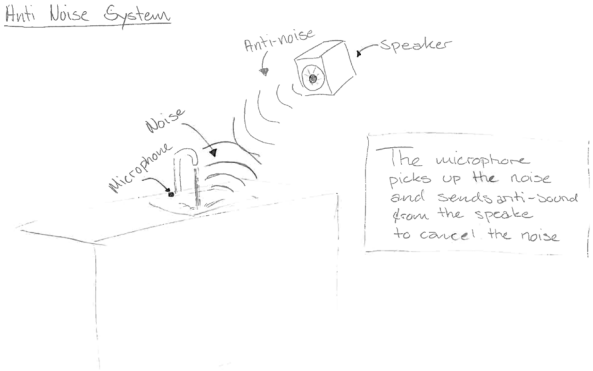
Ideation from the past weeks.

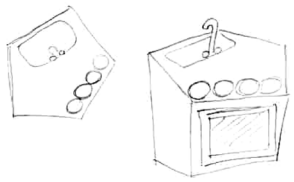


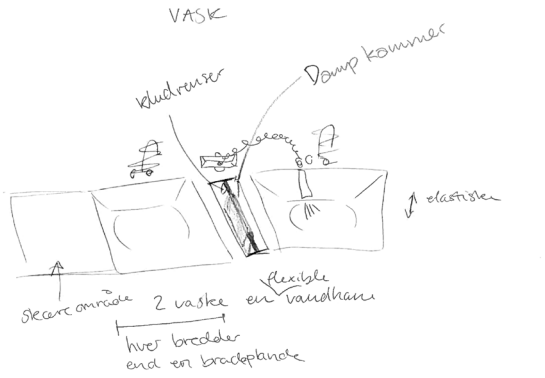












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EVALUATION
This secound ideation phase opened op for some new ideas, that have to be future improved.

REFLECTION
Using different sketching methodes made it easier for us to come op with new concepts.

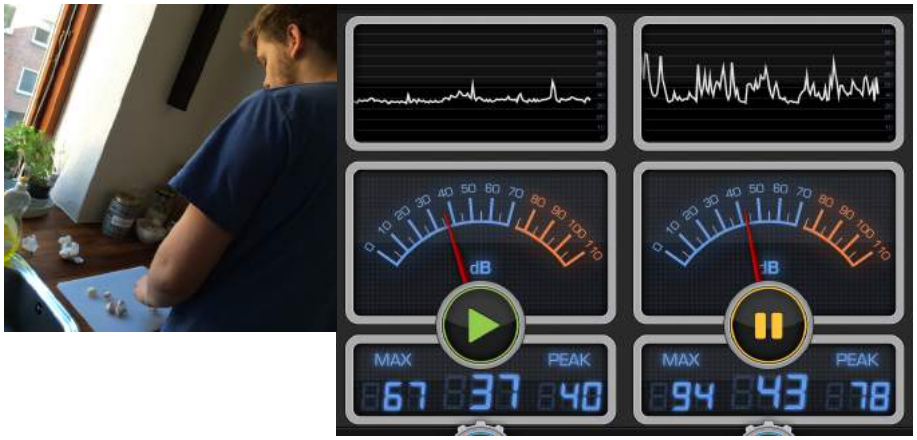
KITCHEN NOISE TEST 2

OBJECTIVE

The objective is to measure the critical noise level from user scenarios similar to the ones in Kitchen Noise Test 1 in a small kitchen to see if there are any differences.

EXPERIMENT/DATA

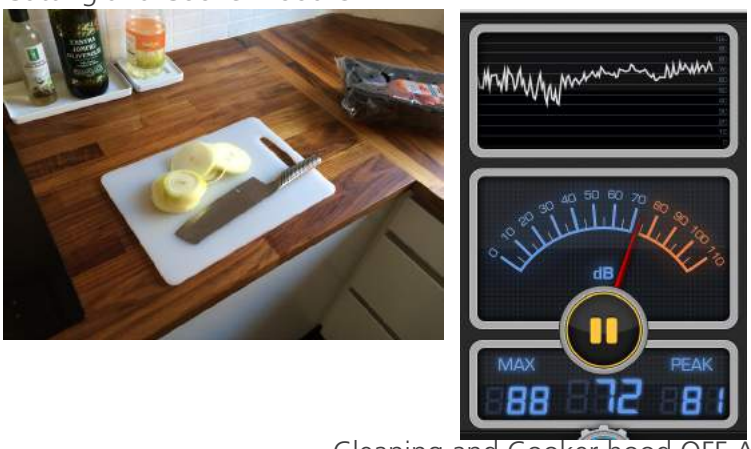
The kitchen is 6 square meters and has one small window and laminate flooring. The kitchen is more or less the same type as in Kitchen Noise test 1 with glossy doors and American walnut table top. Two persons are participating in the study. The tests are made during cooking (40 minutes) and cleaning (15 minutes). They are measured with the app called"Decibel 10th - Professional Noise Meter"and each test is measured one meter from the sound source. The app shows a graph over the sound level in an amount of time and the maximum sound level and current.



CUTTING BOARDS

First measurement shows the cleaning of garlic where the second is the cutting of garlic on a plastic cutting board that clearly shows impulsive noises that often ends in the red zone. The graph shows the sound level during this task which goes from 43 to 94 dB.

Cutting and Cooker hood ON



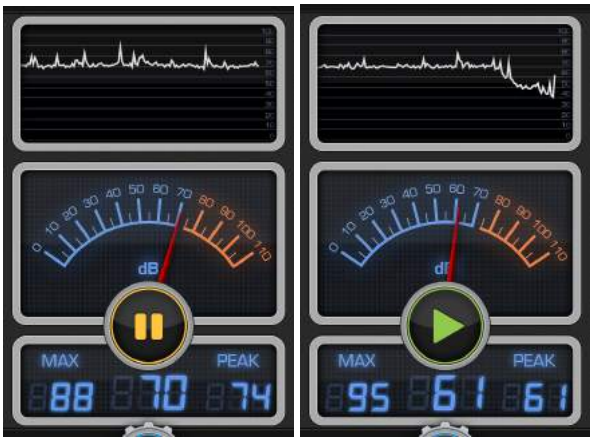
The third measurement is cutting onions while the cooker hood is ON. The graph shows that the noise level is in red zone more or less all the time.
The graph first phase shows when the cooker hood is not ON (impulsive noise, 39-79 dB) and is ON (almost constant noise, 55-85 dB).

Cleaning and Cooker hood OFF AND ON

CLEANING

Cleaning of the cutting board in the sink with and without the cooker hood ON. Without cooker hood noise the cleaning noise is impulsive noise from 45-88 dB and with it is more constant from 57-88 dB.

KITCHEN NOISE TEST 2



PREPARATION AND CUTTING OF MUSHROOMS AND COOKING WITH THE COOKER HOOD ON

This scenario has constant noise level from 68 to 77 dB with few impulsive noises like when the plastic spoon hits the metal pot edge while stirring. The last phase of the second graph shows when the cooker hood and the running water are turned off.

EVALUATION

The differences between the small kitchen and the big kitchen in relation to noise level are very small. Cutting board noise from test 2 (small kitchen) is from 43 to 94 and test 1 is 60 to 92 (big kitchen). Cleaning noise from test 2 is from 45-88 dB and test 1 is from 60 to 85 dB. Both tests show that the sound level varies and is relatively high, and placed in the red zone, almostly as impulsive noise. Constant noise occurs when the cooker hood is ON or when the water is running.

REFLECTION

The team is aware of that some of the movement of the graph can lie in something else like the bottom part in the comparision varies because of the oven was on in the test 1 and not in test 2. Furthermore the team assumes that the app/Iphone that was used is calibrated right, even though the team did reset the app before each test. The team is aware of that other kitchen elements as glossy fronts and doors, kitchen appliances made out of aluminium make the sound level even worse.

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KITCHEN NOISE TEST 3

OBJECTIVE

The aim is to measure the sound level in the kitchen while a consumer is making a dinner on an ordinary weekday consisting of 3 persons. In this case the test also investigates the television's effect in a kitchen compared to noise. The tests are made during cooking (one hour and 11 minutes) and dinner (13 minutes). They are measured with the app called"Decibel 10th - Professional Noise Meter"and each test is measured one meter from the sound source. The app shows a graph over the sound level in an amount of time and the maximum sound level and current.

EXPERIMENT/DATA

Peeling potatoes

In this case the person is peeling potatoes while the water is running. The graph below shows the sound level during this task which goes from 59 to 72 dB.

Mixing forcemeat

In this scenario the person is mixing the forcemeat which in the beginning gives a lot of impulsive noise because of plastic against plastic. The sound level is from 40 to 93 dB. In the end of mixing the noise level is more constant (50 to 70 dB).

Preparing mushrooms

The person is cleaning the mushrooms while the water is running. The graph below shows the sound level during this task which goes from 39 to 86 dB.

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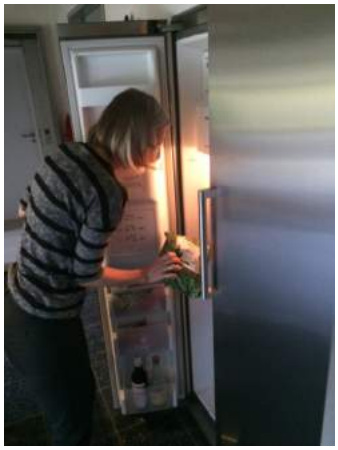
KITCHEN NOISE TEST 3

Cutting Mushrooms

Cutting the mushrooms is clearly impulsive noise from 39 to 81 dB.

Freezer



The noise level for finding something in the freezer is from 40 to 95 dB.

Cooking meatballs

Cooking the meatballs is fairly low regarding noise level, it is also defined as wanted noise. The only fluctuations are when the spoon hits the metal pan.

Cleaning

Cleaning the bowl is from 65 to 88 dB.

T R I
A K T

KITCHEN NOISE TEST 3

Finding spoon

The noise level for finding something in a drawer is from 61 to 89 dB.

Making sauce

Silicone whisk

Metal whisk

In this scenario, the person is making a sauce with a silicone whish that reduces the noise level radically compared to a metal whisk, see the two graphs below.

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KITCHEN NOISE TEST 3

Television

During cooking the television has more or less been ON, which increases the noise level a lot.

Dinner

During the dinner the television was OFF, but a phone was ringing (see the two sections in the last graph).

EVALUATION

The first kitchen noise test with one person in the kitchen was for a weekend dinner, this case was a weekday but the results is more or less the same. It can be concluded that when one person works in the kitchen alone the sound level varies and is relatively high, and placed in the red zone but as impulsive noise. When the television was ON the television level was very high because a "normal" conversation is around 55-60 dB (Arbejdstilsynet, 2015) but while cooking the "conversation level" increases radically and occurs in the red zone. The reasons for this high level are in this case mostly the cooker hood and working around the sink. The sounds from the sink while objects hits the surface and the running water also influence to a higher sound level.

REFLECTION

The team is aware of that some of the movement of the graph can lie in something else. The kitchen door was not closed into the living room where one person was doing something else, which may have contributed to the noise level in the kitchen during the tests of sounds while cooking. Furthermore, the team assumes that the app/Iphone that was used is calibrated right, even though the team did reset the app before each test. The team is aware of that other kitchen elements as full gloss fronts and doors, kitchen appliances made out of aluminium and tile foor make the sound level even worse.

CONSEQUENCES OF NOISE EXPOSURE

OBJECTIVE

The aim is to find the consequences of noise exposure, therefore a desk research on the Danish Working Environment Authority has been made.

EXPERIMENT/DATA

The danish Working Environment Authority has defined consequences of noise exposure as following (Arbejdstilsynet A, 2013);

- Low noise can interfere with work functions that require concentration, such as teaching. Even low noise can be disturbing. The noise, including noise from human activity can also be stressful if the work contains high emotional demands, the work is complicated and often work with short deadlines
- Continuous exposure to noise above 80 dB involves a risk of hearing damage. The individual sensitivity to noise varies widely. There is evidence that some particularly sensitive people may risk hearing damage after many years of exposure to noise levels of 75-80 dB.
- Continuous exposure to noise at 85 dB (A) involves a risk of serious hearing damage.
- Continuous exposure to noise of 90 dB means that the risk of serious hearing damage is almost three times as high as at a noise level of 85 dB.
- Noise causing may lead to tinnitus. Tinnitus can have many reasons other than noise, such as age. There is no evidence that noise is a primary source for the development of tinnitus in business with noise loads during 75-80 dB - here it seems that stress and emotional exhaustion have a greater impact.
- The disturbing effect of noise can be characterized by three factors:
  - Sound physics, including strength and frequency, acoustic conditions, etc..
  - The work situation, including requirements for concentration if you have control over the sound, etc.
  - Personal circumstances, including any hearing loss, age, attitude to the sound etc.
- Normal conversation takes place at 55-60 dB. The other noise should normally be about 10 dB lower in order not to interfere.

No one shall be exposed to a noise level above 85 dB or peak values of impulses of 137 dB. A noise level of 85 dB corresponds to a noise level (Arbejdstilsynet, 2013):

En støjbelastning på 85 dB(A) svarer til et støjniveau på:

85 dB(A) i	8 timer
88 dB(A) i	4 timer
91 dB(A) i	2 timer
94 dB(A) i	1 time
97 dB(A) i	30 minutter
100dB(A) i	15 minutter

T R I A K T

FURTHER INVESTIGATION OF KITCHEN TRENDS

OBJECTIVE

When investigating kitchen trends the first time (Worksheet 6), Dorthe at Boform mentioned that we had to visit their store in Hellerup, as their newest show room is placed there.

The objective is to futher define upcoming trends and confirm the things that we know at this point.

The focus is to describe new products, technologies and materials and further to interview salespersons in relation to their beliefs of the new trends, technologies, the internet of things and, most importantly, to describe the quality of Miele products and the products of competitors.

EXPERIMENT/DATA

The investigation was made by a interview with a salesperson Claus Guldbjerg and observing the store.

Interview with Claus Guldbjerg, project manager

Boform mainly sells Miele and Gaggenau products, therefore its obvious to compare them.
When talking about aesthetics Miele are behind in relation to design compared to Gaggenau, when aiming for the more clean look that the Danes love.
But they win when talking about durability.

According to Claus the average lifespan of a kitchen is about 15 years, with precaution for crisis.
A Boform kitchen sales from about 250.000 DKK to 500.000 DKK.

The tendency of hiding kitchenware behind covers and in cabinets is an upcoming trend. The simple hide-away solutions are preferred over large folding doors.

People buying a Boform kitchen tend to make more homemade food than others. But take-away and prefabricated food do end up in these kitchens.

Trends like copper, brass and marble are not lasting, they are temporary.

Personal kitchens are what people want, together with a kitchen where the kids can make their homework, people can talk and the family can play board games.

Personally, Claus hopes that the conversation-kitchen is staying, having the opportunity of drinking wine with friends while making dinner, using the kitchen for more than one thing is the way to go.

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FURTHER INVESTIGATION OF KITCHEN TRENDS



Three different kitchen solutions from Boform.

#1 Hide-away
#2 Pratical
#3 Flexible

Two or one large sink is the way to go in new kitchens.

Food grainders in the drain are coming, but not in every home.

Hotplate with built-in cooker hood from Bora.

Has a god airflow and produces about 75dB of noise.


Hide-away storage in the corner of the tabletop.

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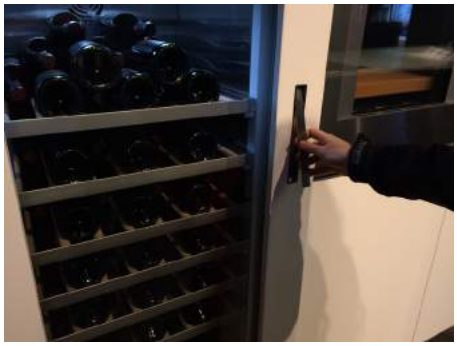
FURTHER INVESTIGATION OF KITCHEN TRENDS

Inspiration pictures from Boffi

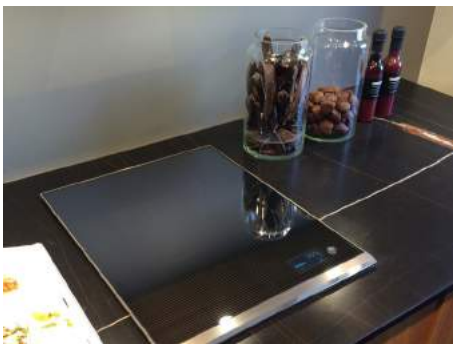







Inspiration pictures from Kvänum



EVALUATION
The interview at Boform in Hellerup confirmed our research and gave the group insight in what the target group wants.

At Boffi and Kvänum new brands and devices were discovered, giving inspiration for new ideas.

REFLECTION
Claus had a lot for good knowledge and were accommodating.

DADA KITCHENS

OBJECTIVE

The aim is to see the most expensive luxury kitchens in Denmark to see what the highest level is. Dada is part of Italy's high-end segment in relation to kitchens and is a part of the Italian design house Molteni Group. Dada is more than just high quality, design and functionality, most of their solutions are patented. There are 7 types of kitchens; Vela14, Banco, Hi-Line 6, InDada, Set, Tivali og Trim. As something new, Giorgio Armani wanted to design three kitchens for Dada; Slide, Checkers and Bridge. The team saw the Vela14 and Armani Slide.

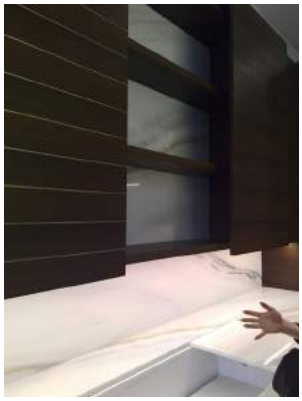
EXPERIMENT/DATA

THE ARMANI KITCHEN CALLED SLIDE

Armani/Dada Slide is the newest model in the Giorgio Armani serie. Made from the exclusive Sassafras tree, with the recognizable Armani stripes milled and hand painted in copper. With Miele refrigerator and freezer, steam oven and wine cabinet elegantly hidden behind the tall cabinet doors. And an impressive cooking island appears on the freestanding element by pushing the 200 kg heavy marble tabletop aside.
The salesperson at Interstudio, Britt Klug, mentioned that Armani only wants to use Miele in his kitchens, because Miele products are more discreet design-wise than e.g. Gaggenau.
The prize for this kitchen with kitchen appliances is 2.367.788 DKK and special prize 1.450.000 DKK





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DADA KITCHENS

THE DADA KITCHEN CALLED VELA14

Dada Vela14 is an elegant kitchen designed by Dante Bonuccelli, which has sleek lines and doors that are only 13 mm in thickness. This kitchen is only with domestic appliances from Gaggenau and a cooker hood from Gutmann. Vela gives you the possibillity to hide your workdesk when the kitchen is not in use.

The prize for this kitchen with kitchen appliances is 552.216 DKK and special prize 350.000 DKK

EVALUATION

Both kitchens show and confirm the tendency with hide-away solutions, so you can have a clean kitchen in a few seconds. Furthermore, the kitchens focus on the right light, so the food looks better, and in some areas sounds, like the doors and the island but not around the sink. These two types of kitchens are also more than just a kitchen, they are more like a jewellery.

REFLECTION

There is still a lot of work to do according to sounds and noise in a kitchen, materials are raw, hard materialer that make a lot of noise when they are in use.

T R I
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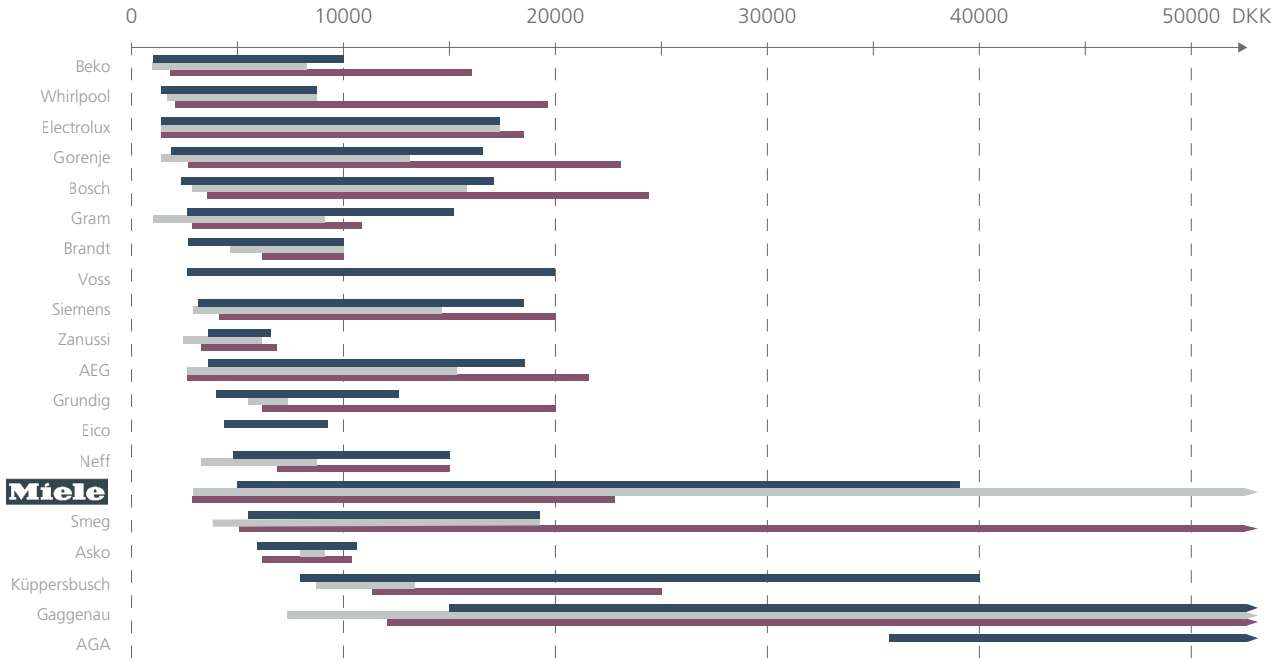
REFRIGERATOR AND FRIDGE-FREEZER COMPETITORS (PRICE RANGE)

OBJECTIVE

The aim of this research was to get a more detailed mapping of competitors regarding price than earned in worksheet 8, to get a better knowledge of where Miele is placed in the market compared to other brands.

EXPERIMENT/DATA

To get a comparable foundation for the comparison, this research is focused on the price on ovens, refrigerators and fridge-freezers from some of the most common brands in domestic appliances. The prices are based on a search on built-in ovens, refrigerators and fridge-freezers at pricerunner.dk, which gave almost 1000 hits in every category from brands in different prices ranges. 20 of the biggest brands were chosen for this comparison and their price range can be seen below.



Source: http://www.pricerunner.dk/cl/105/Indbygningsovne

Source: http://www.pricerunner.dk/cl/16/Koele-Fryseskabe

Source: http://www.pricerunner.dk/cl/18/Koeleskab

EVALUATION

The majority of brands is placed under a price range of 20.000 DKK in every category. Miele differs from the others, as they are the only ones covering a much wider price range from 2700 DKK up to almost 64.000 DKK. Gaggenau and Küppersbusch are also standing out with a price range starting at 7-8000 DKK up to 40-67.000 DKK (or maybe even higher).

REFLECTION

The prices were taken from the price comparison site pricerunner.dk, which might not have all models from each brand represented, so there is a possibility that some of the brands have ovens in their product selection, which are outside the price range shown here, if they are not for sale online.

MATERIAL TEST ON INDUCTION HOTPLATE

OBJECTIVE

The aim is to find out if induction works on other materials than glass, and if so, what is the boiling time compared to the boiling time for glass plate.

EXPERIMENT/DATA

The team brought a second-hand induction hotplate and installed it in the basement. All of the tests is tested with the standard silica glass plate that was already a part of the induction hotplate.

STANDARD INDUCTION HOTPLATE OF GLASS = BOILING

GLASS PLATE
One layer (3mm): 4:54 mins.
Note! The standard glass plate in the induction hotplate

Two layer (1,5mm+ 3mm): 5:48 mins.
Note! The secound layer of glass broke

TWO LAYERS OF GLASS = BROKEN GLASS + BOILING WATER

CORK PLATE:
One layer (10mm): 11:52 mins.
Two layer (10mmx2): The induction didn't work

ONE LAYER OF CORK = BOILING TWO LAYER OF CORK = DIDN'T WORK

MATERIAL TEST ON INDUCTION HOTPLATE

SLATE PLATE:
The induction didn't work (8mm)

BEIGE STONE called RTII:
The induction didn't work (23mm)

GREY STONE:
The induction didn't work (23mm)

Silicone rubber (9mm):
10:51
Note! the silicone rubber got soft and melted a bit.

Chipboard (15mm);
The induction didn't work,
Note! the chipboard was too thick.

Tile (5mm): 10:00 mins.

SLATE PLATE = DIDN'T WORK

BEIGE STONE = DIDN'T WORK

GREY STONE = DIDN'T WORK

SILICONE RUBBER = BOILING

GREY STONE = DIDN'T WORK

TILE = BOILING

EVALUATION
Others materials work on the induction hotplate, but a glass plate is absolutely the most efficient regarding boiling time. The thickness of the material is an important factor, as the induction cannot go through too thick materials.

REFLECTION
The standard silica glass plate, which was underneath the test materials during all tests, might have an influence on the results. It would be ideal to test the other materials without the silica glass plate between test materials and induction.

T R I
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MATERIAL TEST ON INDUCTION HOTPLATE

OBJECTIVE

The aim is to find out if the glass plate on the induction hotplate had interfered with the other experiments. If so, what is the boiling time compared to the boiling time for the glass plate.

EXPERIMENT/DATA

SLATE PLATE = BOILING

SLATE PLATE (8mm): 7:06 mins.

EVALUATION

Without the glass plate, the test with the slate plate directly on the induction area worked in first try. It was 2 minutes slower to reach the boiling point than with the standard glass plate , but the slate plate was also 5 mm thicker.

REFLECTION

Now that it is proved that it works with other materials than glass, we can use it as a argument for introducing new materials to the induction hotplate.

T R I
A K T

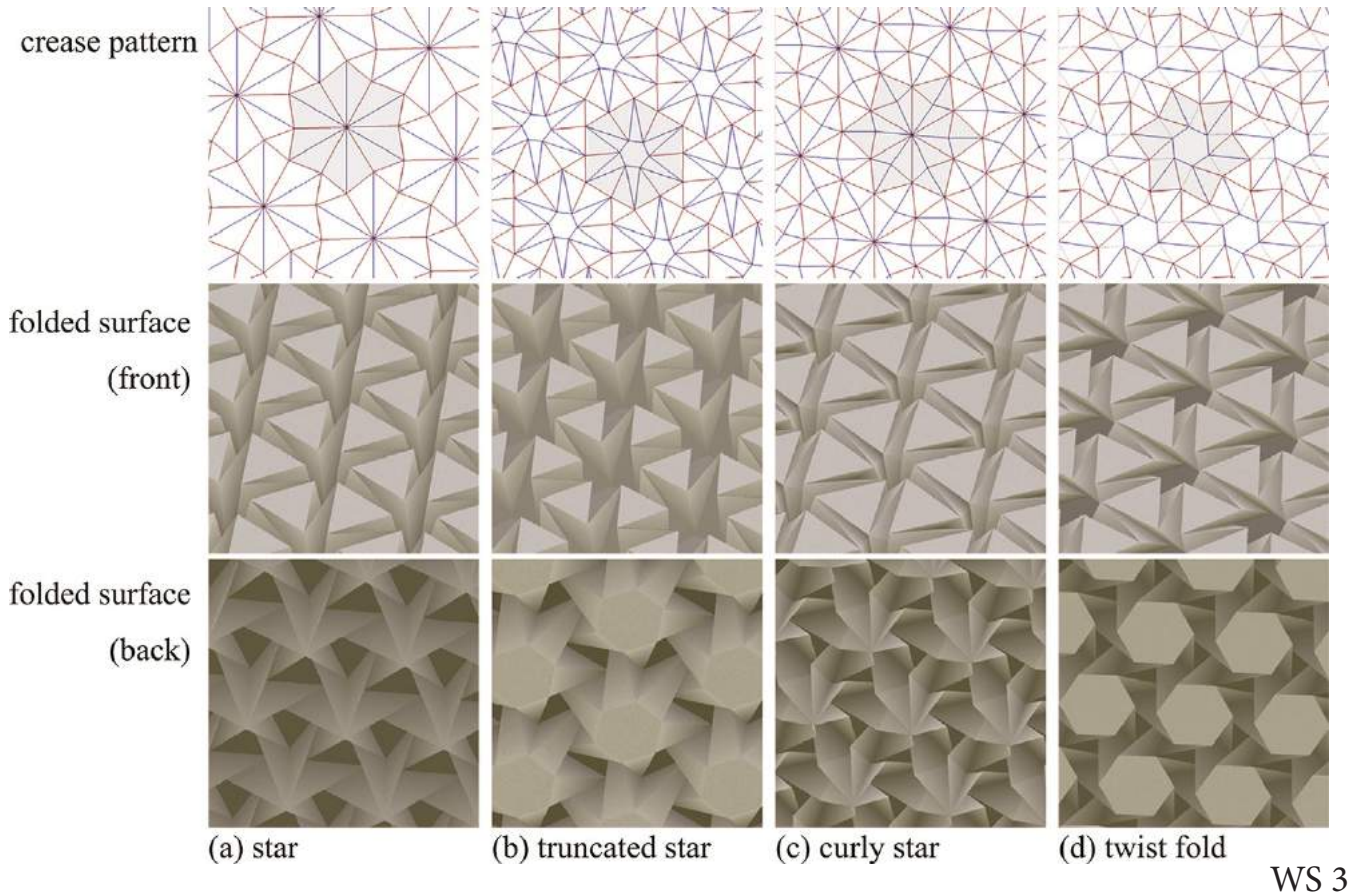
ORIGAMI PATTENS

OBJECTIVE

The aim is to find the most profitable origami tessellation pattern compared to the suction area.

EXPERIMENT/DATA

The team has made desk research on different types of patterns and folded the most interesting ones. Two basic origami tessellation patterns is picked out to measure the suction area to see which one is most effective.



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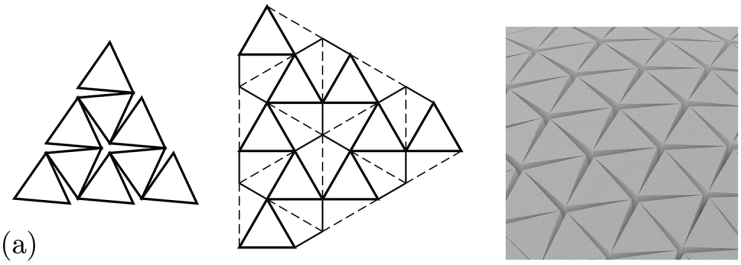
ORIGAMI PATTENS

TWO BASIC AND SIMPLE PATTERNS

The two chosen patterns are measured from an outcut (50 mm x 116 mm = 5800 mm^2) of each pattern. Both patterns contain small equilateral triangles (0,5 x 9 mm x 10 mm = 45 mm^2) that are measured and used to compare the patterns. The equilateral triangles are not the suction area at this point in the project, but is the remaining area.

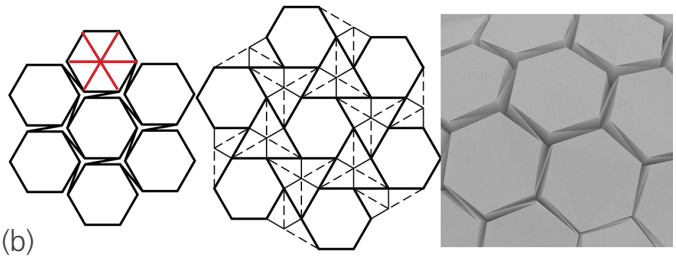
(a)



(a) Triangle origami tessellation;
Formula; A = 0,5 x h x g = 0,5 x 9 mm x 10 mm = 45 mm^2

In this pattern there are 42 equilateral triangles on the area of 5800 mm^2, which means that the area that the equilateral triangles make is 1890 mm^2 (45 mm^2 x 42) and the suction area is **3910 mm^2** (5800 mm^2 - 1890 mm^2)

(b)



(b) Hexagon origami tessellation

Formula; A = 1,5 x tan(60^o) x l^2 = 1,5 x tan(60^o) x (10mm)^2 = 259,8 mm^2, where l is the side length of the hexagon. The hexagon contains 6 of the equilateral triangles as in (a) triangle pattern.

There are 49 equilateral triangles, divided on 8,5 hexagon, on the area of 5800 mm^2, which is means that the area that the equilateral triangles make is 2208,37 mm^2 (259,8 mm^2 x 8,5)) and the suction area is **3591,63 mm^2** (5800 mm^2 - 2208,37 mm^2)

EVALUATION

The suction area of the triangle origami tessellation pattern is 14,41 percentage (100 - (1890 mm^2/ 2208,37 mm^2 x 100)) bigger than the hexagon origami tessellation pattern. The team is interested in the pattern with the highest amount of suction area because some of the area will become smaller because of the frames for the filters in the area. Hereby the team go with the triangle origami tessellation pattern.

REFLECTION

To find the most efficiently pattern the team should measure more patterns to compare.

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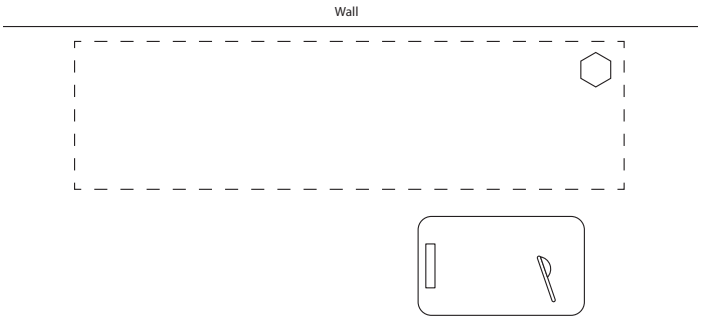
2. STATUS CONCEPT - ORIGAMI

OBJECTIVE

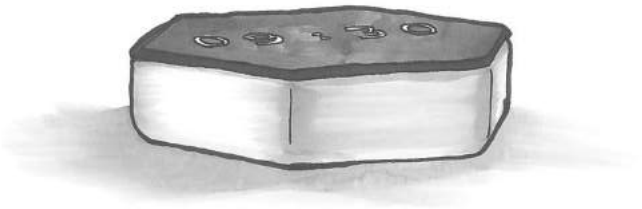
The objective of this worksheet is to get an understanding of what the origami concept consists of and what its strengths and weaknesses are.

EXPERIMENT/DATA

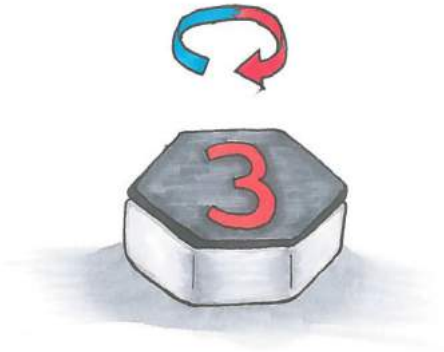
The origami concept is based on the trends that we found on the exhibition in Herning, where PEJ Gruppen had a lecture. The concept is a mix of the trends Flexibility And Mobile and Smart Products (Worksheet 17).
This concept focuses on the cooking area and has the cooker hood and hotplate as its main focus.
The idea is that an induction hotplate is placed underneath the tabletop and thereby becomes invisible. When a pot is placed on the hotplate and warmed up, the cooker hood automatically expands and starts, so that there always will be the right flow. The air flow is automatically controlled by the level of which the cooktop is used.



The hotplate is only placed up against the wall as indicated in the illustration, instead of being all the way out. This allows for a place to have cutting boards, ingredients and other stuff needed for cooking. This also prevents grease getting on the floor. The hotplate is zone-free, which provides greater flexibility.



The hotplate and cooker hood is controlled by a remote which is placed on the tabletop near the hotplate.
When a pot is placed on the zone-free hotplate, the remote is used to start the cooking process, by moving it up to the pot, indicating that it is this pot that you want to control. As feedback, a light will light up around the the pot.
By turning the remote to the right it starts the heating function in the induction hotplate, and at the same time showing the level of power applied.



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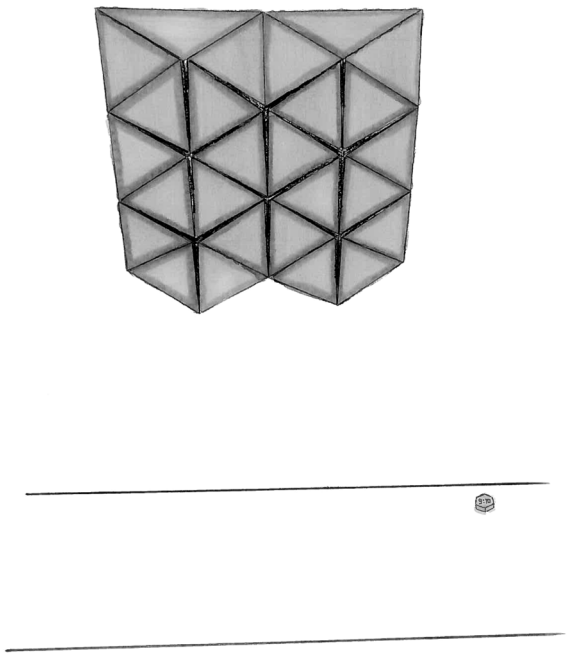
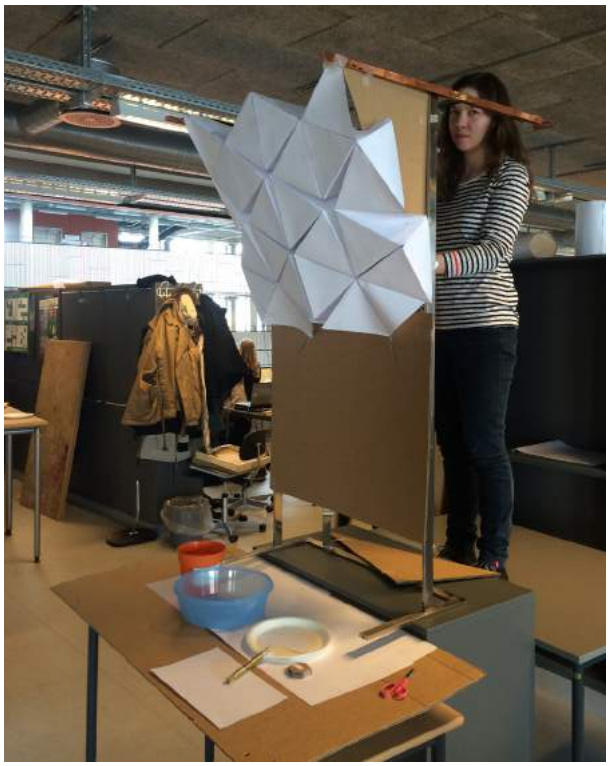
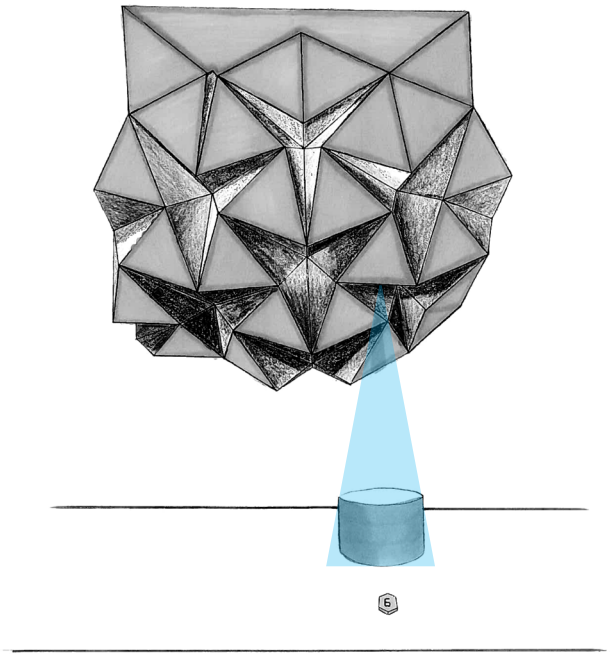
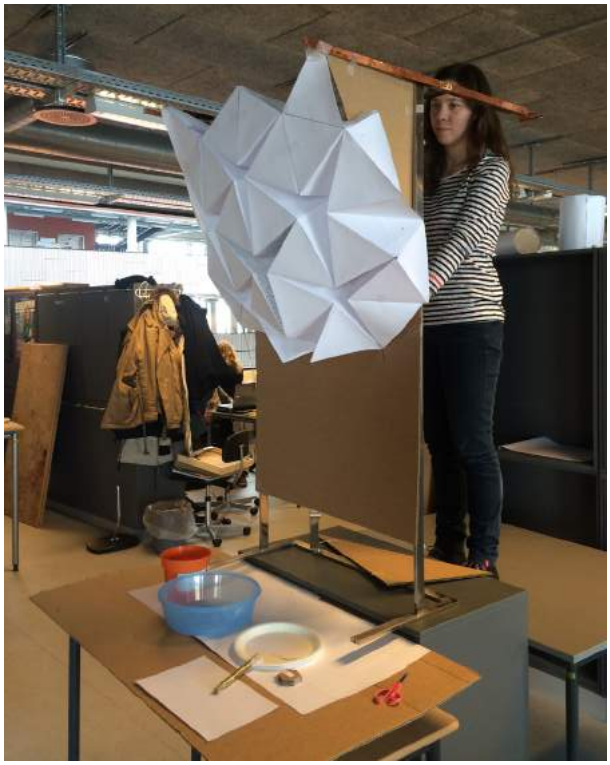
2. STATUS CONCEPT - ORIGAMI





The illustrations show the cooker hood as turned off - where it is closed.





The illustrations shows the cooker hood in action - opened up.
The blue light indicates that that pot is chosen.

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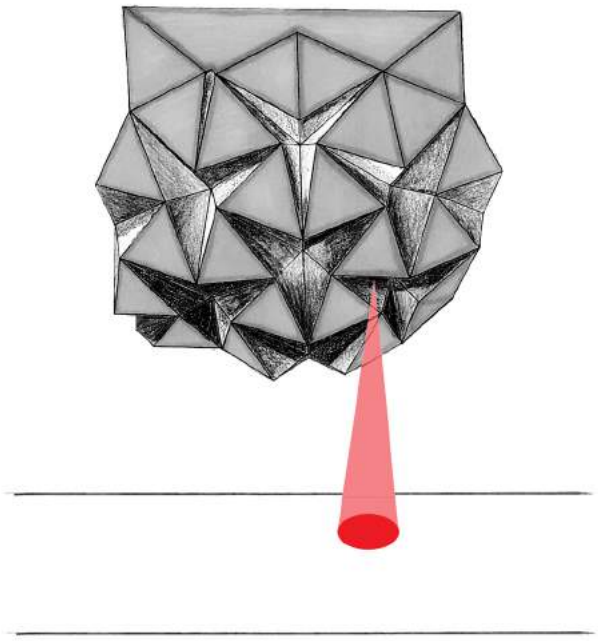
2. STATUS CONCEPT - ORIGAMI



The red light indicates that the surface is still hot after use.

Other features that have not been illustrated:
- Zone-based air flow (the cooker hood only expands above the area that needs ventilation)
- Programable hotplate (e.g. an egg, potato or pasta cooking program)

REFLECTION
The concept needs to be tested, with focus on how people react on the flexible cooker hood. The remote has to be thought through, which functions does it need to have and which could be nice to have? Is it the right way to control this unit?
Do the cooker hood have the right shape? Does it need to be more simple or is there another way to gain a flexible motion?

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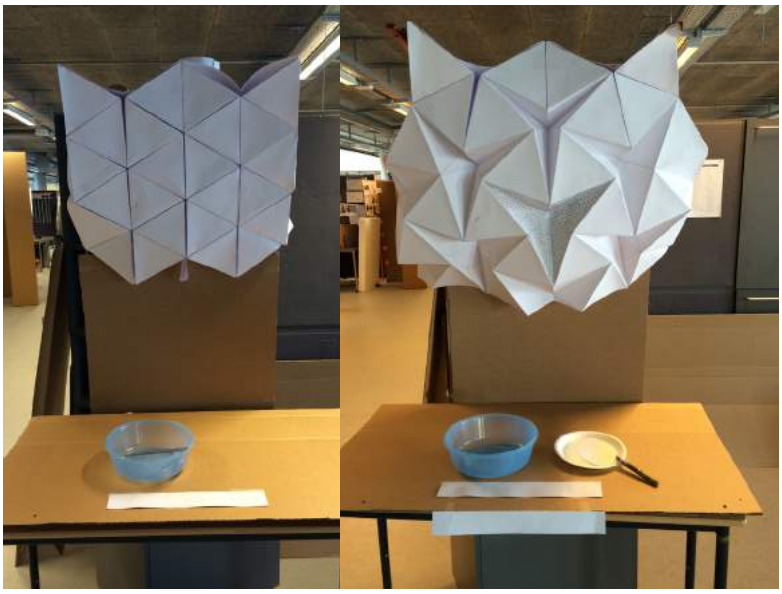
PROTOTYPING ORIGAMI COOKER HOOD

OBJECTIVE

The aim is to test the dimensions of the cooker hood in 1:1 when placed above a kitchen table and to determine if the size is appropriate compared to how high the cooker hood should be placed. The objective was also to try out some interaction scenarios to find out how people respond to the movement of the cooker hood and how close the cooker hood can get to the user without being intimidating. And to get comments about placement of induction hotplate area.

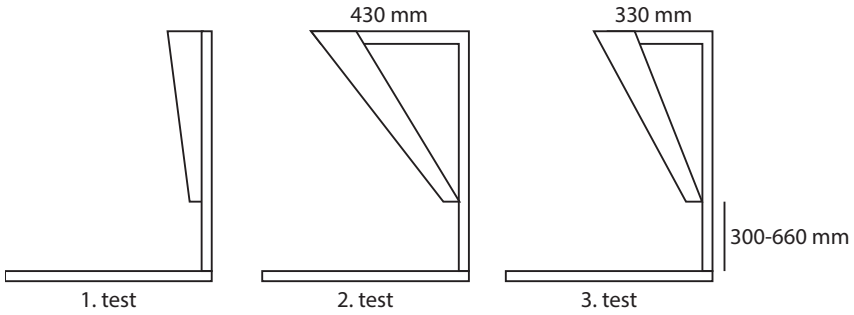
EXPERIMENT/DATA

The cooker hood is placed above a kitchen table (bottom of the cooker hood **300 mm above the table**, when folded out (the biggest size possible)). The induction hotplates are placed closest to the wall, giving some table space between the hotplates and the user.
First the cooker hood was placed in an almost vertical position, but as the suction areas would be facing the user instead of the cooking area/hotplates, the position was discarded with no further testing.



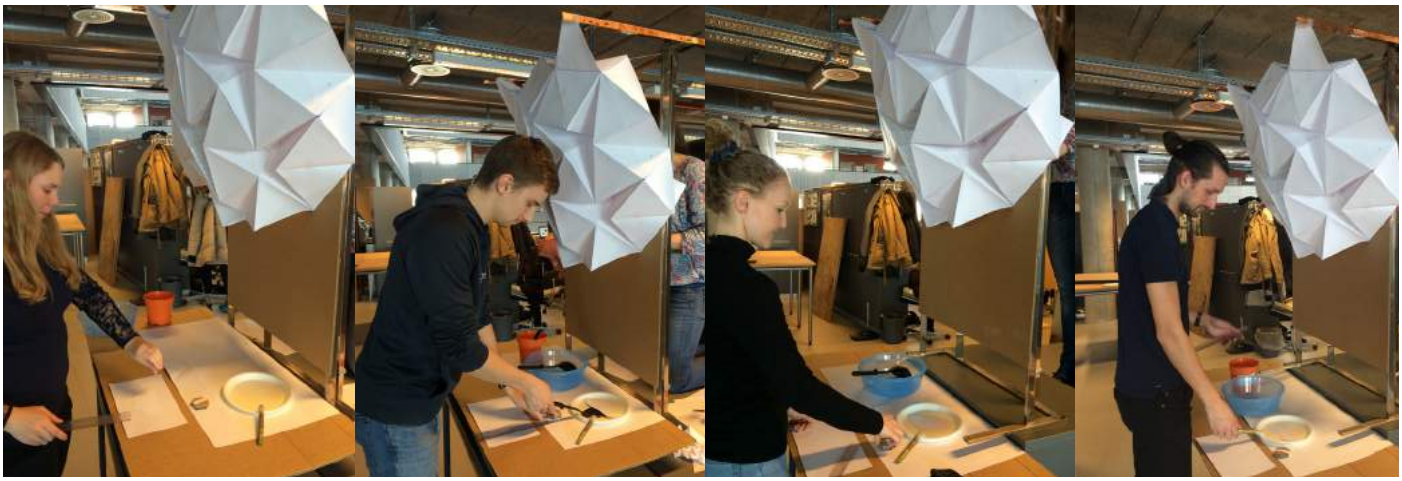
Second test: The cooker hood is placed at an angle where the top part of the cooker hood is 430 mm from the wall. In this position the cooker hood gets too close to the user's head when folded out, which is uncomfortable.

Third test: The cooker hood is placed further away from the user. The top part is moved backwards, so it's 330 mm from the wall. This setup is tested on testpersons, both when the cooker hood was opened slowly and fast.



Niels: The slow version is okay, it doesn't irritate, but he noticed that it moved. The filter in the middle made him think that it "ate" him, when it is opening up at eye level directly in front of him. It was overwhelming. Could be solved by having a deeper tabletop.
Mathias: Missing some sound to indicate the movement and/or suction, the fast movement was uncomfortable.

PROTOTYPING ORIGAMI COOKER HOOD



Test of the mock-up (first two photos cooker hood height is 450mm, last two height is 660mm).

Cooker hood moved to **new height (450 mm above tabletop)**
Ulla: Didn't notice the movement of the cooker hood, when it was slow. Thinks the cooker hood is a bit intimidating and big. Regarding the hotplates, she currently thinks about how she is using her traditional hotplates, so she uses the ones closets to her, when the pot requires her to be active and then puts it to the back hotplates when she doesn't have to stir anymore.
She suggested that the control unit can be charged by induction from the hotplates (there might be a heat problem to solve). She likes the idea of being able to chop vegetables in front of the hotplates.
Jon: Prefers when the cooker hood moves slowly. It is very much "in your face" with the open filters. He likes that the cooker hood is angled, so he can easily see all pots (at home he can't see the pots closest to the wall because his cooker hood is in the way). He liked the idea of having a clean tabletop surface with invisible induction. He likes the possibility to use the table space betweeen him and the hotplates to store plates etc. ready for serving.

Cooker hood moved to **new height (660 mm above tabletop)**
Line: She didn't noticed the cooker hood movements at all, but it should not come any closer to her. She thinks the height is good. She doesn't want/need cooking programs, she likes to decide how to cook herself. She thinks the space between hotplates and herself is okay.
Mikkel: He didn't notice the movement of the cooker hood, but thinks it looks good and gives a wow effect when it's open. The distance to the head was fine, it was not intimidating, the height is good. He prefers to use the hotplates closest to him at home, even though grease is falling onto the floor. He really likes the control unit to turn on/off the hotplates.
Sígrun: She didn't notice the movement of the cooker hood. It is fine to get the hotplates further away from her, so she doesn't get grease on her clothes. She likes the idea of having table space between herself and the cookerhood if there is space enough (there might be too little space as is on the mock-up). The control unit is too small, it should be bigger if we want to have any information given on the display. She thinks it should be more obvious how to turn it off and she would like to have an indication of the temperature of the hotplates (if they are set on max. or min. etc.).

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PROTOTYPING ORIGAMI COOKER HOOD

EVALUATION

In general, the movement of the cooker hood should not be too fast. Slower movement is more comfortable when it is right in front of you.
The higher the cooker hood is placed, the less intimidating it is. This should be balanced with which height is best regarding suction.
The pattern of the cooker hood should be reconsidered to make it look less like an animal and make it more simple.
Regarding placement of the induction hotplate, the majority liked the idea of having table space between themselves and the hotplates.

REFLECTION

The mock-up and the scenario could have been more realistic, which might have changed the impression of the cooking area. The tests were done very quickly with very short scenarios, so the test persons could probably have identified more problems if they had to "cook" an entire meal.
However, the 1:1 mock-up was a good exercise to get a more realistic impression of the origami pattern. Its expression turned out to be much more aggressive in this scale, so a different pattern should probably be found.

BASIC FUNCTIONS AND FEATURES

OBJECTIVE

The objective of this exercise was to map what kind of food is made in the cooking area in order to pinpoint the basic functions and features that should be incorporated in a future kitchen element.

EXPERIMENT/DATA

By breaking down how to prepare various types of meals, the tasks for each meal were mapped, features and problems were found and put onto a white board. This was than categorised into 5 categories: security, preparation, Cleaning, Taste and Other.

Security	Preparation	Cleaning	Taste	Other
• Airflow stop during fire • Air cleaning system • "Moisture" • Parental lock	• Boiling in water: Rise, egg, pasta, potatoes, vege-tables, ham • Roast & crust/ grill: Chicken, beef, ham • Simmer: Stew, soup • Water bath: Chocolate, fish, vegetables • Bake: Omelet, pancakes	• Water: hot/cold • Chemicals, soap • Dishwasher • Self-cleaning: Pyrolysis • "Scraper" • Out sourcing: Cleaning lady	• Salt • Hot • Fat • Sweet • Umami • Sour • Bitter	• Automatic stirring

Afterwards some of the statements was put together to create new features:

Boiling in water + automatic stirring = Boiling programs for rise, pasta, potatoes eg.
Taste + automatic stirring = Self-adjusting seasoning

EVALUATION

The mapping gave an overview of how many various scenarios e.g. boiling water is an essential part.
It also gave some inspiration for possible features to combine some of the mapped keywords.

HOTPLATE FUNCTIONS IDEATION

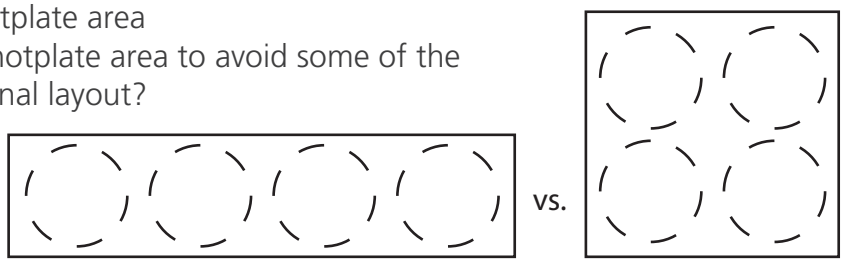
OBJECTIVE
The objective was to find ideas for the hotplates and what functions there could be related to the hotplate area and how the hotplate area could be connected to the cooker hood.

EXPERIMENT/DATA
The ideas were made during a group ideation session based on the brainstorm on activities related to hotplates (Worksheet 35), where pros and cons for each idea were discussed along the way.

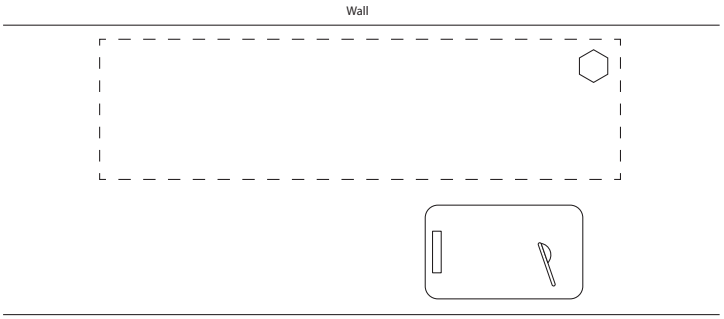
Idea 1: Moveable control button fixed to the hotplate area, maybe with magnets, where you move the button towards the hotplate you want to control and the hotplates registers the button/control unit, so you can turn up/down (inspired by the controller in Gaggenau hotplates, where you push the button towards the hotplate you are using to control it).

Idea 2: Layout and shape of the hotplate area
Why not change the layout of the hotplate area to avoid some of the occuring problems with the traditional layout?

Problems with traditional layout:
1. Risk of burning your arm when reaching for the back hotplates.
2. Grease on the floor/your clothes when using the hotplates closest to you.



New layout? Traditional layout



Position of the hotplate area

Spreading the hotplates out on a single row eliminates problem 1. By moving the hotplate area towards the wall, thus moving it further away from the edge/the user, problem 2 will be minimized. The empty space in front of the hotplate area could be used for e.g. chopping vegetables or storing the plates before serving the food. This will change the work flow and hopefully be more convenient to do several tasks from the same spot, but this should be tested.
On the downside, the new shape requires more shape lenghtwise if the hotplate area should have the same capacity as the traditional one.

Idea 3:
The interaction with the hotplates could be with real buttons instead of touch panels, which does not work well if there is water on the panel or the user have wet hands. To ease cleaning of the buttons, some sort of silicone mat could be placed on top of the buttons (like the existing ones made for laptop keyboards). The mat could then easily be put into the dishwasher when dirty.

HOTPLATE FUNCTIONS IDEATION

Idea 4:
The cooker hood could be a bigger part of the interaction by guiding the user with lights. Some features could be:
1. The control panel could be projected down onto the tabletop surface from the cooker hood, so it disappears when not in use.
2. A light (or a voice) guides the user by telling the user where an ingredient is located by lighting up the location.
2.1. The location of an ingredient could be showed by a self-opening mechanism, so the drawer opens itself when the user needs something from it. Maybe with smoke coming out of the drawer to add some drama.

Idea 5:
If the control panel should be placed on the edge of the tabletop, the position of the control panel could be angled, so it becomes easier for the user to see the display/buttons.

EVALUATION
The idea of changing the layout of the hotplate area is an interesting new take on hotplates and could be a solution to a few minor "problems" occuring in the kitchen today. However, it should be tested if the suggested layout gives other problems to deal with.
Idea 1 (moveable control button) is also a possible way to go regarding controlling the hotplates. But this needs more ideation.
Idea 3 (silicon mat) is not as interesting, but could solve cleaning issues, if the team choose to use buttons.
The features mentioned in idea 4 are a bit "too much" and silly to use as-is, but maybe they can be inspiration for other, more realistic features.

REFLECTION
The team should test if the changes in layout will be annoying/give too many other problems. To begin with the team can test at home when cooking by only using the hotplates near the wall. It could also be an idea to create some realistic scenarios to test it further.

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STATUSSEMINAR 2 FEEDBACK

OBJECTIVE
The objective of the statusseminar was to present the current state of the project primarily to get feedback on our concept.

EXPERIMENT/DATA
Comments from the supervisors and audience:
Mix between slides/model/speak was good, but we should practice being more enthusiastic when presenting. Our sketches should be better.

We should be clearer about who we are adressing:
What are we trying to help the user with? What is the context? Who are using this and what is it all about? Should it be zen-like, engaging or? What kind of person would like this? What kind of kitchen? Who are we adressing - everyday use or weekend use? (5/2 principle made people confused).
How is it going to work in the future? What is cooking in the future? (Trends)
We should create a context/stage a scene, find the poetry.
Make scenarios realistic (not only one pot, but "cook" an entire meal)
How are we enhancing the cooking experience? What experience are we designing for?
What consequences does our product have?
Needs and demands for stakeholders, how can we see this in the concept?
Want to hear more about the functionality, how does is work?
We should frame what we are creating rather than presenting our inspiration.

Problems with the concept:
Cleaning will be awful.
The aesthetics - too much Batman/stealth, we should work on that.
Consider lenght of hotplates vs. size of cooker hood.
The control unit will disappear (we didn't mention that it was fixed to the table top)
Consider how the surfaces meet, that might be a big challenge to find a good solution
Invisible zonefree doesn't make sense, we are creating a new problem we have to solve.
Space in front of hotplates? Will it be used?

Don't make it all automated, so the user can't overwrite it and control it himself.
Push the boundaries function-wise (help me cook, avoid over-heating etc.)

What about noise/turbulence? How to control it?
We should do calculations on air flow/suction
Control the heat - level of complexity?

Suggestions for features/functions:
Full tabletop where you can heat everywhere (hot plates, pots etc.)
Maybe a cooling effect? Baby food.
Shuffle game with the pot (make it an experience)
Heating zones w/different temperatures - moving the pots back and forth
Maybe we could use a material that responds to humidity? (Huse/Rasmus/Mads Brath?)
Material with low cooling time? (Huse) Aerogel material (Mathias)
Maybe use air/vacuum as opening mechanism?
Light that changes colour to indicate the temperature of the pot.

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STATUSSEMINAR 2 FEEDBACK

EVALUATION

We should be much clearer about creating a scene, telling a story, and present scenarios to make it more obvious what our product can do and why someone should buy it.
We should also be clearer about who we are adressing, what they need and how we are fulfilling those needs.

The aesthetics of the product and working principles should be worked with.
We should push the boundaries more regarding functions and features.

The suggested materials should be investigated to see if they are a possible solutions.

REFLECTION

Many of the comments could probably have been avoided if we had been more sharp at choosing the content of the presentation and had been better at presenting it more smoothly.
The project is still somewhat chaotic for the team as well, so it is needed to focus and set the frame, so the elements of the project can become set into a system to make it easier for the team to navigate the process and concept development during the rest of the project.

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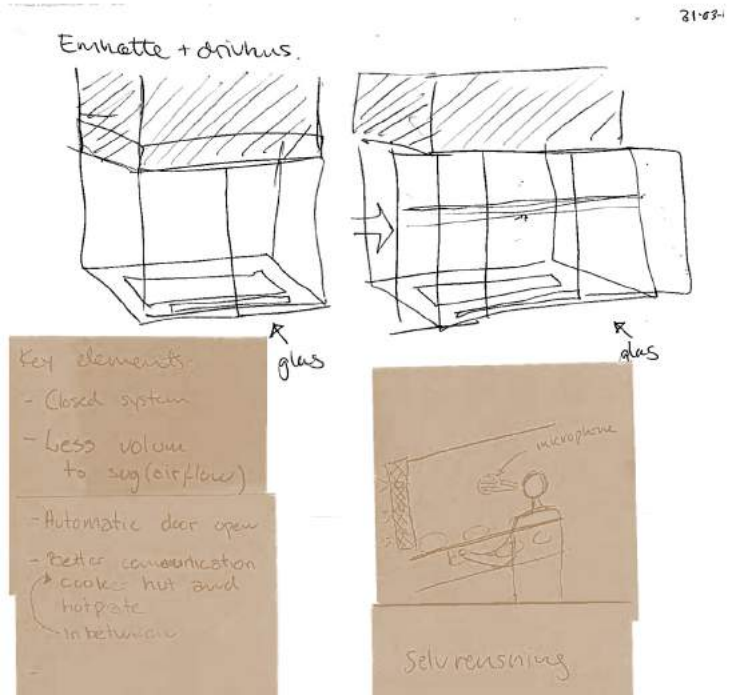
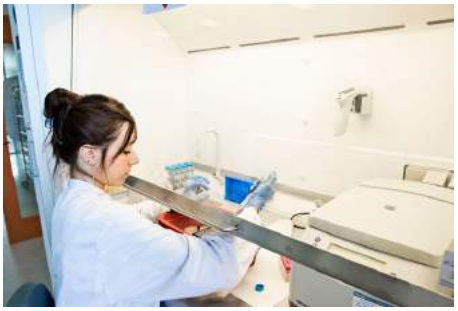
IDEATION: CLOSED SYSTEM CONCEPT

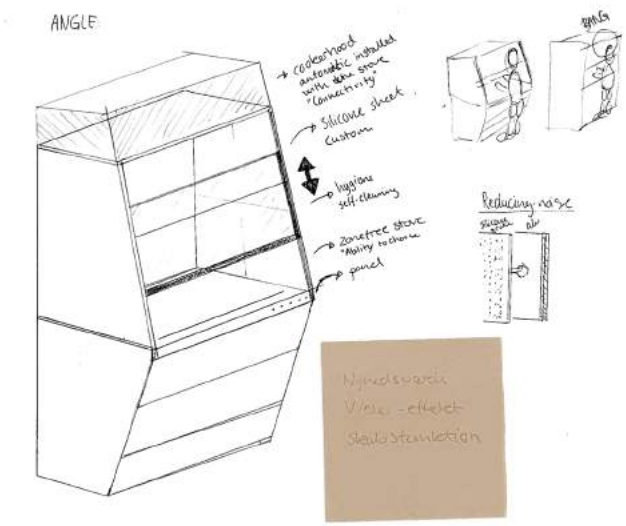
OBJECTIVE
To ideate further on an idea from an earlier sketching/ideation session (Worksheet 25), which the team saw some potential in.

EXPERIMENT/DATA
The initial idea from the ideation session, which had some potential was about creating a closed system around the cooking area, so the cooker hood had a smaller volume to suck air out from. Glass walls around the hotplates from tabletop to cooker hood creates a seperate room in the kitchen for the cooking area.

This principle resembles a fume cupboard known from laboratories, which also has been an inspiration source.







A variation of the closed system concept, where the front is angled so the user easier can look into the chamber without hitting the head on the glass.
The zonefree hotplates communicate with the cooker hood inside the chamber, so the cooker hood is used most effectively.
The inside of the chamber could somehow be insulated with silicone (photo below) to reduce noise inside the cabinet.
The chamber could be self-cleaning, using pyrolysis or something similar to ease cleaning for the user.

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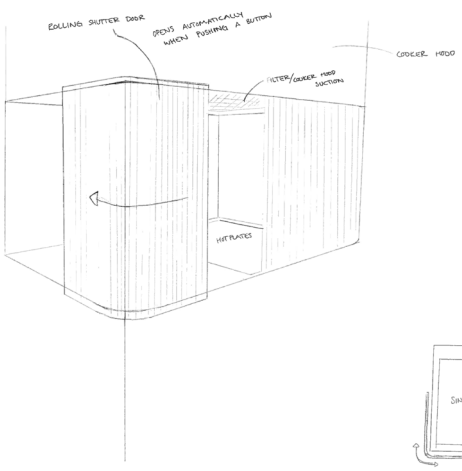
IDEATION: CLOSED SYSTEM CONCEPT

To make the expression more in line with calm fusion, the glass is smart privacy glass, which can be turned on and off to swich between being see-through or frosted glass.



Another variation over the same theme. Rolling shutter doors instead of glass. A sink is integrated into the closed system as well.

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IDEATION: CLOSED SYSTEM CONCEPT

To try out how it would feel to work in such a space, a mock-up was built around a traditional cooking area (photo).
The mock-up is made from paper on the sides and vita wrap on the front to resemble the transparent glass.

When the cooker hood is turned on, it is easy to see that its building up a vacum inside the working area, as the vita wrap is forced in.

When working inside the mock-up, the first thing that comes to mind is where to put the handle of the pan.
Working on the backend of the cooktop is difficult, as the front is in the way.

After roasting the toasts for a while, there is still a smell all over the kitchen, meaning that the insulation was not that effective.

EVALUATION
The main problem with these concept variations is the user interaction, as the system is not closed, when the user is working in the cooking area.
It requires more development of the concept to find a solution, so the system can be closed during the entire cooking session if the idea of a closed system should have any effect.

REFLECTION
The interaction with the concept in the current form might not be good as the working space is limited by the front doors and thereby also the user's freedom of movement.

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HISTORY OF KITCHEN UNITS

OBJECTIVE

The aim is to get an overview of the history of kitchen units and Danish kitchen trends through the years (from 1950s to now) and to see if there are any overlaps or patterns that may be reused in the future.

EXPERIMENT/DATA

Kitchen examples for 1960

It is the housewife kitchen (bolius, 2015) where the dining area, cooking island and open-plan kitchen were introduced. It was the time where the standardization of kitchen units were the main focus. Rustic materials, use of wood and the brown and beige colors supplemented with olive green and tiles in kitchen are some of the keywords.

Kitchen examples for 1980

Kitchens are becoming larger and more social, they need to be multifunctional, it has a bit lack of design experience and a conservative mood with dark lighting and dark wood and laminate.

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HISTORY OF KITCHEN UNITS

Kitchen examples for 2000-2010
The kitchen type contains a lot of different names like the Fusion kitchen (Experimental mixing kitchen that merges the features of the kitchen cultures traditionally separated - Den Store Danske, 2015), the low-fat kitchen but is mostly known as the conversation kitchen (Den Store Danske, 2015). The user is turned away from the wall and cooking island with bar stools is in the middle of the kitchen. There is a lot of focus on styling as a minimalist and clean kitchen (bolius, 2015).

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A K T

HISTORY OF KITCHEN UNITS

Kitchen examples for 2010-2015
The kitchen is tailor-made with calm fusion and clean solutions as handle-free drawers and hidden power sockets, cooking area behind cabinet walls and free or sink island. It seems that wall cupboard is out of the picture.

keywords; calm fusion, customisation, hidden solutions, cleam surfaces and clean look

T R I
A K T

HISTORY OF KITCHEN UNITS

Kitchen examples for 2015-?
Kitchen must be practical and self-supporting as a food workshop (bolius, 2015). User is turned toward the wall and the island disappears. It looks like it is in use or alive with fresh herbs placed on the tabletop and open shelves. Social aspects are still important (bobedre, 2015).

Keywords: practical and functional, alive and in use, warm materials, the 'right' messy look

T R I A K T

HISTORY OF KITCHEN UNITS

Overview

	KITCHEN UNITS	KITCHEN FOCUS	SOCIETY
1960	Housewife kitchen with dining area, cooking island, open-plan kitchen, standardization of kitchen units. Rustic materials, use of wood, brown, beige and olive green, tiles in kitchen.	Housewife kitchen and standardization of kitchen units	Industrial society
1980	Kitchens become larger and more social, multifunctionality is necessary.	International inspiration and multifunctional	Information society
2000	User is turned away from the wall, towards the cooking island with bar stools. Focus on minimalistic and clean styling, white and polished surfaces.	The conversation kitchen and lifestyle	Dream society
2010	Tailor-made kitchen with calm fusion, high quality and clean solutions: handle-free drawers, hidden power sockets, cooking area behind cabinet walls. Cooking island becomes sink island.	Customized and calm fusion kitchen	Dream society
2015	Kitchen must be practical and functional. User is turned toward the wall and the island disappears. Fresh herbs on the table top and open shelfs. Social aspects is still important.	Kitchen as a food workshop	Creative society
2025	Influenced by urban farming and eco-lifestyle trends: Sustainable materials and plants.	Adaptable kitchen	Intelligent society

EVALUATION

It can be concluded that the different time periods are inspired of each other but with a twist. For example the 2015 kitchen with the food workshop it clearly inspired by the country kitchen from the 60s and 80s types of kitchen unit, but with new colors. Also the herringbone floor from the 60s is very popular today. As for the future kitchen goes it might be good for the team to be inspired by the past and mixed with the needs of the future consumer.

REFLECTION

There is always more tendencies than one in each period of time but the team has chosen to focus on the ones that the team thought were intersting. The team knows that of course there is counter-currents such as the retro lifestyle in 2010 with lots of antique and so on.

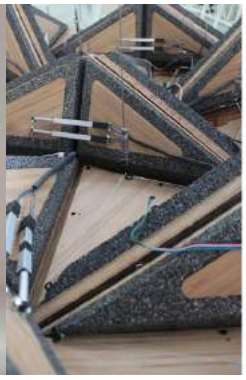
ORIGAMI IDEATION

OBJECTIVE

The objective was to ideate on a cooker hood concept with the triangle origami tessellation, which the team calculated would be the best choice of the two origami patterns the calculations were made on (Worksheet 33).

EXPERIMENT/DATA

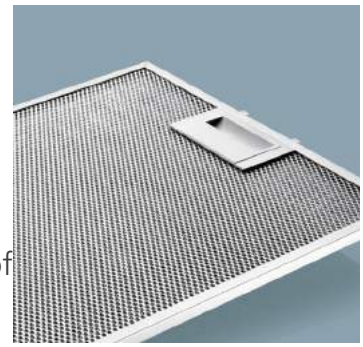





The basic idea of using the origami tessellation is that the surfaces, that disappear into the structure when it is pressed together/closed, will be the suction areas with filters, so the functional parts of the cooker hood is hidden when it is not in use, which corresponds to the principles of calm fusion.

The initial thought of using origami principles was that the structure could have some good characteristics to help creating better acoustics (which was the focus point at the beginning of this ideation) as some of the kitchen noise would be absorbed into the openings in the pattern, where the filters also are placed.

To make cleaning of the filters easier, the filters should be easy to take out, so a click system (as seen on the photo) would be a possible solution. It would be beneficial if all filters in one opening could be one unit and be clicked out at the same time, so the user does not have to take out too many filters. Furthermore, it is assumed that filters placed in the top will be too inefficient, so it might be a better idea just to have filters in the openings in the lower part of the structure to make the number of filters that have to be cleaned lower.



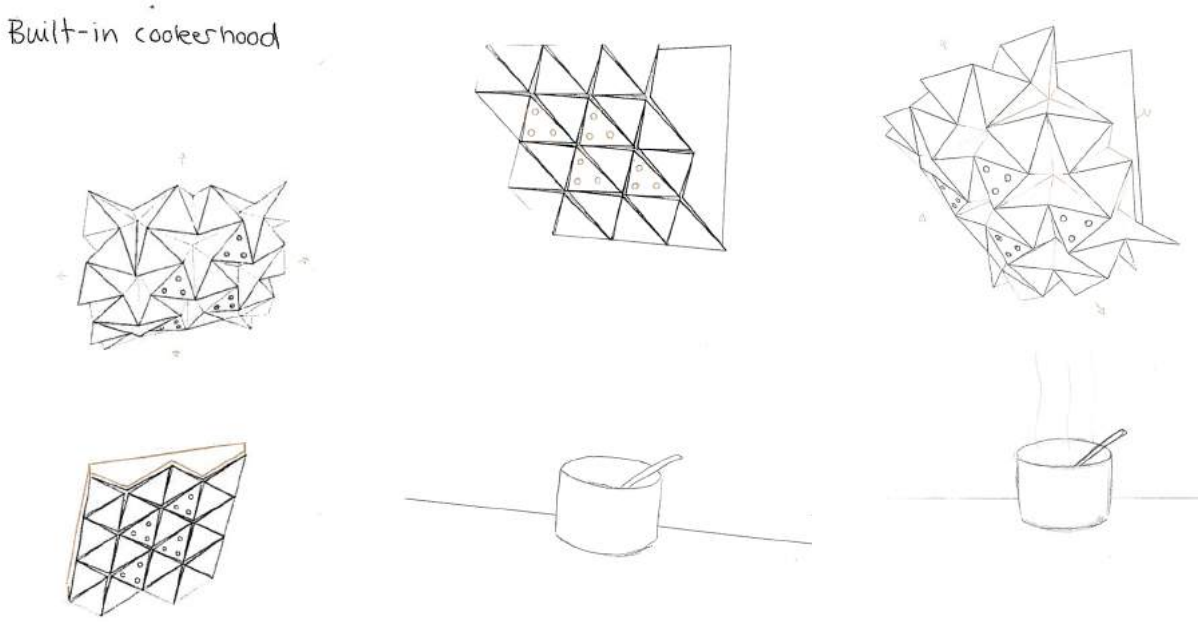
Spotlights could be placed in the triangles, which are visible all the time, to give the right amount of working light. The light should be able to regulate itself to ensure the optimal working light and adjust to the movement and different positions of the cooker hood.

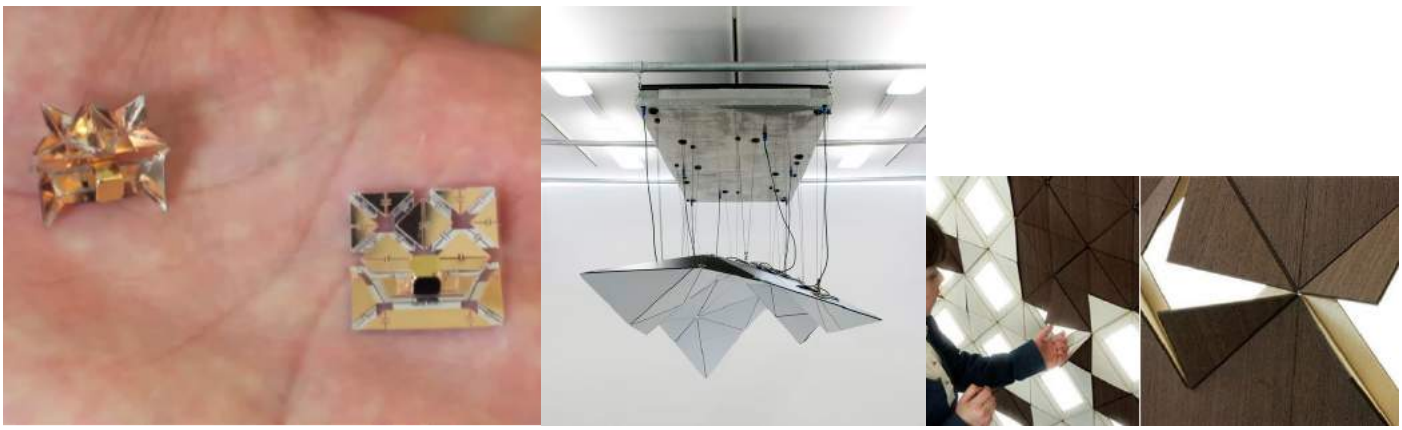
The installation of the cooker hood will give some challenges regarding how the origami structure should be mounted in the ceiling or on the wall, as the material for the origami structure has to be flexible in order to open and close the struture.

To avoid too much interaction directly with the cooker hood, the cooker hood should be regulated through signals sent from the hotplates, so the cooker hood can adjust itself to the number of pots, their position and how much heat/moisture is generated. So when the hotplates are turned on, the cooker hood will react on that information and start to open.

ORIGAMI IDEATION

How the cooker hood should be able to move should be investigated more, but some possible solutions, inspired by existing installations, are linear actuators or small engines placed on the back of the structure. Another method that might be a possibility is magnetic fields, which is used in a tiny origami robot. How this exactly works has to be investigated more before it is possible to say if it could be a realistic solution. Another possibility is that the material itself responds to heat or moisture, but there is a risk that the material will react too slow (especially considering the fact that a cooker hood ideally should be turned on in advance before cooking).





EVALUATION

There is still a lot of things that have to be researched on regarding working principles and materials. It is hard to get a sense of what the expression of the origami pattern will be like when it becomes bigger than the small models made. Next step is to make a 1:1 mock-up to figure out if the pattern is useful in large format or if it is too busy and complex.

REFLECTION

The ideation session was done without any particular methods in mind, but just talking about possibilities and sketching at the same time. It might have been a good idea with a more structured approach/method.

T R I
A K T

HISTORY OF FOOD TRENDS

OBJECTIVE

The aim is to make an overview of Danish food habits through the years and hereby may give a direction for future food habits.

EXPERIMENT/DATA

	FOOD TRENDS	KITCHEN FOCUS	SOCIETY
1960	Traditional Danish heavy food (e.g. meat balls with gravy sauce and boiled potatos). Appetizers such as porridge, gruel or sweet soups.	Housewife kitchen and standardization of kitchen units	Industrial society
1980	Italian and American inspired food (pasta and pizza), fast food and convenience food. Counter reaction: fish and vegetables.	International inspiration and multifunctional	Information society
2000	Welcome coctails, sipping wine, gourmet coffee, sushi, low fat food, ecological goods.	The conversation kitchen and lifestyle	Dream society
2010	Danish goods, 5/2 princples (weekdays = convenience food, weekend = home-made food). Nordic food like oatmeal porridge and raw food.	Customized and calm fusion kitchen	Dream society
2015	Local goods, gluten free, free-from products, luxury convenience, greener lunch, sustainable meat, self-supporting with urban farming.	Kitchen as a food workshop	Creative society
2025	Local sustainability, support local produce. More vegetables, less meat, honest food.	Adaptable kitchen	Intelligent society

1960: The kitchen contains a lot of fatty foods and dishes, and often people got two dishes in terms of a starter as sweet soup or porridge and a main dish. Women began to work which resulted in people started to buy ready meals and people did not think so much about what they ate. Dishes like sausage, meat dishes with potatoes and gravy was very used (Krøgholt, 2014). The favourite food of the 60s was rare steaks, fries and bearnaise sauce, but pork was still the most eaten.

1980: The Danish kitchen is influenced by the United States including salad bar, baked potatoes, barbecue, turkey and ready meals with chicken. The Italian cuisine, especially pizza and pasta dishes, also becomes popular. However, Danish pork sausage and meatballs with gravy and potatoes were still the most seen dishes on Danish diner tables. The custom of serving appetizers in form of porridge, gruel or sweet soups disappears.

T R I
A K T

HISTORY OF FOOD TRENDS

2000: The globalization broke through in the Danish cuisine in the 1990s when many world cuisines were tested and mixed in the so-called fusion cuisine. Asian cuisine had the greatest impact including stir-frying in the wok. This is in line with another of the current trends, the low-fat kitchen, started by the fear of obesity and disease. Also, mad cow disease, salmonella, campylobacter and other pathogenic phenomena influenced the cooking in form of growing demand for organic products and foods with transparency and identity, e.g. origin information (Den Store Danske, 2014). Welcome coctails or sipping a glass of wine are typical starters in 2000. People are invited inside to see the kitchen and are getting a glass of wine while the host is cooking. It is also the year for gourmet coffee, sushi and first steps of ecological goods.

2010: A response to fusion cuisine is a new way in which simple dishes with locally grown produce is the focus. Especially Danish goods are in focus. People's lifestyle is like the 5/2 princple with convenience food in the weekdays and more or less home-made in the weekends (Kongsholm, 2016). Nordic food like oatmeal porridge and raw food are also getting very popular in these years (Krøgholt, 2014).

2015: More green, more eggs, more scraps and less bread. That is how the lunch development looks like in 2015. Gluten-free products - ie products without gluten, found in wheat and rye flour - has gone from being something you found in health foods, to really become mainstream with gluten-free baking mix in supermarkets, gluten-free cookies, pasta, sausages and so on. Ecological meat is no longer enough, the meat must have additional sustainable qualities. Paleo diet and low carb, high fat diets are getting more popular than ever (Politikken, 2015). The chain 7-Eleven has now freshly prepared paleo bars and gluten-free paleo protein salads in the range, they also have ginger shots, which is a bestseller (Bleeg, 2016). The consumer still sometimes wants quick and esay solutions, but they want luxury convenience with "real" food. The newest trend is that everything should be the local goods and the consumer choose to use time in the kitchen because they want to be self-supporting (Hansen, 2014). More or less it is important for the consumer that the food has meaning, symbolic and real differences (Jeppsen, 2015).

2025:
The keyworld for 2025 may be: self-farming and local sustainability around the world, supporting food production of developing countries (african inspired food), the plant's power - from animal to vegetable, save water, stop food waste, recyclable packaging, where the mega trend is save the planet because of CO2 emissions, lack of water, the excessive food waste in the world, the plastic islands in the oceans and lack of animal welfare. Overall the life around food must be less harmful to the planet (Jeppesen, 2015).

EVALUATION
The food development seems to go from fat heavy food to focusing a lot on personal health to world wide health. Food isn't just food anymore, it needs to have the right life and surroundings as well. Focus is on the life around food.

REFLECTION
There will always be opposite opinions and megatrends with backlash and the life around food is influenced by a lot of factors that occur all the time which makes it impossible to be 100 percent sure of what will happen in 2025.

T R I
A K T

COOKER HOOD WORKING PRINCIPLE

The objectivity of this worksheet is to find out how a cooker hood works and what we have to take into consideration when designing a flexible cooker hood.

EXPERIMENT/DATA

Essentially, there are five different types of cooker hoods [Siemens-Home, 2014]:

Wall-mounted hood - typically has a better air flow and is good for big kitchens, which need a high capacity of air flow.

Table-mounted hood - is typically installed in open kitchens with high ceilings and a cooking island.

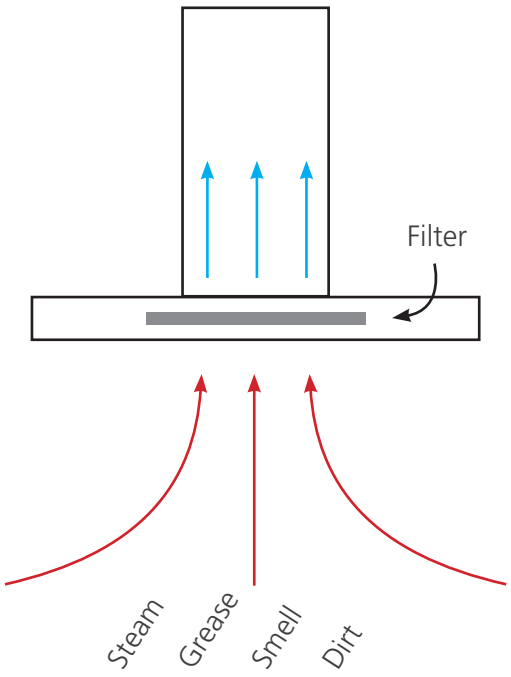
Extension hood - is used in smaller kitchens and is installed into the existing kitchen elements.

Hoods for integration - can be installed into cabinets, kitchen elements or over a kitchen island.

Ceiling-mounted hood - is mounted directly into the ceiling. Good in normal to small kitchens sizes.

The function of a cooker hood is to remove grease, smell and steam. It is doing it by cleaning the air in the kitchen [Siemens-Home, 04/2014].
The cooker hood sucks the polluted air through a filter, the air is cooled down when it passes the filter, leaving the grease behind. The clean air is then either returning back to the room or send away from the kitchen and outside the house. This leaves the kitchen with a better climate, less smell and makes it easier to clean.

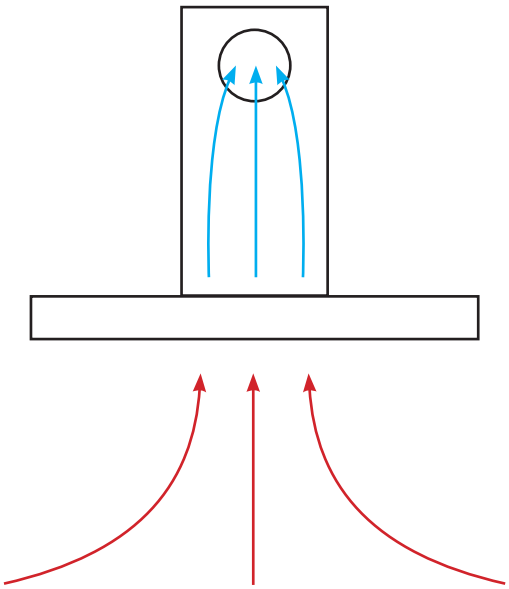
The way a cooker hood works is by trying to establish a vacuum in the kitchen and thereby keep steam and smells in the room. That is way it is important not to open a window and break the vacuum.



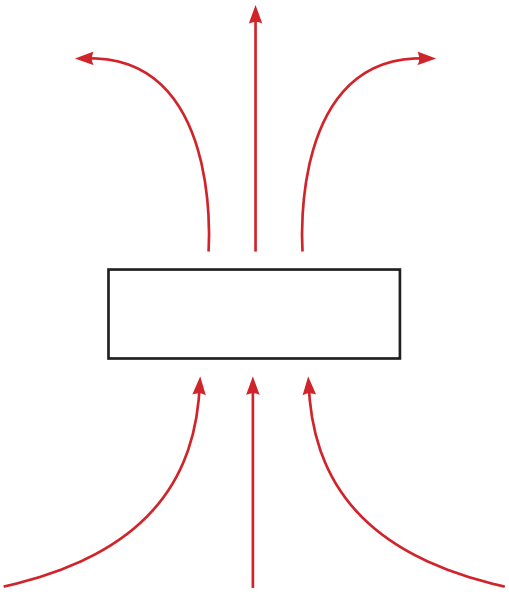
T R I
A K T

COOKER HOOD WORKING PRINCIPLE

As mensioned before there are two types of exhaust systems when talking about cooker hoods - through a vent or recirculation.



Vent system
Moves more air than a recirculation system and changes the air in the kitchen. To work properly it has to have a sufficient air supply, through a door or air valve.



Recirculation system
Are flexible and can be placed anywhere, as there is in no need for extra installation. They use a carbon filter to filtrate the air. Saves energy by keeping the warm air in the room.

Traditionally pumping the air out through a vent has been the most efficient way to move air, and it still is. But recirculation systems are getting a lot better and are now able to compete with vent systems.

But there are other elements that has be taken into consideration when trying to get the best air flow in the kitchen. The 4 factors are:

- Addition and subtraction of air in the room
- Air resistance in the vent
- The size of the kitchen
- The capacity of the cooker hood

The recommended capacity of a cooker hood is to be able to change the air in the kitchen at least 6 times per hour and max 12 times. To calculate how much there is needed for the specific kitchen, the length, width and height are multiplied (L x W x H). In a kitchen which measures 4m x 5m x 2.4m = 48m3, the cooker need to have a capacity between 288-575m3/h.

Choosing a cooker hood with bigger capacity gives the ability to run the same amount of air though with less effect, which reduces the noise level.

TRIAKT

COOKER HOOD WORKING PRINCIPLE

Here is a tabel showing which capacity is needed compared to kitchen size (the height is 2.4m):

Længde / Bredde	2 m min–maks. m³/t	3 m min–maks. m³/t	4 m min–maks. m³/t	5 m min–maks. m³/t	6 m min–maks. m³/t	7 m min–maks. m³/t	8 m min–maks. m³/t	9 m min–maks. m³/t	10 m min–maks. m³/t
2 m	58–115 m³/t	86–173 m³/t	115–230 m³/t	144–288 m³/t	173–346 m³/t	202–403 m³/t	230–461 m³/t	259–518 m³/t	288–576 m³/t
3 m	86–173 m³/t	130–259 m³/t	173–346 m³/t	216–432 m³/t	259–518 m³/t	302–605 m³/t	346–691 m³/t	389–778 m³/t	432–864 m³/t
4 m	115–230 m³/t	173–346 m³/t	230–461 m³/t	288–576 m³/t	346–691 m³/t	403–806 m³/t	461–922 m³/t	518–1037 m³/t	576–1152 m³/t
5 m	144–288 m³/t	216–432 m³/t	288–576 m³/t	360–720 m³/t	432–864 m³/t	504–1008 m³/t	576–1152 m³/t	648–1296 m³/t	720–1440 m³/t
6 m	173–346 m³/t	259–518 m³/t	346–691 m³/t	432–864 m³/t	518–1037 m³/t	605–1210 m³/t	691–1382 m³/t	778–1555 m³/t	864–1728 m³/t
7 m	202–403 m³/t	302–605 m³/t	403–806 m³/t	504–1008 m³/t	605–1210 m³/t	706–1411 m³/t	806–1613 m³/t	907–1814 m³/t	1008–2016 m³/t
8 m	230–461 m³/t	346–691 m³/t	461–922 m³/t	576–1152 m³/t	691–1382 m³/t	806–1613 m³/t	922–1843 m³/t	1037–2074 m³/t	1152–2304 m³/t
9 m	259–518 m³/t	389–778 m³/t	518–1037 m³/t	648–1296 m³/t	778–1555 m³/t	907–1814 m³/t	1037–2074 m³/t	1166–2333 m³/t	1296–2592 m³/t
10 m	288–576 m³/t	432–864 m³/t	576–1152 m³/t	720–1440 m³/t	864–1728 m³/t	1008–2016 m³/t	1152–2304 m³/t	1296–2592 m³/t	1440–2880 m³/t

Limit
Out of range

Based on a ceiling height of 2.4m and a vent Ø = 150 mm.

Emhættens kapacitet	Tab med aftrækskanal
500 m³/t	20 m³/t
800 m³/t	30 m³/t
1200 m³/t	40 m³/t

Installation
When installed correctly the noise from the cooker hood can be as low as 53 dB (re 1 pW) and as noicy as 72 dB (re 1 pW)

1. If the air "hits" a curve at high speed, it will make turbulence, which results in bad air flow and noise. There for the first curve should be placed as far up as possible.

2. The right size vent is crucial to get the best air flow. No change in size as that will result in turbulence, noise and bad air flow.

3. Uneven vents can make unnecessary resistance and translate in bad air flow.

4. Keep the distance as short as possible to reduce resistance.

5. Flat vents can be more attractive as they blend in better than round ones.

6. Install the vent with a little tilt downwards to the exit, as this minimize the possibility of condensation dripping down into the cooker hood.

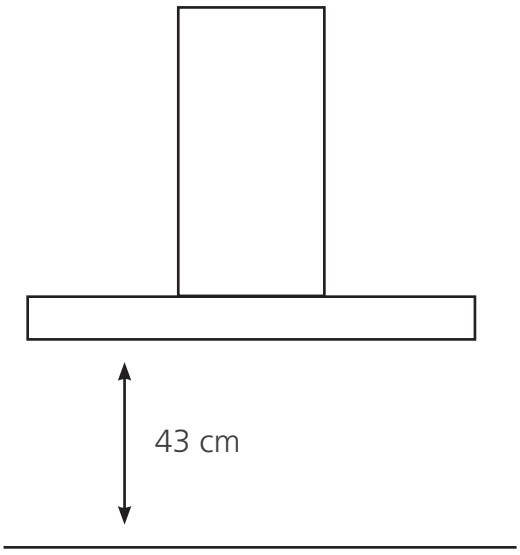
COOKER HOOD WORKING PRINCIPLE

A new building regulation code (BR) will go into effect at the 1st of July 2016, which influence the installation of recirculation systems [Bygningsreglementet.dk, 2016].

There is made a change for the ventilation in residential buildings (including kitchens) to improve air quality and indoor climate. One of the points determines that from 01.07.2016 there may only be used cooker hoods with extraction and exhaust to the outside in new kitchens:

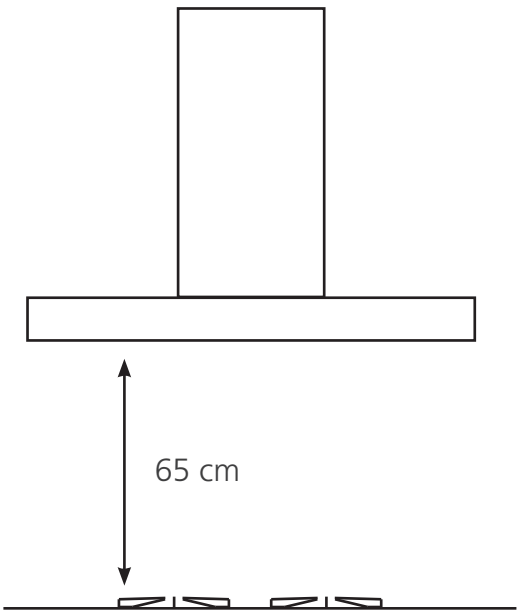
Stk. 2	**(6.3.1.2, stk. 2)**
Køkkener skal forsynes med emhætte med udsugning over kogepladerne. Emhætten skal have regulerbar, mekanisk udsugning og afkast til det fri og have tilstrækkelig effektivitet til at opfange fugt og luftformige forureninger fra madlavningen. Udsugningen skal kunne forøges til mindst 20 l/s.	Kogeplader kan være f.eks. el- eller gasopvarmede og indbygget i et komfur.

Placement



The cooker hood must as a minimum be placed 43cm above an electrical or induction cooktop.

[Siemens-Home, 2014]



The cooker hood must as a minimum be placed 65cm above a gas cooktop.

COOKER HOOD WORKING PRINCIPLE

[Siemens-Home, 2014]
Siemens-Home; Emhættehåndbogen. Sådan vælger du din emhætte. - www.siemens-home.dk - 04/2014

(Bygningsreglementet.dk, 2016)
http://bygningsreglementet.dk/br15_00_id145/0/42

EVALUATION

When designing a cooker hood some elements must be taken in consideration:

- Air resistance in the vent and cooker hood
- The capacity of the cooker hood or and possibility of changing the capacity
- Mounting position
- Vent or recirculation system
- From July 2016 its not allowed to install a recirculation system in new kitchens

REFLECTION

There are many external parameters that defines if its a greate cooker hood, how do we take them in to consideration when designing the cooker hood?

T R I
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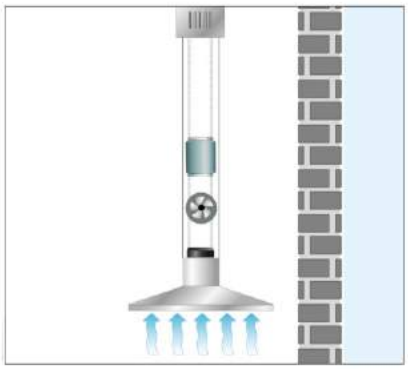
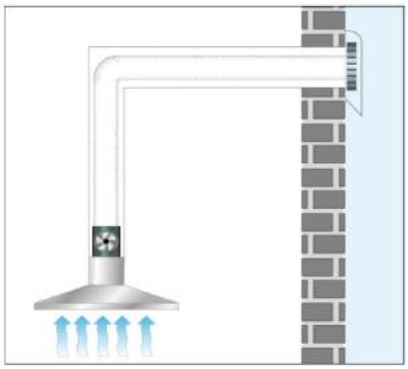
COOKER HOOD WORKING PRINCIPLE
- MOTOR PLACEMENT

Where can the motor for the cooker hood be placed, and which advantages / disadvantages can there be?



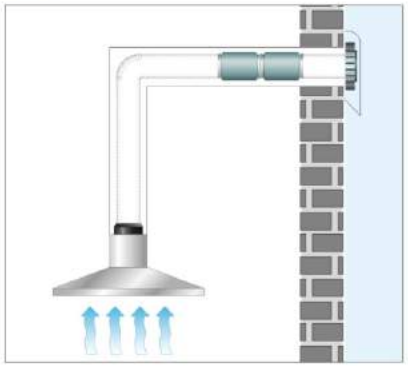
Recirkulation



Udluftning til det fri

Intern motor
- alle Mieles emhætter

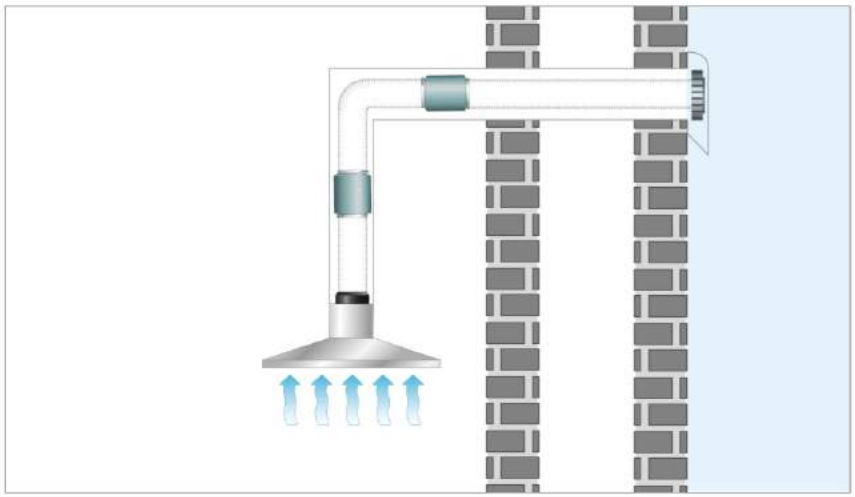
Den interne motor er integreret i emhætten og kræver ingen yderligere montering. Motoren er forsynet med en lydisolering, så lydniveauet er på et minimum. Desuden kan der på Miele emhætter integreres en lyddæmper i udluftningskanalen, der reducerer lydniveauet yderligere.



Udluftning til det fri uden rumlig adskillelse

Ekstern motor
- kun ved emhætter med udluftning til det fri
- med og uden rumlig adskillelse

En ekstern blæser sidder uden for emhætten og skal monteres særskilt. Derved flyttes motorlyden, hvorved lydniveauet i køkkenet reduceres. Der opnås en betydelig reduktion i lydniveauet, hvis den eksterne motor er placeret min. 5 meter fra emhætten.



Ekstern motor – ja eller nej?

En ekstern motor kan monteres på ydervæggen, loftet eller i muren. Det afhænger af bygningskonstruktionen på opstillingsstedet, føringen af udluftningsvejen og emhætten, om der kan anvendes en ekstern motor. Ved en udluftningsvej på mere end syv meter anbefaler Miele brug af ekstern motor.

Miele; https://www.miele.dk/media/domestic_dk/media/files/download/Finale_120453_MMS120081_Dunstabzug_DK_FINAL.pdf

EVALUATION

The motor can be place in/close to the cooker hood. This can make some noise and is the most efficient way.
Another way the motor can be placed is under the ceiling or outside, this remote motor is typically more efficient and makes less noise in the kitchen.

REFLECTION

Using a external motor will lower the noise level and give a more efficient way to move air.
This will enable us to make a smaller design as the motor is placed away from the cooker hood.

WS NO: 43.3 DATE: 10.05.16 RESPONSIBLE: TORBEN DEADLINE: 10.05.16

T R I
A K T

COOKER HOOD WORKING PRINCIPLE - FILTERS

Which kinds of filters are there, what do they do and where are they placed?

Fedt

Miele anvender inertial-princippet til at filtrere fedtet fra luften. Fedtmolekylerne suges gennem lagene i metalfedtfilteret, og fedtet udskilles via centrifugalkræfter i filteret.

Metalfedtfiltre:
Alle Miele emhætter er udstyret med 10-lags metalfedtfilter i rustfrit stål.

Inertialsystemet:
Sammenlignet med en bil, der kører hurtigt rundt i kurver, skubber centrifugalkræfterne fedtmolekylerne mod ydersiden og fanges i filterets væv.

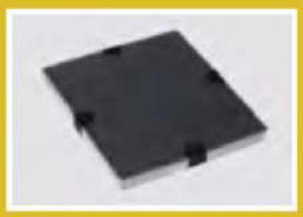
+ Optimal fedtfiltrering
+ Udformningen af Mieles 10-lags metalfedtfilter er perfekt egnet til centrifugalvirkningen i emhætten.
+ Mieles 10-lags metalfedtfilter kan nemt og hygiejnisk rengøres i opvaskemaskinen.

Lugte

Mieles NoSmell-filtre er fremstillet af aktivt kul, der absorberer lugte som en svamp, binder dem, ændrer deres molekylære struktur og neutraliserer lugten.

Re-cirkulation og NoSmell-filtre
Hvis du ikke ønsker at tilslutte emhætten til udluftning til det fri, kan Mieles NoSmell-filter anvendes i hele Mieles emhættesortiment med re-cirkulation.

Mieles NoSmell-filtre:
Lugtmolekylerne søger en passende åbning (kapillærer), trænger ind og fastholdes derefter.



+ Lugtmolekyler opsuges, og deres struktur ændres. På denne måde bliver de lugtfri.
+ Efterlugt reduceres betydeligt med Mieles NoSmell-filter.

Fugt

Ved udluftning til det fri ledes overskydende fugt automatisk ud af rummet. Ved emhætter med re-cirkulation anbefales det at foretage en hurtig udluftning ved at åbne vinduet. Derved undslipper overskydende fugt og kondenseres derved ikke i rummet.

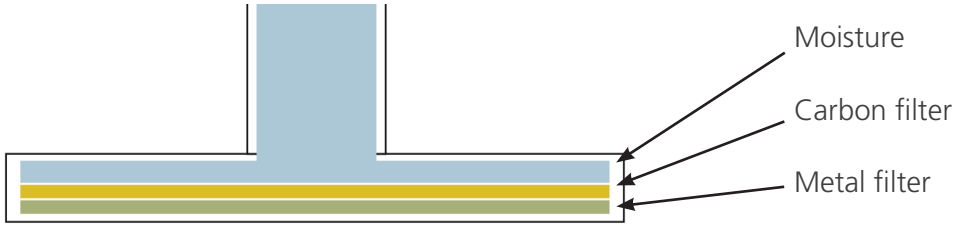
Udluftning til det fri
Kondens på vægge og kolde overflader reduceres betydeligt med emhætter, der er tilsluttet med udluftning til det fri.

Kondensering:

Ligesom varm luft absorberer fugt, frigiver den også fugten igen ved afkøling, hvilket resulterer i kondens på køligere flader.

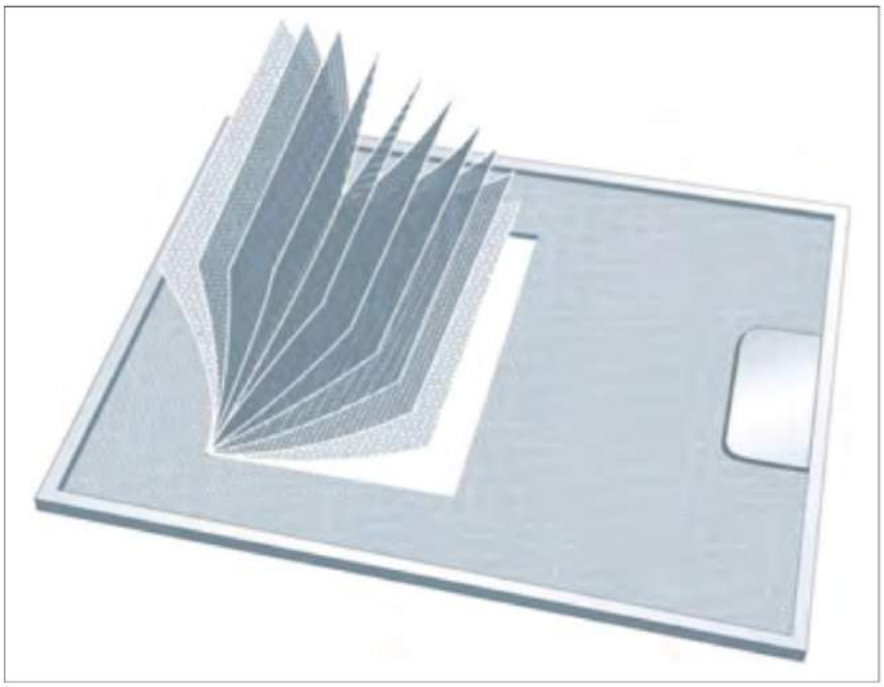
+ Fugt sætter sig ikke på vægge som kondens, men fjernes helt fra rummet.
+ Et fugtigt, ubehageligt indeklima undgås.

Miele; https://www.miele.dk/media/domestic_dk/media/files/download/Finale_120453_MMS120081_Dunstabzug_DK_FINAL.pdf



T R I A K T

COOKER HOOD WORKING PRINCIPLE - FILTERS



En af de vigtigste funktioner for en emhætte er at rense fedt og em fra madlavningen ved hjælp af fedtfiltre. Stegning og opvarmning af mad på en kogeplade udvikler em, som er særligt ubehageligt i køkkenet. Emmen danner aflejringer på vægge, møbler og gardiner, som praktisk talt er umulige at fjerne. Fedtaflejringer i forbindelse med fugt og varme giver en ideel grobund for bakterier.
Dette gør et effektiv førsteklasses fedtfiltersystem så meget desto mere vigtigt. Alle Miele emhætter er udstyret med 10-lags metalfedtfilre med to ydre lag i stål og otte indvendige lag i strukket aluminium. Filterrammen er i rustfrit stål i eksklusivt finish og tåler rengøring i opvaskemaskine.

Uanset indstillet effekt er fedtfiltreringen i Mieles emhætter særdeles effektiv.

Mieles rustfrie 10-lags metalfedtfilter absorberer em fra både fedt og fugt. På grund af den tætte maskeoverflade er Mieles metalfedtfilter i stand til at holde store mængder fedt og fugt tilbage, hvorved du undgår rengøring af uhygiejniske aflejringer.

Mieles rustfrie metalfedtfilter kan nemt og bekvemt rengøres regelmæssigt i opvaskemaskine.

Miele; https://www.miele.dk/media/domestic_dk/media/files/download/Finale_120453_MMS120081_Dunstabzug_DK_FINAL.pdf

EVALUATION

There are tow kinds of filters: Metal filter, which filters grease from the air. Carbon filter, which filters the food smells from the air. They are placed in front of the motor, first a metal filter, then the carbon filter.

REFLECTION

As new cooker hoods must have a ventilation that is connected to the outdoors, carbon filters is not needed in our design.

T R I
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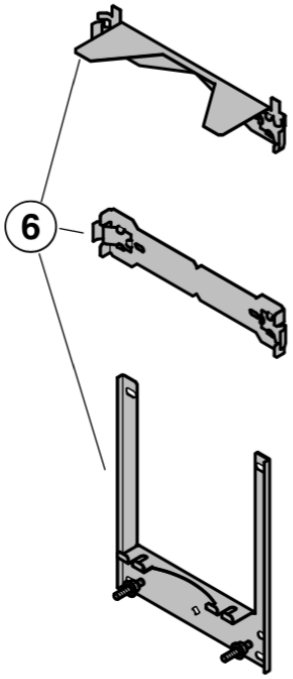
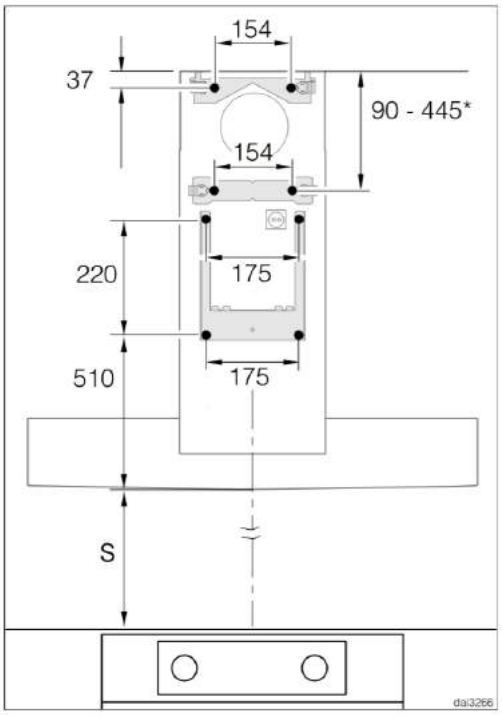
COOKER HOOD WORKING PRINCIPLE - MOUNTING

How are cooker hood mounted today?

EXPERIMENT/DATA

Most cooker hoods are mounted with mounting brackets:





These pictures from Mieles "Brugs- og monteringsanvisning - Emhætte" shows the mounting brackets and where they are placed. This is a common example and not how all looks like.

Miele; http://www.miele.dk/pmedia/ZGA/TX2070/9709960-000-00_9709960-00.pdf

EVALUATION

Mounting brackets makes it easier to mount the cooker hood and get it leveled.

REFLECTION

A mounting bracket it a good idea for easy mounting of our design.

T R I
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HEAT NEEDED ON POTS AND PANS

The objective is to find out what temprature is needed to warm up pots and pans and which temprature they are used at.

EXPERIMENT/DATA

By searching the web on which materials and coatings there are used in pots and pans, it was clear that there is a big variety of materials depending on which type of food is made.

When having a non stick coating for roasting etc. one of the most common is PTFE, better known as teflon. This material has some crucial temperature weak points, at 250-260 C the nonstick function stops working [1] and at 325 C it starts to melt [2].
It is recommended to roast at a temperature of 180 C [1], so this shouldn't be a problem, but as most electrical and gas stoves reaches a max temperature of 550-600 C at its max, and at this temperature the PTFE coating has a risk of emit unhealthy particles to the food. That is why some newer pots and pans are made of materials that stops heating at 230 C as long as they are used on a induction cooktop, like Fiskars' Rotissér, which loses its magnetic ability at a temperature of 230 C and thereby can't heat up further [3].

Another way to get a non stick surface is by using a ceramic coating, which has a melting point starting from 700 C [4], depending on which type of ceramic coating is used.

Besides roasting, one of the most comon taskes in the kitchen is boiling, which typically is done at 100-120 C.

But there is also many other tasks in the kitchen such as using a wok or frying, where higher tempratures is needed.

[1]
http://www.sondagsavisen.dk/testogindkob/2015-01-29-stor-test-af-stegepander-her-er-belaegningen-du-skal-undga/
[2]
Karbæk, Kjeld; Lilholt, Hans: Materialekendskab - Plast og Fibre - 1. edition 2. printing - 1998 by DTI industi's forlag - s. 177
[3]
http://www.fiskars.dk/rotisser
[4]
Karbæk, Kjeld; Lilholt, Hans: Materialekendskab - Plast og Fibre - 1. edition 2. printing - 1998 by DTI industi's forlag - s. 255

EVALUATION

The typical uses of pots and pans requires a temperature around 100-230 C, which means that a surface material should withstand a temperature of 300 C or more for optimal use in the kitchen.

REFLECTION

If we place the induction hotplates under the tabletop, the material used for the tabletop should be able to withstand at least 300 C.

T R I
A K T

DOMESTIC APPLIANCES TODAY

OBJECTIVE

The objective is to get insight into what domestic appliances in the kitchen offers today in order to be able to identify common characteristics and features, so we can see if there are any tendencies that might give a hint about which direction domestic appliances will go in the future.

EXPERIMENT/DATA

Based on desk research (websites of domestic appliance companies and brochures from some of the companies collected at the design fair in Milan (2016) and at various kitchen companies) and information gathered during field research at kitchen companies (worksheet 6).






Flexibility is one of the key words when looking at domestic appliances for the kitchen. An example is zonefree hotplates, which gives the user maximum flexibility in placement of pots and pans. Another example is an oven that can be divided into up to three isolated room, so it is possible to cook three different meals at different temperatures simultaneously.

Another key word, which also is related to flexibility, is customization, e.g. cooker hoods are available for all types of installation, so the consumer can get the best solution for the specific kitchen, e.g. Gutmann are branding themselves on the flexibility and customization possibilities: "new possibility for flexible and individual kitchens with invisible table cooker hood" (Gutmann brochure "Emfang og tilbehør", 2016). Another indicator for the customization tendency is the possibility to choose different fronts on many domestic appliances so they fit better into the kitchen elements. Another example of customization is a segmented cooktop by Bertazzoni, which also allows the user to choose the combination of gas/induction/electric griddle that fits the user's individual needs best (http://www.salonemilano.it/en/tools/tendenze.html)

A third major key word is about programmed and assisted cooking. Ovens have a big amount of cooking programs and provides guidance for the user, so the user only have to pick the right programs for the meal. The possibility to control your domestic appliances from your smartphone is also becoming more and more developed.

T R I
A K T

DOMESTIC APPLIANCES TODAY

EVALUATION

The team has categorised the observed functionalities and tendencies into three main key words, which cover many of the existing (newer) domestic appliances today:

Flexibility, customization and programmed cooking.
What they all have in common is that the user has a huge possibility to pick and choose to get the best solution for individual needs, whether it is related to the placement and looks of the domestic appliances or it is related to the cooking experience.

REFLECTION

The mentioned key words are what the team has identified and categorised as the most important and most obvious tendencies in domestic appliances, but there is most likely also other tendencies, which could be highlighted as well.

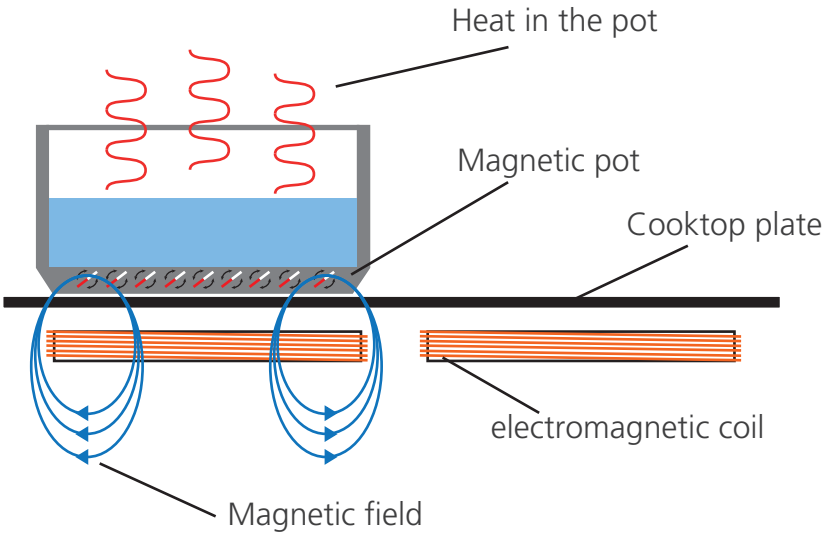
T R I
A K T

INDUCTION HOTPLATES WORKING PRINCIPLE

The objective of this worksheet is to find out how an induction hotplate works and if it is a technology that we can use in our kitchen concept to integrate under the tabletop.

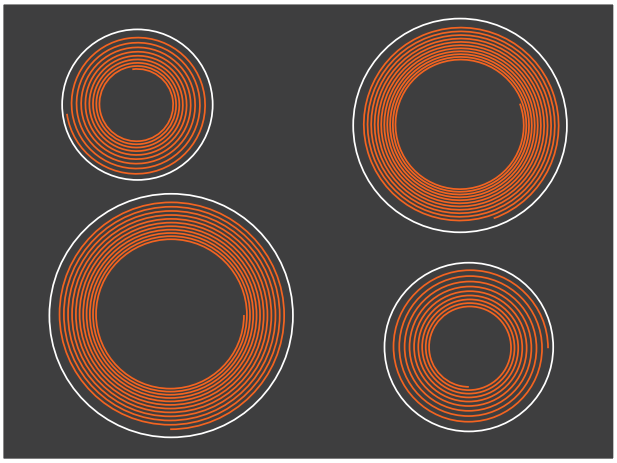
DATA

An induction cooktop is basically an electromagnet that heats up pots by changing the electric current and thereby change the polarity at a rate of 20-40 kHz. This means that an induction hotplate does not generate heat directly, but only in the pot.
When a pot is placed on the induction cooktop, the magnetic field produced by the electromagnetic coil penetrates the metal of the pot. This leaves the pot with a fluctuating magnetic field moving around inside the metal - and that makes an electric current flow through the pot too. It's not the same electrical current that flows through a wire, but more like a swirling electric current with a lot of energy and nowhere to go - called Eddy current. As it swirls around inside the metal's crystalline structure, it deliver its energy to the surrounding environment, which makes the metal pan heat up.
Food will be heated up by conduction from the pan [Woodford, 2012].



4 zoned hotplates

A normal 4 zoned hotplate has an induction coil under each zone. When it is turned on, an alternating current flows through the coil and produces an invisible, high-frequency, alternating magnetic field all around it. Nothing will happen as long as there is no pan or pot placed on the cook zone.



T R I
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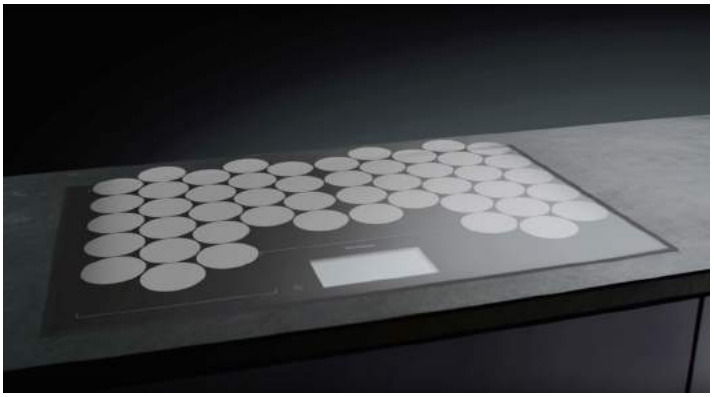
INDUCTION HOTPLATES WORKING PRINCIPLE

Zone free induction cooktop

Insted of having dedicated zones as the 4 zoned hotplate, the zone free hotplate have many small electricmagnetic coils, e.g. the Siemens Free induction cooktop has 48 small coils eg. [Appliances Online Australia, 2012].
Having many small coils enables the possibility of placing the pots and pans as you wish and still get optimal heating.



[Woodford, 2012]
Woodford, Chris; Induction cooktops; Explainthatstuff!; Last updated: February 12, 2016 - http://www.explainthatstuff.com/induction-cooktops.html

[Appliances Online Australia, 2012]
Appliances Online Australia; https://www.youtube.com/watch?v=QSJzq8rbR2c

EVALUATION
Using an induction hotplate is ideal when placing the hotplate underneath the tabletop as it is not heating up the tabletop, but only the pot and pans, which leaves the tabletop on a low temprature when done cooking.
Adding the zone free principle, makes it more flexible for different sizes and placment of the pots.

T R I A K T

INTERACTION & FEEDBACK

OBJECTIVE
The objective is to find possible solutions for interaction and feedback from the hotplates and find pros and cons for each solution.

EXPERIMENT/DATA
The ideation sessions were group sketching/discussion. The first session was about interaction, while the other was more focused on the feedback.

Ideation on the interaction with focus on how to turn the hotplates and cooker hood on/off:

Solution 1: Via smartphone
Pros: Easy installation
Cons: Greasy fingers on phone, requires development of app, phones have shorter lifespan

Solution 2: Via remote control
Pros: Can be moved, will work with greasy fingers
Cons: Can be moved = can be lost/forgotten

Solution 3: Button on table top
Pros: Does not get lost, easy to find
Cons: Might be switched on accidentally (depending on design)

Solution 4: Button on the side of the table top (either touch + button "going in" + button "going out"
Pros: Same as solution 3, will not be turned on accidentally
Cons: Depends on the design

Solution 5: Button on the cooker hood
Pros: Hard to switch on accidentally, emphasize the connectivity between cooker hood and hotplates
Cons: Ergonomics (inconvenient to turn on/off), will become greasy, might not be intuitive to turn on the hotplates via the cooker hood, cooker hood has to be reachable, consumer has to buy both cooker hood and hotplates together

Ideation on the feedback (how to see where the hotplate is and/or afterheat indicator):

Solution 1: Light/projector that lights up the "pot spot"
Pros: Direct feedback, many choices, easy to implement afterheat indicator, not visible when cooking area not in use
Cons: Might be distracting, requires specific height/has to be adjustable to fit into the room

Solution 2: Transparant table top (light in the table top indicates "pot spots")
Pros: Direct feedback, allows many features, distance from pot to indicator is good
Cons: Niche product (because specific requirements to transparant table top)

INTERACTION & FEEDBACK

Solution 3: Panel in the table top
Pros: Gives a good overview (functions are at the same place), "direct feedback", similar to existing solutions (easy for user to get used to)
Cons: Similar to existing solutions, take up space, not "social" (best for use by one person at a time)

Solution 4: Remote with display
Pros: Can be moved, direct feedback, "social"/easy to share/be used by more than one person at a time, can give a good overview (depending on design)
Cons: Can become lost

Solution 5: Via app/smartphone
Pros: Easy installation
Cons: Greasy fingers on phone, requires development of app, phones have shorter lifespan

Solution 6: Permanent marking on the table top (marking the induction area)
Pros: Makes induction area visible, cheap, energy efficient
Cons: Does not have any other features, no (after)heat indicators

EVALUATION
A lot of the pros and cons depend on how the solution is designed. As long as the solutions are so unspecific and superficial it is hard to be specific in pros and cons.

REFLECTION
It is necessary to do more ideation and develop further on the ideas.

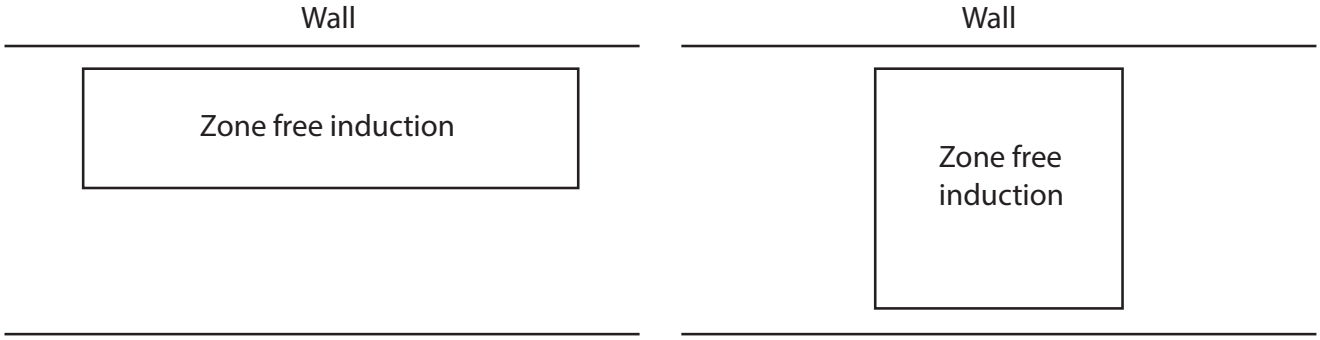
T R I A K T

HOTPLATES LAYOUT IDEATION

OBJECTIVE
To ideate on the layout of the hotplates to refine the one presented at the 2. status seminar (or find a better layout).

EXPERIMENT/DATA
The ideation was a group ideation session, where possible layouts were systematically defined and discussed.

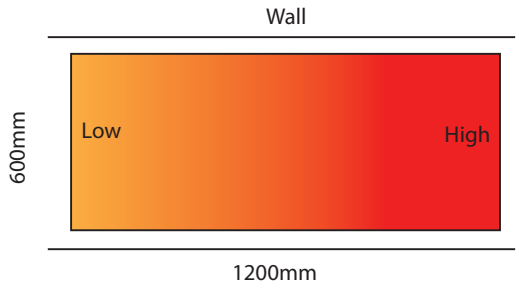
Classic zone free, where the user has to regulate the heat:



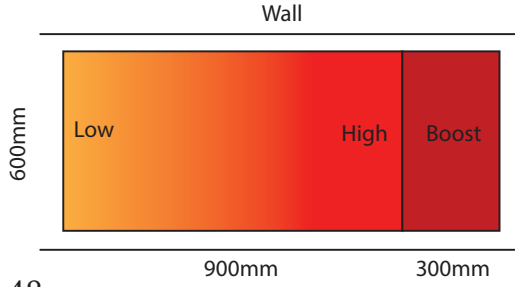
The version presented at status seminar 2 where the induction zone is drawn to the wall (above to the left):
Pros: Space for social cooking, working space in front of hotplates, less grease on the floor, hard to get burned on other pots, new approach to hotplate area.
Cons: Has to be long if the areal has to be the same as on a traditional hotplate, requires time to get used to, bad if people prefer to work close to themselves/the edge.

The classic shape (above to the right):
Pros: Does not require a long table top, "normal" (change of habits not necessary).
Cons: Nothing new, normal.

Induction with fixed heat zones: User moves pots/pans to regulate heat on each pot.



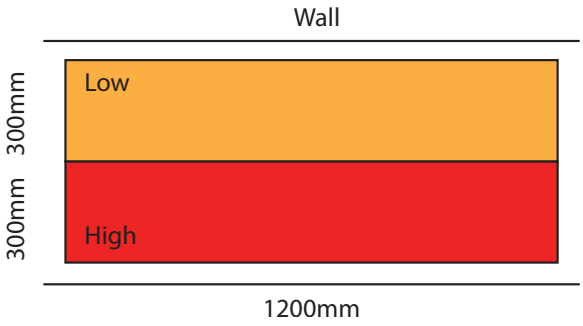
Version 1: Gradient shift low to high temperature.
The user drags the pot to the left to turn down for the specific pot (or drag to the right to turn up the temperature). The temperature gradually increases the longer to the right you get.
Pros: Easy to reach both low and high heating zones.
Cons: Inconvinient to move pots from zone to zone with many pots in use.



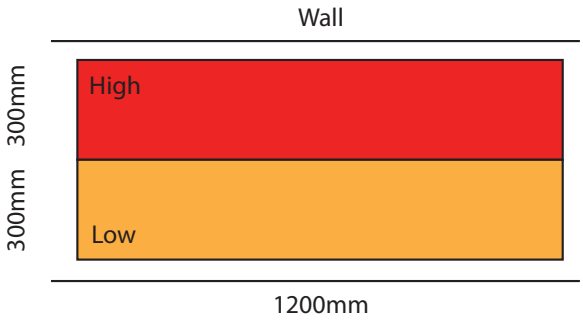
Version 2: Gradient low-high with boost area.
Same as version 1, but with a boost area at the end to kick-start cooking.
Pros: Boost area is nice to have.
Cons:Boost area quickly becomes crowded.

T R I A K T

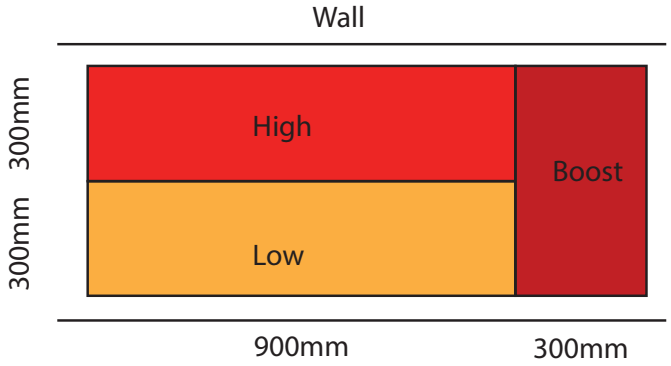
HOTPLATES LAYOUT IDEATION



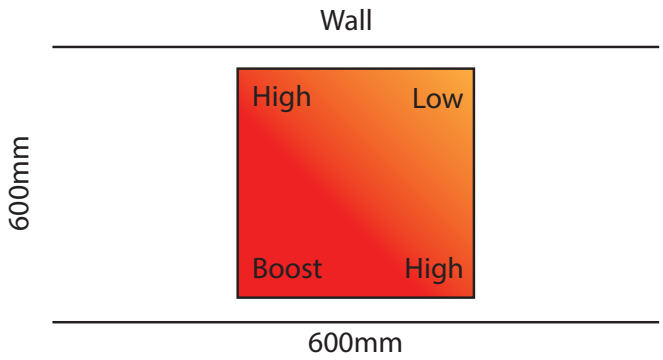
Version 3a: Two different heat zones.
The low temperature area is close to the wall, so the hottest area is closest to the user.
Pros: Pots that requires less activity (e.g. simmering pots) is to the back, while pots that needs user's attention/action is closest and easier to reach.
Cons: Grease closer to the floor and user. User has to reach over the hot pots to reach the simmering pots.



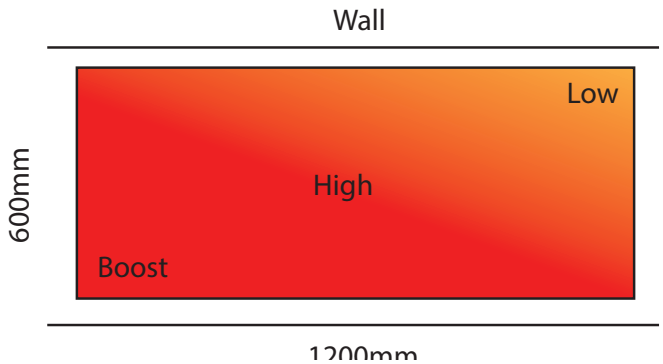
Version 3b: Two different heat zones.
The high temperature area is towards the wall, so the coldest area is closest to the user.
Pros: Harder to get burned on pots, as the user does not have to reach over the hottest pots. Grease far from edge and user. Low temperature area can be used for preparation (chopping etc.).
Cons: Pots/pans that needs most action from user is farther away. Pots left on low temperature might be in the way.



Version 4: Two different heat zones with boost.
Same as 3b, but with boost area.
Pros: Pots that requires less activity (e.g. simmering pots) is to the back, while pots that needs user's attention/action is closest and easier to reach.
Cons: Grease closer to the floor and user. User has to reach over the hot pots to reach the simmering pots.



Version 5a: Gradient shift with boost corner (traditional size).
Pros: Pots that requires less activity (e.g. simmering pots) is in the back corner, while pots that needs user's attention/action is closer and easier to reach.
Cons: Grease closer to the floor and user. User has to reach over the hot pots to reach the simmering pots. Not suited for social cooking.



Version 5b: Gradient shift with boost corner (long size).
Pros: Pots that requires less activity (e.g. simmering pots) is to the back, while pots that needs user's attention/action is closest and easier to reach. Wellsuited for social cooking.
Cons: Grease closer to the floor and user. User has to reach over the hot pots to reach the simmering pots.

T R I
A K T

HOTPLATES LAYOUT IDEATION

EVALUATION

On paper the different layouts all have pros and cons, but it is hard to evaluate them just by imagining how it would be to work with the various cooking areas.

REFLECTION

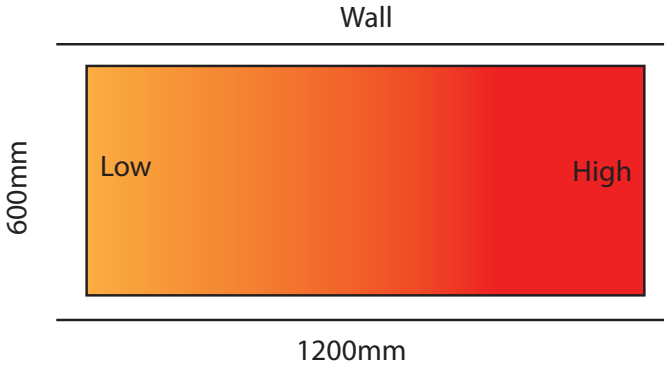
The different layouts have to be tested in practice by trying different cooking scenarios and using bodystorming.

HOTPLATES LAYOUT TEST

OBJECTIVE
To test the various suggestions for layout of the hotplate area to be able to determine which one of the different layouts that works best.

EXPERIMENT/DATA
The tests were done with bodystorming, using a regular kitchen table top with imitations of pots and pans pretending to cook a relatively complex meal (where many pots and pans were needed to prepare different types of dishes) to get a feeling of how it would be to prepare a big meal (roast chicken on a pan, boil rice in a pot, make sauce in a pot, boil vegetables in a pot).
The scenario consisted of the following steps:
1. Begin rice cooking (high temperature)
2. Make sauce (medium-high temperature)
3. Roast chicken (high temperature)
4. Move rice to simmer temperature
5. Boil vegetables (high temperature first, later lower)

Version 1: Gradient shift low to high temperature (1200mm x 600mm).

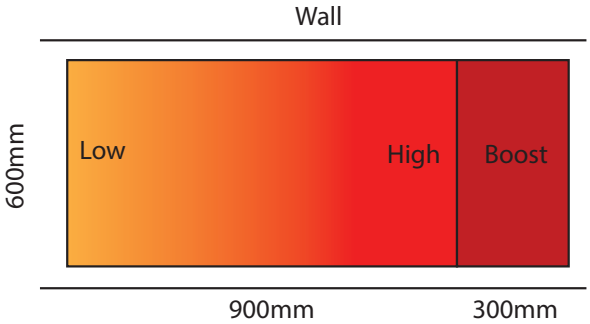


1200 mm is a fine length for one person use.
The most activity is in the end with high temperature, there is a tendency to place the pots as far to the right as possible (to get the most heat).
High end is too crowded for two persons cooking at the same time.
When moving a pot from high temperature to low, it is natural to lift the pot (because the other pots are in the way if you want to slide the pot from one end to the other.

Pros: The gradient shift in heat makes it possible to choose the desired temperature.
Cons: Too crowded in the high temperature end. It is inconvenient to move pots from boost between heat zones when the zone in the middle is crowded, as you have to lift the pots.

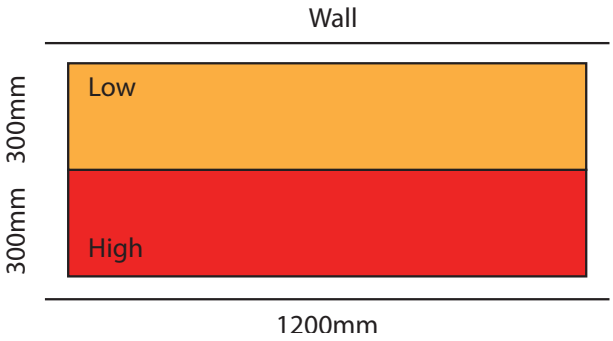
HOTPLATES LAYOUT TEST

Version 2: Gradient low-high with boost area (1200mm x 600mm).



Pros: The boost area relieve the pressure on the high temperature area, which makes it less crowded.
Cons: The boost area quickly becomes chaotic as almost all pots start on boost. It is inconvenient to move pots from boost between heat zones when the zone in the middle is crowded, as you have to lift the pots.

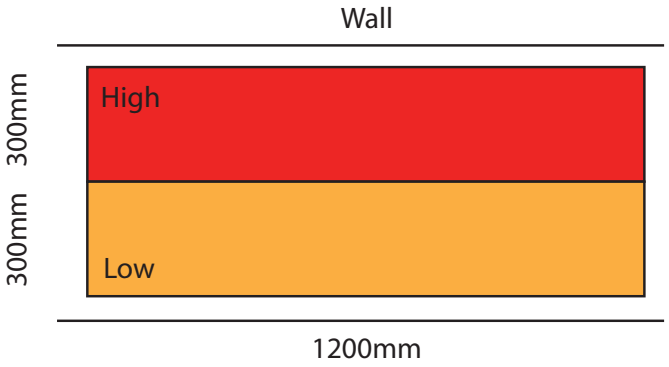
Version 3a: Two different heat zones (high heat close to user).



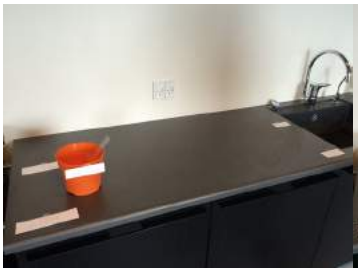
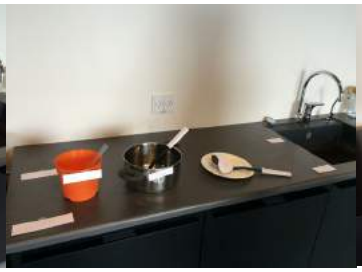
Pros: It feels logical to put simmering pots/"inactive" pots to the wall and have the pots on high heat, where you have to be active, close to you. It works better for social cooking as more than one person have easy access to both high and low temperature. The movement of pots between heat zones is much better than moving them sideways (as in version 1+2).
Cons: Not optimal use of space (low heat area can be waste of space), the user has to reach over the hot pots to reach the pots on low heat.

HOTPLATES LAYOUT TEST

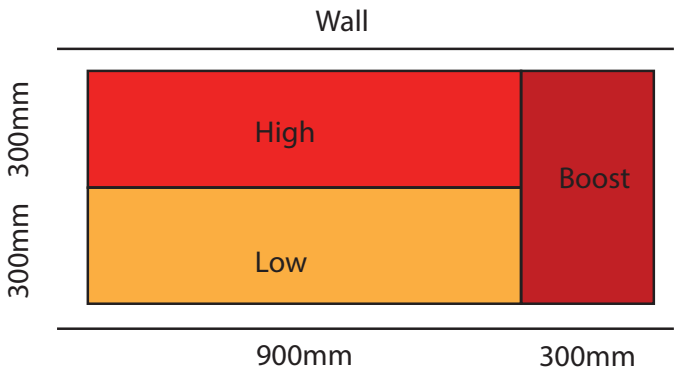
Version 3b: Two different heat zones (low heat close to user).



Pros: The low heat area can be used for chopping etc. while cooking. Steam will go more directly up to the cooker hood. No grease on the floor. It works better for social cooking as more than one person have easy access to both high and low temperature.
Cons: Might be awkward to "be active" (e.g. stir in a pot) far away from yourself. Pots/things placed on low heat zone might be in the way.

Version 4: Two different heat zones with boost.

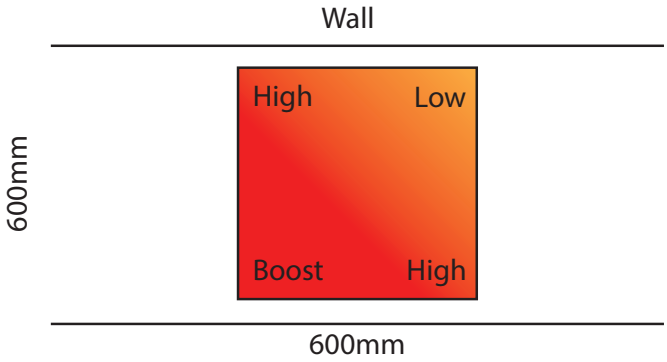


Pros: Boost area relieves the pressure on the high temperature area + same as version 3b.
Cons: Boost area quickly becomes chaotic as almost all pots start on boost. Moving the pots from one area to another is inconvenient when there are many pots on the induction areas + same as 3b.



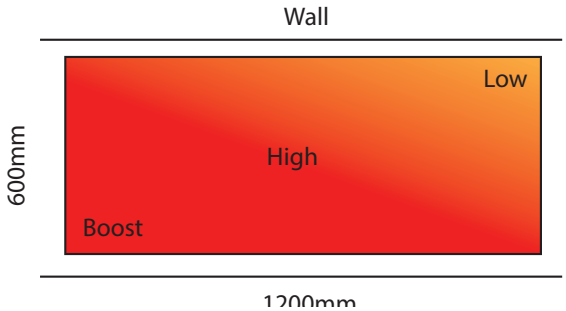

HOTPLATES LAYOUT TEST

Version 5a: Gradient shift with boost corner (traditional size).



Pros: Easy to reach everything.
Cons: Can only be used by one person at a time. Boost area is too small. Chaotic and too crowded, so pots and pans have to be moved a lot.

Version 5b: Gradient shift with boost corner (long size).



Pros: A lot of space in the high temperature area.
Cons: Confusing with a big "fluid" high temperature area, the gradient makes it hard to determine when each area stops. Chaotic and too crowded (especially the boost area), so pots and pans have to be moved a lot.

HOTPLATES LAYOUT TEST

Miele no-zone induction hotplates

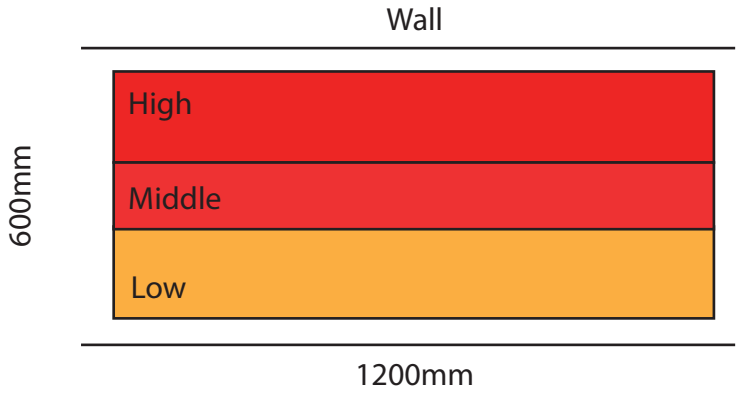
After the test, we found out that Miele has a no-zone induction hotplate, which has a similar function. Miele's hotplate has a program, where the user can choose how the heat should be distributed on the induction area. The trio program is more or less similar to the tested layout version 1, except from Miele's version is divided into three zones instead of the gradient shift.

EVALUATION

It is most convenient to regulate the heat by moving pots back and forth in the depth of the table, rather than sideways, which means that version 3a+b and 4 are better than the others, including Miele's program.

The boost area tended to cause very crowded scenarios and requires a lot of coordination of pots and pans, where the user has to move the pots a lot. The boost function is only "nice to have" and not a necessity. As future tendencies is going towards "living with less", and the consumers want solutions without too many choices, it would be an obvious choice to discard the boost function and just go with a low to high temperature scale. In order to give the possibility of having more than two heating temperatures, the middle area should have a middle temperature, so the induction area has three heat zones, but not with gradient shift.

As we are aiming for a social cooking area, where more than one person can cook at the same time, the length of the induction area should be at least 1200 mm.



REFLECTION

The scenarios were acted out without taking time on each action, so the crowdedness might be different and could maybe have been avoided, if the cooking scenarios were planned more and were more realistic time-wise.

MEASUREMENT OF HEAT HOTPLATE

OBJECTIVE

The aim is to find out how hot the induction hotplates is after have been used for 15min on low, medium and high power and how much time it takes for it to cool down agin.

EXPERIMENT/DATA

GLASS HOTPLATES

After 15min on low power the temperature had reached 30 degrees.

AFTER 15MIN ON LEVEL 1

After 15min on medium power the temperature had reached 55 degrees.
The warning sign H has not turned on at this point, meaning that the company making them does not mean that they are to hot to touch.

LEVEL 4

AFTER 15MIN ON LEVEL 4

After 15min on high power the water was boiling at 100 degrees and the temperature had reached 107 degrees on the hotplates. Showing that the hotplates get about as hot as the things in the pot.
The warning sign H had turned on at this point, meaning that plate was to hot to touch.

LEVEL 9

AFTER 15MIN ON LEVEL 9

MEASUREMENT OF HEAT HOTPLATE

AFTER 4MIN AND 30SEK

AFTER 15MIN

Waiting 4min and 30sek the hotplates was already down at 77 degrees.

15 min after stopped boiling the H disappeared and the cooktop was free to touch.

ELECTRICAL HOTPLATES

LEVEL 9

AFTER 15MIN ON LEVEL 9

When cooking the temperature reached about 90 degrees (81 shown) and after 15 minuntes the temperature had reached more than 310 degrees on the hotplates, as the IR thermomter maxes out at that point. This shows that the hotplates get much hotter that the things in the pot.

SLATE PLATE

BOILING

RIGHT AFTER TAKING THE POT OFF

After 15min on high power the water was boiling at 100 degrees and the temperature had only reached 58 degrees on the hotplates. This shows that the slate material does not pick up heat as good as glass. The warning sign H had turned on at this point, meaning that plate was to hot to touch.
It took 10 min to cool down to 50 degrees, which was faster than glass, but the temperature was not as high to begin with (it only had to fall 8 degrees).

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MEASUREMENT OF HEAT HOTPLATE

EVALUATION

On a low and medium power level the induction hotplates does not get hotter than it is still possible to touch and keep the hand on the hotplate, making it possible to work on that spot rigth after using it.

After using it on high power level for a couple of minutes, the hotplate was too hot to touch, but got down to 50 degrees in 15min.

The worst method regarding afterheat was when using the old electrical hotplate, which came above 310 degrees.

REFLECTION

Using an other material than glass can give som advanteges, like the slate plate not getting as hot as the glass plate. But it held better on to the warmth (comparing degrees pr. min). If cooking for longer than 15min on the slate plate it might get warmer and would take longer to get down to 50 degrees than the glass plate.

T R I
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FINDING A NEW COOKER HOOD CONCEPT

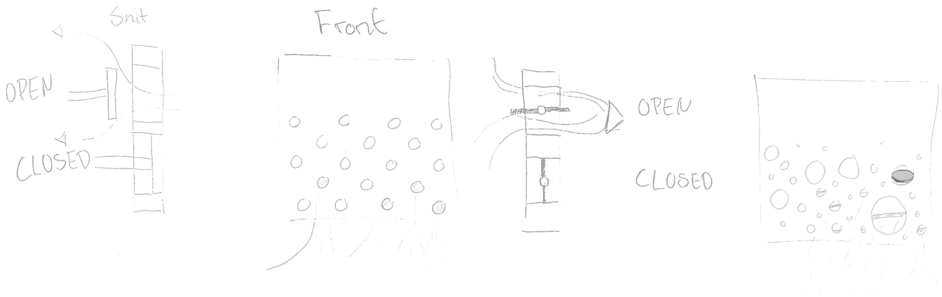
OBJECTIVE

The objective is to find a new cooker hood principle, which still has the expression of a living organism and adapts to the suction area and function.

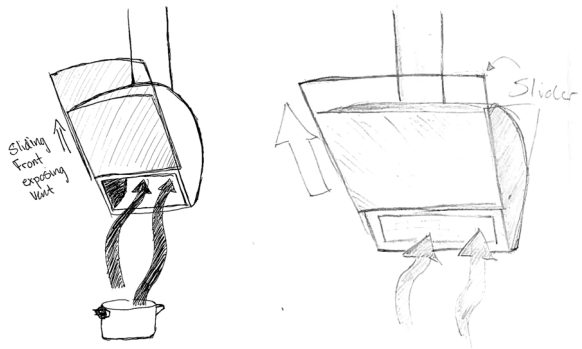
EXPERIMENT/DATA

With inspiration from this mood board about opening and closing methods below, the team was brainstorming with focus on the keywords from the new consumer; Minimalistic with subtle details, perfect angles, right geometry as simple geometry, timeless, quality and sustainability. Furthermore, the team added some words which describes timelessness to ensure a common sense of the meaning of the word: Neutral in expression, colours, materials and classic, recognizability, symmetry, simple, elegance and sustainable.

The team brainstormed on the opening and closing method to select pros and cons for each of the concepts.



Concept 1: Holes
Pros: Simple geometry.
Cons: Hard to clean, the team is not too fond of the visual expression.



Concept 2: Sliding doors
Pros: Slide open/close effect is elegant.
Cons: Too similar to existing cooker hood. Too little adjustability and flexibility. Will become too massive if it has to be 1200 mm long.

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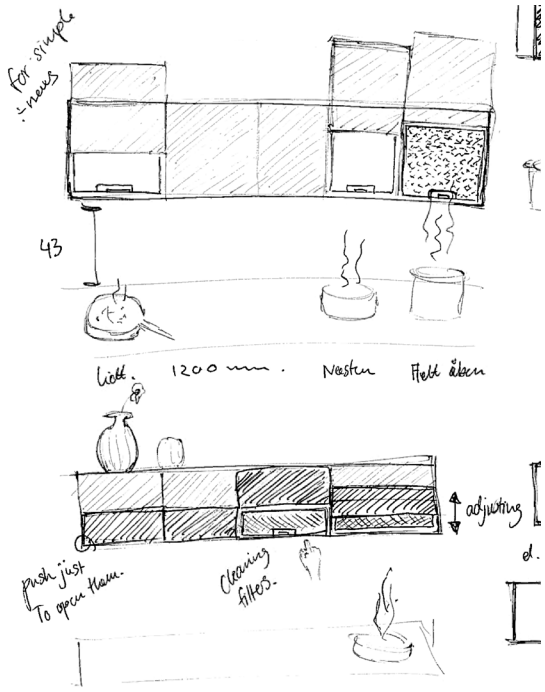
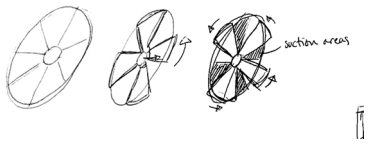
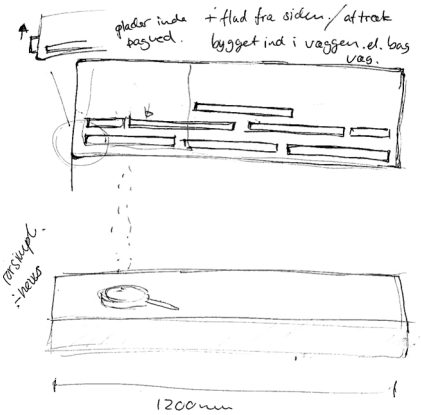
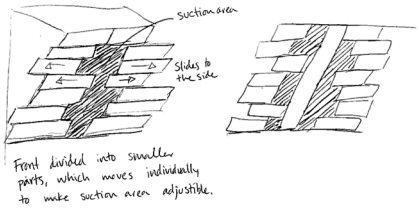
FINDING A NEW COOKER HOOD CONCEPT

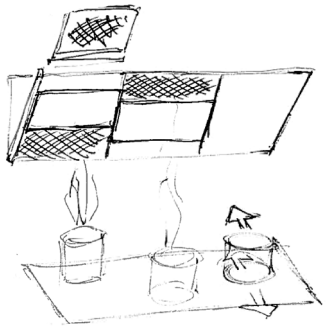


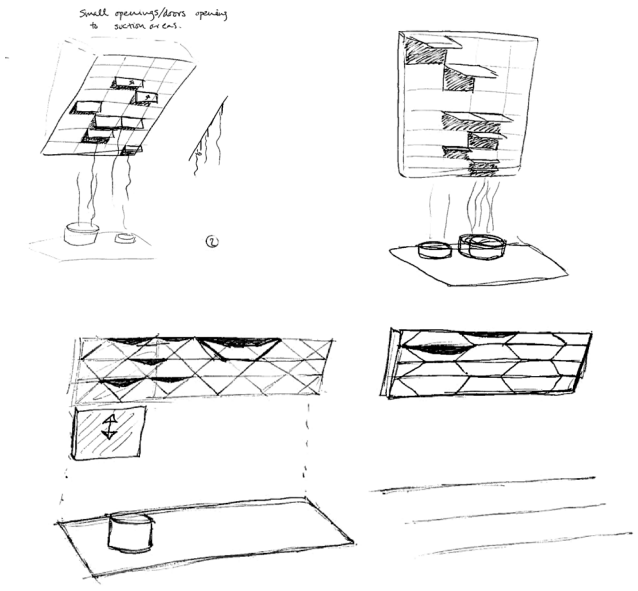
Concept 3: Sliding doors
Other variations of sliding opening mechanism (slide up/down/sideways/inside/outside).
Pros: Easy to clean. Adjustable.
Cons: Not enough living organism in the expression.



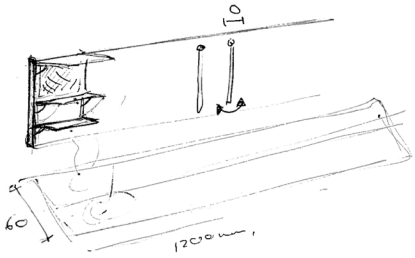








Concept 4: Open/close flaps.
Pros: Can have a very living expression if flaps move individually.
Cons: Too difficult to clean (both filters and backside of the flaps). Requires many motors to move the flaps and make the expression living enough. Too complex compared to the function.



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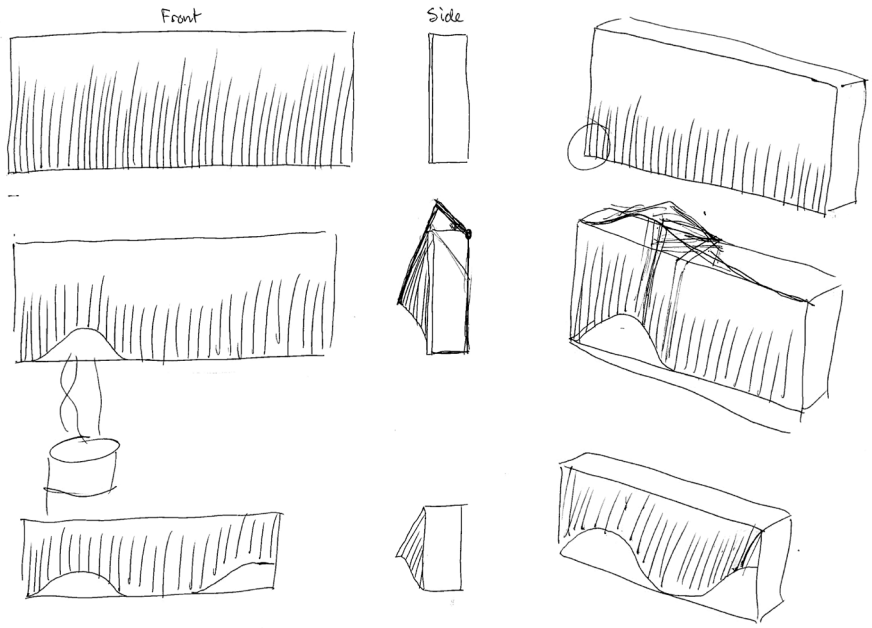
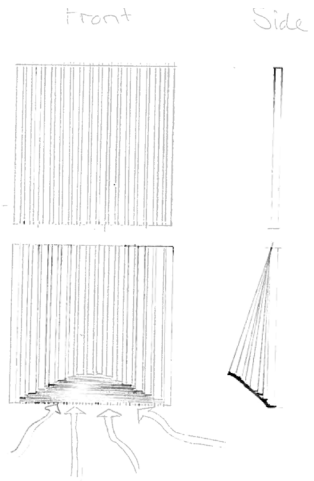
FINDING A NEW COOKER HOOD CONCEPT





Concept 5: Wave
This concept is inspired by the cabinet (see picture to the right) which creates a wave that has the expression of a living organism that the team is looking for, because it easier allows the cooker hood to be adjustable in more than one area, which is a requirement.

EVALUATION

The wave concept was chosen because of its working principle that allows the cooker hood to be adjustable in more than one area, even though the cleaning of this concept will be a challenge. The expression is simple, but with a twist that the team likes.

REFLECTION

The team must build a 1:1 mock up of the new concept to see how the cooker hood will behave and how the costumer will respond to it. Furthermore the team needs to look into elastic materials to see if that can solve the cleaning issue and tighten the cooker hood.

T R I
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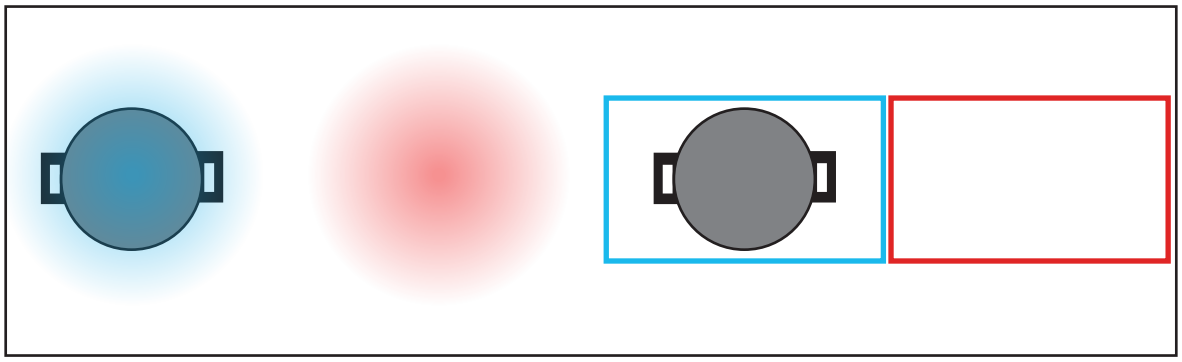
VISUAL FEEDBACK

OBJECTIVE

The objective is find out which light source that can be used for visual feedback.

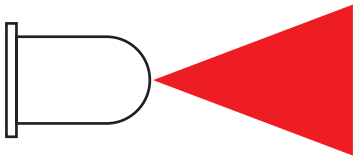
EXPERIMENT/DATA

Two kinds of light sources are investigated: LEDs and Lasers. The idea is that when a pot or pan is placed on the hotplate a blue light will light up, to show that the working space is in use. And a red light will indicate if the working space is too hot to touch after end use. The blue light will at all times follow the pots around and overwright the red light showing which zone the pot is located in.



LED

LED or Light Emitting Diode, has a big spectum of coulors and can even transmit infrared light (Hede, Den Store Danske).
The light from a LED is a bright light, but at the same time diffuse, meaning that the light cover a big area and is not precise.

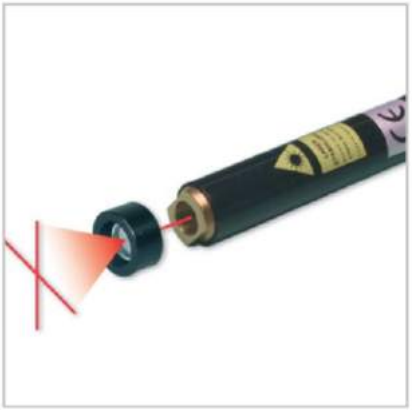


LED comes as RGB or W-RBG, meaning that one LED can light many different coulors.

Laser

The special thing about lasers is that they transmit light at a perfect wave length, meaning that the wave is the same lenght at all time and a high coherence (JOH, DenStoreDanske). This makes a laser good for precision work. But as the laser doesn't resize the size of its beam, a lens is needed to light the whole area.

The lens that could be used, could be a DOE lens from Laser Components. They make lenses that turnes a simple laser dot into different beam patterns (Laser Components, 2015).



VISUAL FEEDBACK

If using a laser, there are some different issues that have to be dealt with. There is a saying that lasers can potentially damage the eyes if looked at. In a article from Illustreret videnskab (Illustreret videnskab), it is discussed if this is right.
The article states that there is 7 differet types of strengths when speaking of lasers, they are listed as 1, 1M, 2, 2M, 3R, 3B and 4 (old system: I, II, IIa, IIIa, IIIb and IV). Level 1 are the ones used in printers and CD-players, and these lasers are not harmful. The ones used in laser pointers used for slideshows are typical rated from 2 to 3R and can be harmful, but only if looked directly into over a long periode of time.
It is most likely a laser that is rated in level 2 to 3r that we have to use, if the laser is chosen as the light source.

(Hede, DenStoreDanske)
Hede: Carsten Hede; DenStoreDanske - Lysemitterende diode; Gyldendal;
http://denstoredanske.dk/It%2c_teknik_og_naturvidenskab/Elektronik%2c_teletrafik_og_kommunikation/Elektronik%2c_radio_og_tv/lysemitterende_diode

(Laser Components, 2015)
http://www.lasercomponents.com/fileadmin/user_upload/home/Datasheets/lasermodules/doe.pdf

(JOH, DenStoreDanske)
JOH: Jes Ole Henningsen; DenStoreDanske - Laser; Gyldendal;
http://denstoredanske.dk/It,_teknik_og_naturvidenskab/Elektronik,_teletrafik_og_kommunikation/Elektronik,_radio_og_tv/laser

(Illustreret videnskab)
http://illvid.dk/mennesket/kroppen/er-straaler-fra-laserpenne-farlige

EVALUATION

Using a laser emitter enables us to make a precise border on the hotplate. But lasers do need a lens to achieve the desired effect and not only being a dot.

Using LEDs gives more light, but they are not that precise. This means that it probably will light up more than intented.

REFLECTION

To finally decide what to use we have to look into unit price and thereby decide if laser with a lens is better than LEDs in relation to the price.

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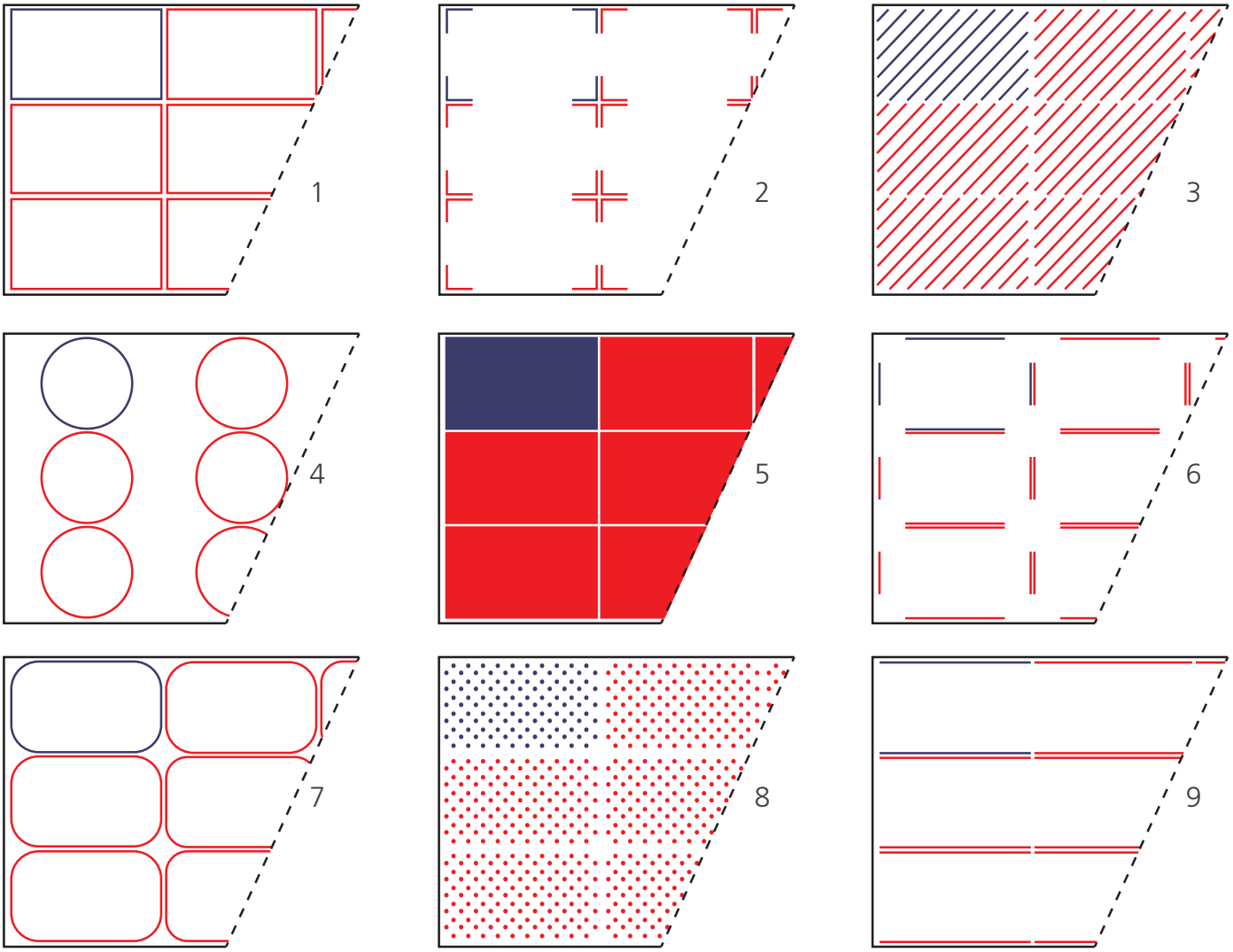
LIGHT PATTERN

OBJECTIVE
The objective is to investigate which light pattern to use to signal the cooking zone when it is in use and which one to use when hot if not the same.

EXPERIMENT/DATA
9 different patterns were made:

Single pattern Full pattern



When using light to indicate which zones is in use and which zones that is too hot to touch, there are some different criterias that comes to mind.
When making dinner, it is most likely that one wants to see the right colours of the food and not a blueish cauliflower etc., therefore the light cannot light into the pots during cooking. On the other hand it is important that the zone is completely covered when it is not in use, but still hot.
When changing from e.g. the hot zone to the medium zone, it is important to know when it is changing, and therefore it is important to know where the borders are. But at the same time the borders must be discreet, not disturbing the user.

T R I
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LIGHT PATTERN

For the blue working light the 9 different patterns are evaluated based on these 3 criterias, standing in order of priority:

1. Pattern covers the outer borders of the zone.
2. No light in the pot or pan.
3. Discreet.

For the red indication light the 9 different patterns are evaluated based on these 2 criterias, standing in order of priority:

1. Cover the zone completely
2. Be discreet as possible

Each criteria is given a number from 1-5 in a PV chart, where 5 is the best, to determine which one that is the best for respectively the blue light and the red heat-indicator light.

VP schema for the blue working light

	Border coverage	Lights in to pots	Discreet	Total
Pattern 1	5	4	4	13
Pattern 2	4	5	4	13
Pattern 3	3	2	2	7
Pattern 4	2	4	3	9
Pattern 5	5	1	1	7
Pattern 6	3	5	3	11
Pattern 7	3	5	3	11
Pattern 8	3	2	3	7
Pattern 9	3	4	4	11

VP schema for the red indicator light

	Zone coverage	Discreet	Total
Pattern 1	2	4	6
Pattern 2	1	4	5
Pattern 3	4	2	6
Pattern 4	1	3	4
Pattern 5	5	1	6
Pattern 6	1	3	4
Pattern 7	2	3	5
Pattern 8	4	3	7
Pattern 9	1	4	5

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LIGHT PATTERN

EVALUATION
The patterns for the working area that scored the highest was pattern nr 1 and 2, with 13 points. Both patterns get the job done and would be useable, but as coverage of the outer borders of the zone weighs more, pattern nr 1 is chosen for the working area.

Pattern nr. 8 scored the most in the indicator light schema. The pattern lets people know that the area still is hot by lighting a amount of dots onto the zone.

REFLECTION
It would be nice to see the light patterns in real live, to see if it is annoying or not.

T R I
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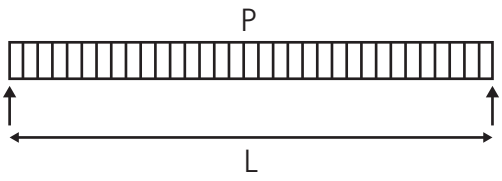
BEAM CALCULATIONS 1

The objective of this task is to calculate which the size of beam we must use to carrier all 25 lamellas, without a deflection that is greater than 2mm. We also need to know if the beam has to be simple supported or fixed.

EXPERIMENT/DATA

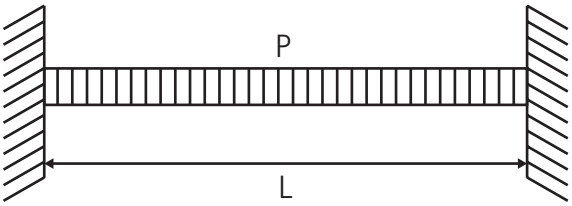
First we have to define the formula for deflection (Madsen, 2013):

Simple supported



$$U_{max} = \frac{5 \cdot \mathrm{P} \cdot L^4}{384 \cdot \mathrm{E} \cdot \mathrm{I}}$$

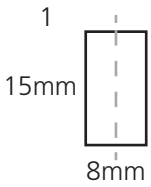
Fixed

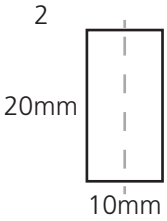


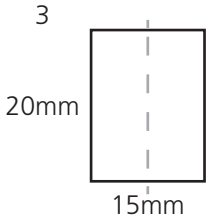
$$U_{max} = \frac{\mathrm{P} \cdot L^4}{384 \cdot \mathrm{E} \cdot \mathrm{I}}$$

$$\mathrm{P} = \frac{\mathrm{F} \cdot \mathrm{g}}{\mathrm{L}} = \frac{25\mathrm{kg} \cdot 9{,}82\mathrm{M}/s^2}{1{,}25m} = 0{,}2kN/m \qquad E_{stål} = 210000MPa \qquad L = 1{,}25m$$

Calculation of the inertia module of 3 different beams:







$$I = \frac{1}{12} \cdot \mathrm{b} \cdot h^3 \qquad I_1 = \frac{1}{12} \cdot 8mm \cdot 15mm^3 = 2250mm^4$$

$$I_2 = \frac{1}{12} \cdot 10mm \cdot 20mm^3 = 6667mm^4$$

$$I_3 = \frac{1}{12} \cdot 15mm \cdot 20mm^3 = 10000mm^4$$

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BEAM CALCULATIONS 1

Now that we know all the unknown values, we kan calculate the deflection of the 3 different beams, both for a simple supported and fixed.

Simple supported

$$U_1 = \frac{5 \cdot 0{,}2\ \mathrm{kN/m} \cdot (1250mm)^4}{384 \cdot 210000\mathrm{MPa} \cdot 2250mm^4} = 13{,}46mm$$

$$U_2 = \frac{5 \cdot 0{,}2\ \mathrm{kN/m} \cdot (1250mm)^4}{384 \cdot 210000\mathrm{MPa} \cdot 6667mm^4} = 4{,}51mm$$

$$U_3 = \frac{5 \cdot 0{,}2\ \mathrm{kN/m} \cdot (1250mm)^4}{384 \cdot 210000\mathrm{MPa} \cdot 10000mm^4} = 3{,}03mm$$

Fixed

$$U_1 = \frac{0{,}2\ \mathrm{kN/m} \cdot (1250mm)^4}{384 \cdot 210000\mathrm{MPa} \cdot 2250mm^4} = 2{,}69mm$$

$$U_2 = \frac{0{,}2\ \mathrm{kN/m} \cdot (1250mm)^4}{384 \cdot 210000\mathrm{MPa} \cdot 6667mm^4} = 0{,}908mm$$

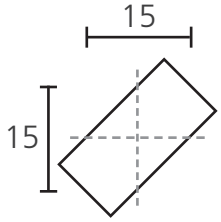
$$U_3 = \frac{0{,}2\ \mathrm{kN/m} \cdot (1250mm)^4}{384 \cdot 210000\mathrm{MPa} \cdot 10000mm^4} = 0{,}606mm$$

EVALUATION

To get a deflection less than 2mm the beam either needs to be larger than the ones that we calculated on or fixed. As we want to keep the beam as small as possible, we are going with the fixed support. For the fixed beames both number 2 and 3 can be used. To keep it as small as possible number 2 is chosen.

REFLECTION

As we want to rotate the beam by 45 degrees, we need to make som new calculations to see if beam number 2 is still strong enough:



$$I_{45°} = \frac{1}{12} \cdot 15mm \cdot 15mm^3 = 4218{,}75mm^4$$

$$U_{45°} = \frac{0{,}2\ \mathrm{kN/m} \cdot (1250mm)^4}{384 \cdot 210000\mathrm{MPa} \cdot 4218{,}75mm^4} = 1{,}44mm$$

Beam number 2 is still strong enough with a deflection of only 1,44mm after rotating it 45 degrees.

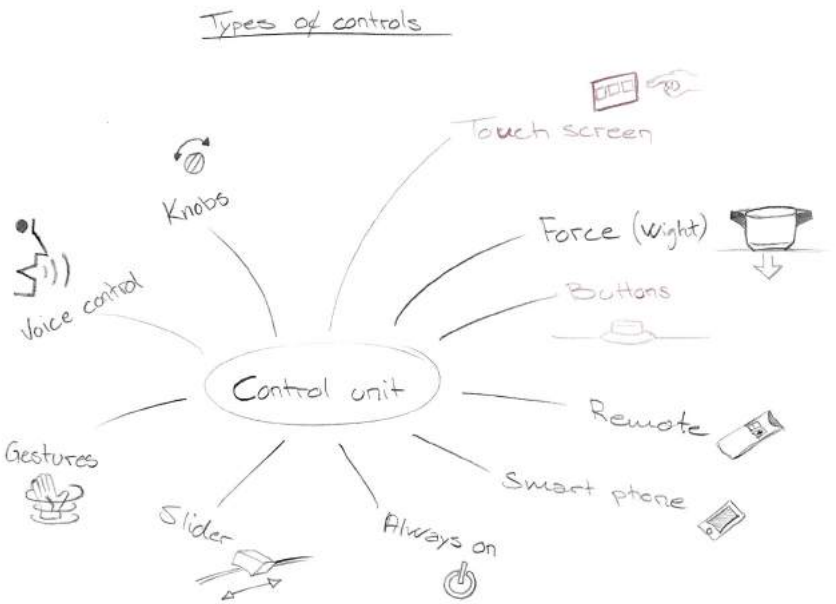
CONTROL PANEL

The objective of the assignment is to determine how to control the cooker hood and hotplate. This is done by specifying what they should do. Examine which types of controls that could be relevant to look at. Where the controls should be placed. And from this investigation make an ideation on the design of the control unit.

EXPERIMENT/DATA
First and foremost we have to determine what to control on the cooker hood and hotplate. As the cooker hood is automatic and adjusts after the input from the hotplate, there is no need for an adjustment control. The hotplate is divided into 3 zones (Low, Medium and Hot), and as this also is not adjustable, there is no need for controls here either.
The controls we need is:

- ON/OFF
- Filter change/cleaning

Now how can we interact with cooking area to control these two features?

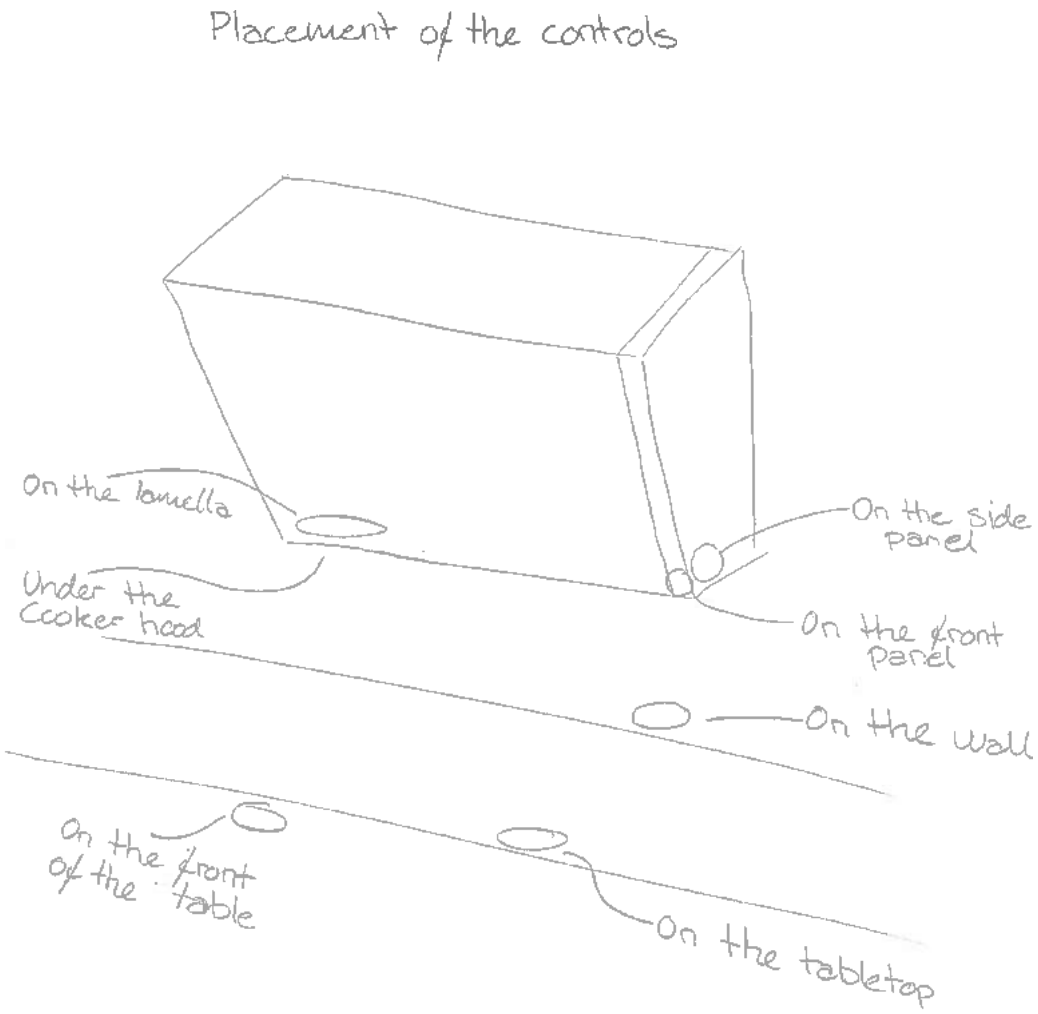


As shown on the ill. above, there are about 10 different ways to possibly interact with the cooking area.
The Remote and Smartphone solutions are discarded, as they are easily lost or not right at hand when needed.
Gestures, Voice control and Force are discarded, as these can be triggered by accident when using a kitchen.
The Slider and Knob are discarded, as there is nothing that has to be adjusted.
This leaves us with Buttons and Touch interfaces.

The control unit also need to show some signals to make the user aware of that the cooking area is active (ON signal), it needs to show that the air filter has to be cleaned/changed and if there is something wrong with it (Error signal).

CONTROL PANEL

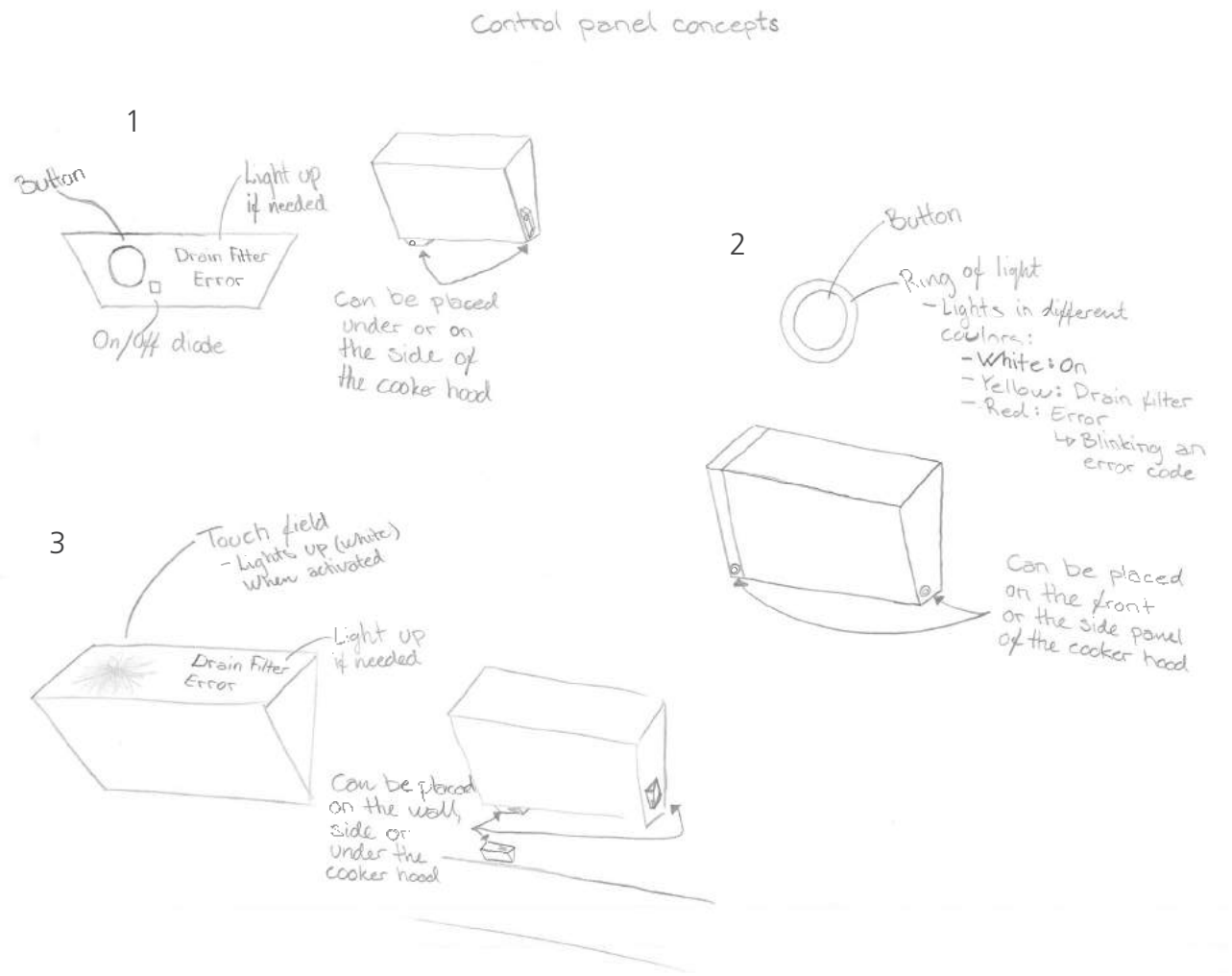
The placement of the unit is also something to take into consideration, that is why we made an indication of all the possible placement areas - see the ill. below:



As shown there are about 7 different positions in which the controls can be placed.
The one on the table is discarded, as we want as much flex space on the table as possible.
Placing it onto the lamella is also discarded, as having a moving control is not optimal.
This leaves us with four different placement options: On the side panel, on the front panel, under the cooker hood and on the wall.

CONTROL PANEL

Now that we know what the control unit has to include and where it can be placed, we can make some concepts for it.



EVALUATION
Being the most simple and discreet, concept 2 was chosen.
The concept consists of one button only, around the button there is a transparent ring.
The ring light up when turned on (white light), lights up in yellow when the filter has to be drained/cleaned and blinks red if there is an error - the rhythm shows what the error is (look in the manual).

REFLECTION
To determine the final placement of the control button, building a 1:1 mock up of the entire concept would help.

T R I
A K T

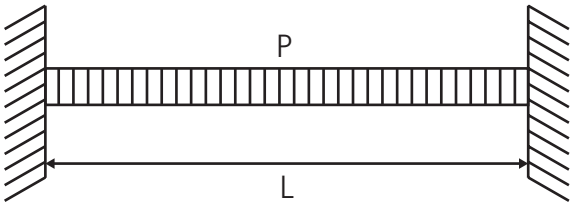
BEAM CALCULATIONS 2

The objective of this task is to calculate when the our fixed beam is angled what the bending stress will be and compare it with steel's yield stress to see if the beam are duarble.

EXPERIMENT/DATA

First we have to define the formula for deflection (Madsen, 2013):

Fixed



Calculation of deflection of a fixed beam with uniformly distributed load on 25 kg

$L = 1{,}25\ m = 125mm$

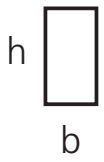
The weight of P is calculated by:

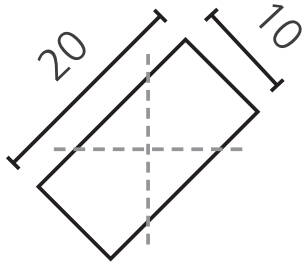
$$P = \frac{m \cdot g}{L} = \frac{25kg \cdot 9{,}82\frac{m}{s^2}}{1{,}25m} = 0{,}2\frac{kN}{m}$$

$E_{steel} = 210.000\ MPa$

Formula of deflection

$U_{max} = \frac{P \cdot L^4}{384 \cdot E \cdot I}$ and $I = \frac{1}{12} \cdot b \cdot h^3$





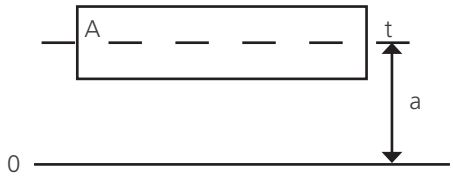
$H = 20\ mm$

$B = 10\ mm$

As we know that our beam is angled 45°, we need to look at shear stress.

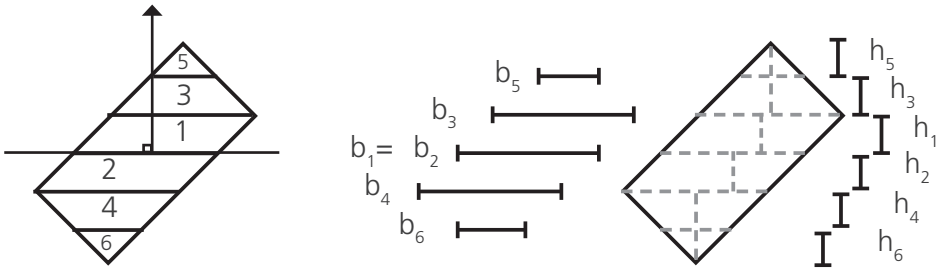
Formula of shearing

$I_0 = I_t + a^2 \cdot A$



T R I
A K T

BEAM CALCULATIONS 2



We need to divide the beam area into more sections to get a more realistic moment of inertia.

$$I_{Total} = I_1 + I_2 + I_3 + I_4 + I_5 + I_6$$

$$b_1 = b_2 = b_3 = b_4 = \sqrt{B^2 + B^2} = 14{,}14mm$$

$$b_5 = b_6 = \frac{b_1}{2}$$

$$\mathrm{A_{1+2}} = \mathrm{B \cdot B} = 10 \cdot 10 = 100\mathrm{mm^2}$$

$$\mathrm{h_{1+2}} = \frac{\mathrm{A_{1+2}}}{b_1} = \frac{100mm^2}{14{,}14mm} = 7{,}07\mathrm{mm}$$

$$\mathrm{h_1 = h_2} = h_3 = h_4 = h_5 = h_6 = \frac{7{,}07\mathrm{mm}}{2} = 3{,}535\mathrm{mm}$$

$$I_1 = I_2 = \frac{1}{12} \cdot b_1 \cdot {h_1}^3 + \left(\frac{h_1}{2}\right)^2 \cdot b_1 \cdot h_1$$

$$= \frac{1}{12} \cdot 14{,}14mm \cdot 3{,}535mm^3 + \left(\frac{3{,}535mm}{2}\right)^2 \cdot 14{,}14mm \cdot 3{,}535mm = 208{,}21mm^4$$

$$I_3 = I_4 = \frac{1}{12} \cdot \left(\frac{b_1 + \frac{b_1}{2}}{2}\right) \cdot {h_3}^3 + \left(h_1 + \frac{h_3}{2}\right)^2 \cdot \left(\frac{b_1 + \frac{b_1}{2}}{2}\right) \cdot h_3 = 1093{,}09mm^4$$

$$I_5 = I_6 = \frac{1}{12} \cdot \left(\frac{\frac{b_1}{2}}{2}\right) \cdot {h_5}^3 + \left(h_1 + h_3 + \frac{h_5}{2}\right)^2 \cdot \left(\frac{\frac{b_1}{2}}{2}\right) \cdot h_5 = 494{,}49mm^4$$

$$I_{Total} = (208{,}21mm^4 + 1093{,}09 + 494{,}49mm^4) \cdot 2 = 3591{,}58mm^4$$

T R I
A K T

BEAM CALCULATIONS 2

Deflection of the beam angled 45˚

$$U_{max} = \frac{0{,}2\,\frac{kN}{m} \cdot (1250mm)^2}{384 \cdot 210.000MPa \cdot 3591{,}58mm^4} = 1{,}69mm$$

Therefore the maximum deflection is 1,69mm

Formula of bending stress

$$\sigma = \frac{M}{W} = \frac{M \cdot \frac{h}{2}}{I}$$

Formula for moment of fixed beam

$$M = -\frac{1}{12} \cdot p \cdot L^2$$

Calculation of our bending stress

$$\sigma = \frac{-\frac{1}{12} \cdot 0{,}2\,\frac{kN}{m} \cdot (1250mm)^2}{3591{,}58mm^4} = -72{,}5\,\frac{N}{mm^2}$$

Bending stress in our beam will be around 73$\frac{N}{mm^2}$, which is under the yield stress of steel that is 175-300$\frac{N}{mm^2}$ for original steel construction or 275-450$\frac{N}{mm^2}$ for high-yield stress steel.

EVALUATION

Our steel beam's strength are strong enought to hold our 25 lamellae as the yield stress of steel is over 175 N/mm^2 and our beam is around 73 N/mm^2 which is lower and our deflection of the angled beam is low with 1,69mm.

REFLECTION

Even enough we have divided our beam into more section, it is still approximated.

CHANGE OF SUBJECT

The objective is to explain why the team shifted from Remoni to Miele.

At the beginning the group wanted to make a technology based project, that is why we teamed up with ReMoni, a company that specialises in making technologies that helps obtain a more sustainable living by making sensors that monitors resource usage in buildings, small business, agriculture, households and more. ReMoni offered to share their newest invention, a energy harvesting device that is strapped onto an electrical cord and thereby harvest the energy around it to drive a sensor or similar. This technology was still in the development phase and therefore not tested.

As the project started we began looking more into the technology and started ideate on where this technology could be used, as ReMoni already was focusing on how to use it in the industry, we wanted to focus on households and private homes. After a few days of ideation without the precise numbers of how much energy this harvesting device could produce, ReMoni send some more insights which showed what the device was capable of. After investigating the patent and researching on low energy devices it was clear that the harvesting device wasn't able of producing enough energy for any of our ideas or being placed where ReMoni had described in the first place.

This led to reconsidering what we wanted to do in our project and if this was the right way to go. After talking to our supervisor, discussing the situation, we made a decision on finding a new subject for our master project.

This time we decided to go for a project that was based on mutual interest, that is why when we saw the design competition for Mieles 50 years anniversary we knew that this was the way to go.

MIELE INTERVIEW

Interview with Asger Bache Jensen at Miele, Glostrup, 22/3 2016.

Torben: Sådan, så kører den.
Anne: Okay, fedt.
Asger Bache Jensen (ABJ): Nede på Milanomessen, der er Miele repræsenteret på standen selvfølgelig. Der lancerer vi en helt ny designlinje, som er superfed altså, virkelig lækker, så så… også rigtig god til at integrere i køkkener og sådan nogle ting og sager, så det er selvfølgelig spændende, men vi har også inde i midtbyen en særudstilling om fremtidens køkken, som er ekstremt spændende og hvis I tilmelder jer… har I tilmeldt jer vores nyhedsbrev på nettet?
Anne, Torben: Nej.
ABJ: Det må I lige gøre, for der kommer der pressemateriale ud omkring innovationslab og sådan nogle ting, som vi har en større ting omkring nede i Milano og det er vildt spændende, altså…
Anne: Ja…
ABJ: Der ligger også allerede, gad vide om ikke man på den internationale youtubesite faktisk allerede nu kan finde… omkring de tanker der er om køkkenet i fremtiden og sådan noget, interaktion mellem bruger og produkt og sådan nogle ting.
Torben: Ja.
ABJ: Så det er i hvert fald værd at kigge ind i, så… Men jeg kender jo ikke jeres problemformulering eller hvad man nu kalder det i jeres univers…
Anne: Nej, nej… det kalder vi det ja, øhm, vi har sagt at vi vil gerne lave fremtidens Miele køkkenkoncept, så det er et helt køkkenkoncept.
ABJ: Det er simpelthen sådan det er.
Torben: Ja, det er i hvert fald det vi stiler efter.
Anne: Så ender det så nok med at vi kommer med et helt køkkenkoncept, men så dykker ned i en hårde hvidevare højst sandsynligt.
ABJ: Ja.
Anne: Der er ikke mere tid i forhold til vores deadline.
Katrine: Nej, vi kan ikke nå at detaljere det hele.
ABJ: Nej nej.
Anne: Så og så har vi sagt det er for 2025, så det er 9 år frem.
ABJ: Så vi er et godt stykke derudaf, ja.
Anne: Yes, og så den anden ting, vi har valgt, at have som vores hovedemne, det er at have fokus på støj. Både visuel støj og… hvad hedder det… lyd.
Torben: Lyd, ja.
Anne: Sådan at…
ABJ: Altså i brugslyd i produkterne…
Anne: Ja.
ABJ: Under drift eller også kvalitetslyd, når man lukker døren…
Anne: Begge dele, oplevelsen generelt.
Torben: Hele oplevelsen, ja.
ABJ: Det er meget skægt, helt tilbage i… hold da op, 1998, 1999, 1998...
Anne: Ja.
ABJ: …. der afleverede jeg cand.merc.-opgave med designlyd som hovedfokus omkring produkter og kvalitetsindtryk, man fik, når man afleverede… altså, når man solgte en bil, for eksempel, når man lukker døren, det oplevelse det giver, når man
Anne: Ja, det er rigtigt. Men øh, sådan noget er der jo meget fokus på ved ovne og

køleskabe allerede jo, men så snakkede vi også lidt om at det kunne være sjovt og lige lave en vask til jer, måske.
ABJ: Ja, men altså vi er jo sådan her (breder armene ud), vi glæder os bare til at se, hvad der kommer.
Torben: Ja.
ABJ: Vi vil selvfølgelig gerne afklare spørgsmål og vi vil også gerne give jer et indtryk af de værdier, som er vigtige for Miele også fordi, hvis det er noget, der en dag skulle vise sig at have gang på jord og det var noget, man kunne præsentere for vores øverste ledelse, så… så skal man helst ikke være gået helt skævt af, hvad der er vigtigt for dem.
Torben: Nej.
ABJ: Så… så det vil jeg selvfølgelig give et par ord omkring. Så… så det er, det er det. Men det er da en superfed opgave.
Anne: Ja, bestemt.
ABJ: Altså… det er jo også… det er jo når man er studerende, man får lov til at lave det rigtig sindssyge opgaver, og så når man kommer ud, så er der jo flere begrænsninger på hvad man skal, ikke… så… og det kan vi se i de grupper, der deltager i det her, den her konkurrence, det er jo også andre retninger end design. At det bliver jo meget ambitiøst også, altså det er jo helt, hold kæft altså, så det er jo vildt spændende at høre hvilke tanker, der kommer ind udefra, vi sidder jo her i vores egen lille osteklokke
Torben: Hvor mange andre deltager, hvis man må spørge om det?
ABJ: Der er omkring 25, som deltager i det her, total set, så det er…
Anne: Mange.
ABJ: Og lad mig sige sådan, når man nu har talt med, nu har jeg er talt med de fleste, så omkring 20 virker… altså… med nerve engagerede i projektet, ikke.
Anne: Nå, det er da dejligt.
ABJ: Ja, men det er fedt, det er vildt fedt og det er klart at, at, når man sidder her, hvor jeg sidder, så… der er jo nogle af studierne, som er businessstudier, hvor man vel mere tænker, hvordan kan Miele tjene flere penge i fremtiden, altså, hvad er det for nogle ting og sådan noget, så det er jo lidt en anden vinkel på det.
Anne: Ja.
ABJ: Og så har man de grupper som er… er… der hvor I er med, hvor det er meget visuelt og hvor man ligesom… det er sådan her vi tænker, det skal se ud…
Torben: Ja.
ABJ: Så det er selvfølgelig det sjoveste, men det andet er mindst lige så relevant. Også for…
Anne: Så kan det også være de kan kombineres.
ABJ: Så, så, superspændende, superspændende.
Anne: Ja. Og lidt om os som personligt, så er vi fra Aalborg Universitet, vi er i gang med vores afgangsprojekt, som industriel designere, så det er lidt spændende, vi er færdige til sommer.
ABJ: Simpelthen til sommer.
Torben: Ja.
ABJ: Og så skal I ud…
Torben: Jaaa…
ABJ: På det rå arbejdsmarked og finde… har I så nogle praktikpladser og sådan noget, man er I undervejs eller…
Anne: Ja.
Torben: Vi har været…
ABJ: I har været.
Katrine: Sidste semester var alle i praktik.
ABJ: Okay.

Anne: Og der hvor vi var, jeg var ved Jacob Jensen Design.
ABJ: Yes. Han skal holde med at lave, altså… jeg kan godt lide Jacob Jensen, altså nogle af hans B&O…
Anne: Jeg synes deres køkken er sejt.
ABJ: Det dér, der går ind i bunden, ikke? Det er også lækkert, især hvis man rører ved det, fordi kvaliteten er superlækker og måden det hele åbner og lukker på og sådan noget… Men han, nogen gange, så har de altså ligesom adapted design fra noget og så skal alting se ligesådan ud, lige meget hvilken produktkategori, de er gået over i… eller, der er de sådan… der kan man blive sådan lidt jaja, vi ved godt der skal være genkendelighed, men det behøver ikke være helt det samme…
Torben: Sort og stål.
Anne: Nej, de prøver faktisk at få lov til at lave noget andet for kunder, men kunderne vil bare have det andet.
ABJ: Det er skægt nok… jeg har lige købt deres gamle pladespiller, som jeg også have i 80'erne, den har jeg så købt tilbage, den er totalt lækker, altså det… det synes jeg er vildt cool…
Anne: Jeg elsker de der slidere…
ABJ: Jaja, jamen det er sådan helt…
Anne og Torben griner.
ABJ: Så… jamen det, det er da et fedt sted at være i praktik, hvor har I andre været henne?
Torben: Jeg var ved en lille tegnestue i Århus, der hedder Says Who, der tegner møbler til… øh, Ilva og Bolia og…
ABJ: Okay, altså simpelthen møbler til øh… masseproduktion eller sådan…
Torben: Ja, middelklassen, så det er ikke sådan helt masseproduktion, som Jysk og Ikea og sådan nogen, men semi-masseproduktion, ja.
ABJ: Altså sådan, kvalitetsmøbler til en fair pris.
Torben: Ja, det er deres målgruppe…
ABJ: Jaja… Det er jo også et sted, som er et sandsynligt sted at ende, hvor man ligesom siger, okay, der skal laves nogle møbler…
Torben: Ja, der er høj produktionsrate der, i hvert fald…
ABJ: Og hvor var du henne?
Katrine: Jeg var i Kina…
ABJ: Du var simpelthen i Kina?
Katrine: Ja, universitetet har en aftale med et firma, der laver CNC-maskiner og…
ABJ: Og hvad er CNC-maskiner?
Katrine: Fræsere…
ABJ: Okay, sådan noget stads der.
Katrine: Ja, og vi var så på vores eget lille projekt, vi skulle lave turistting til… det er en lille by, der hedder Bengbu, hvor de vil gerne udvide deres turisthalløj, så…
ABJ: Okay, fedt, det er sgu da fedt.
Katrine: Så vi lavede souvenirs til et museum.
ABJ: Hvor længe var du så derude?
Katrine: I tre måneder.
ABJ: Sejt, mand.
Katrine: Ja, det var meget fint.
ABJ: Der var I lige lidt misundelige der, hva'? Haha.
Anne: Ja… Ej, jeg var også en tur i Shanghai, så jeg fik også lige lov til at snuse til…
ABJ: Der ligger også en del produktion derude… jaja, nå, jamen, jeg hedder jo Asger Bache og jeg er marketingdirektør her i Danmark og det hænger sammen på den måde, at vi har jo vores jubilæum i år og det er derfor vi holder den her seance. Og jeg er også vores mand i vores internationale gruppe,

som kigger på indspark til fremtidig produktinnovation og marketingplatforme, alt muligt forskellige ting, så det er derfor vi har fået lov til at lave denne her, hvor vi jo også ønsker at præmien indeholder et… et studiebesøg hos vores designafsnit i Tyskland. Og det er egentlig uanset om man er fra business eller man er fra designlinjer, fordi det er superspændende at være nede og besøge vores hovedkontor i Tyskland og det er en del af præmien er at komme ned der og få insights fra vores store designstudie, det er et kæmpe designafsnit, som er in-house.
Anne: Spændende.
ABJ: Ja, det er vildt fedt, der er altså… for man tænker nogen gange at Miele er meget konservativt, altså det er vi også, det skal virke og det skal være i orden, vi lancerer ikke bare fordi vi kan, det skal også være testet og sådan nogle ting, men dernede for de jo lov at lege og der har man jo ting fremme som jo bliver testet in real life, selvom det ikke nødvendigvis ender med at blive lanceret, så det er et meget inspirerende sted at være. Det er noget af det, som de har brugt nede på Milanomessen, nogle af de ting, som de har lavet derinde i legestuen, der er værd at kigge ind i. Men… men grundlæggende omkring konkurrencen, hvis jeg lige kort skal sige, hvordan det er, så er det jo, I har fået den her beskrivelse, som er meget åben og den er åben, fordi vi gider ikke styre nogen i nogen retning, det er simpelthen bare nogle friske indspark og så kan man hellere, hvis det skulle vise sig den dag, at det her det er noget, der har gang på jord, så vil vi hellere skrabe 10% fra end at komme med noget, der er for kedeligt fra starten af. Der er også nogle kriterier omkring det, at skulle man ønske det, fra jeres side af, hvis I synes I opfinder et eller andet liret, så kan vi sagtens lave fortrolighedserklæringer og sådan nogle ting, inden I ønsker at præsentere nogle ting, det kan vi sagtens gøre. Det vil I i første omgang gøre med mig, og hvis det så er sådan at man bliver en af finalisterne, så ønsker vi jo også at det kan præsenteres i en eller anden form i forbindelse med vores jubilæumsevent i København i oktober. Øh, der kommer forhåbentlig, det ser i hvert fald ud til at kunne lade sig gøre, men der vil Tyskland også stille op med en, de synes det er vildt spændende, at andre udefra kigger ind på deres virksomhed, så vil det være en del af vores jubilæumsfest der, det er en rigtig fed fest, der er koncert og alt muligt andet, så det vil ikke være spild af tid at møde op.
Anne: Nej nej, det er jo dejligt at vide.
ABJ: Så der er knald på der, så… Men grundlæggende er Miele en familievirksomhed og I har jo sikkert læst alt muligt inde på vores hjemmeside, men der er nogle værdier, som er vigtige, der har med Miele at gøre og som er de, hvad kan man sige, krav, der gør sig gældende, de visioner vi har, for Miele og det er at… det er baseret på socialt ansvar i, hvad kan man sige, Tyskland og omkring fabrikker og sådan noget, der har de meget omkring det sociale ansvar er jo ikke så vigtigt ude i landene, der er det jo mere salgsselskaber og salg og marketingfeatures, vi opererer med der, men så har vi, hvad kan man sige, et ansvar for samfundet i almindelighed, så at alt, hvad der bliver sat i gang hos os skal tage udgangspunkt i bæredygtighed, at gøre verden bedre, uden det skal lyde alt for fancy-fancy, så er det et krav for alle innovationer i Miele at man indtænker bæredygtighed som en del af vores processer.
Anne: Men er det ikke også lovgivning fra Europa?
ABJ: Jo, men det er det jo på alle niveauer omkring energy labelling for eksempel, altså, hvor meget forbruger det af strøm og hvor meget vandforbrug er det, alt det bliver styret af EU.
Anne: Også at det kan gå på standby og sådan nogle ting…
ABJ: Ja, alt sådan noget, det bliver nemlig styret af EU, så selvfølgelig overholder vi det, og det gør vi også til overflod. Men det er også omkring materialevalg, det er omkring genanvendelighed, hvad sker der, når produktet det dør, hvad skal der så ske med det, genbrugsmaterialer i hvor høj grad kan vi det, øh, så det er det hele, øh, hvad kan man sige, det her økosystem omkring vores produktion og de produkter, vi laver, som skal være en del af… det er sådan set det eneste krav, der er. Og så er der

selvfølgelig, når vi producerer, nu har vi jo kun vores egne fabrikker, så det kan vi jo styre fuldstændig, men der må jo ikke blive brugt børnearbejde, der må ikke blive brugt… altså, alt sådan noget af ting og sager, men nu har vi vores egne fabrikker, alle sammen købt og betalt af Miele, drevet af Miele, styret af headquarters HR-afdeling, så der er… det kan vi også garantere, men det ville også være et krav, der er ikke noget der hedder "hey, vi kan lige finde en fabrik i Shanghai eller hvor det er og sige hey, kan vi lave nogle billige støvsugere og så sælge dem, sådan fungerer det ikke.
Anne: Så kan du også lige få kopieret den der…
ABJ: Ja ja, jaja, så om natten laver de til naboen på samme fabrik, ikke.
Torben: Ja.
ABJ: Så vi har en enkelt samlefabrik uden for Europa, men ellers så har vi fabrikker i Tyskland og så i Tjekkiet har vi, det er 12 km inde på den anden side af grænsen har vi også en fabrik der.
Anne: Ja.
ABJ: Men altså, alt laves selv øhh.. og vi er pissedyre i produktionsomkostninger i forhold til andre, øh... Nu er det jo ikke en kommerciel opgave som sådan, det er jo en af de problemstillinger vi har med en af de andre grupper, det er at handlen, som skal sælge vores varer, de tjener for lidt penge på det fordi vores kvalitetsnormer gør at kostpriserne er høje og der er selvfølgelig en kant for, hvor dyre man kan sælge produkter… altså, vi kender jo os danskere, pris er jo en faktor. Så… så, men det er mere så man forstår det her, det er et bærende element, Miele har også vundet et hav af sustainability awards og alt muligt andet for at bidrage til samfundet i forskellige sammenhænge, så… så det skal man bare have med inden man kommer med en idé om at bruge ulovligt træ fra regnskoven i sin produktion.
Anne: Jaja.
ABJ: Men ellers er der ikke nogen kriterier som sådan omkring hvad vi må gå ind i, vi må også gå ind i andre brancher, helt nye typer af produkter, sige nej, nu laver vi en ovn, som kan både riste brød og som kan alt muligt, der tænkes meget bredt i vores innovation, man kan sige, vi laver måske 10 innovationsprojekter og et af dem bliver lanceret, så der er mange designere, tekniske designere, som sidder og laver projekter, som så… nå…
Anne: Ja, men sådan er det tit.
ABJ: Og det er ikke anderledes hos Miele end det er hos Terrinovo (?), de laver også masser af forsøg og så røg de sgu ikke på markedet, så får de ikke godkendelse, så er det tilbageløb og så er det sådan det er.
Anne: Ja.
ABJ: Rent praktisk, hvis man lige skal have lidt med der, så er det ligegyldigt for os, hvornår skal aflevere jeres opgave, bare I skal aflevere inden vi rammer september måned, fordi vi vil gerne, øh, ligesom finde ud af, hvem skal I finalen, det skal vi finde ud af der og så vil vi gerne bearbejde noget materiale, så man kan præsentere til festen, altså ligesom… der er koncert, der er host på og alt muligt andet og så er der nogle pauser, hvor der bliver sagt i anledning af jubilæet, så har vi to konkurrencer, der skal… også som en del af festen overrækkes og det her, det er så den ene af dem, så der skal vi have noget tid til ligesom at gøre det klart og.. også dem vi vælger og nominerer, der interviewer vi jo også nogle hos Miele om "hvad er jeres tanker om det", "årh, det er fandme spændende", altså det håber vi jo selvfølgelig det er…
Anne: Det håber vi også.
ABJ: Så det vil vi selvfølgelig gerne, men jeg kunne forstå jeres deadline også er til sommer, så der er ikke…
Torben: Jaja.
ABJ: Og hvis man bliver nomineret, så uanset hvad, så er man inviteret med til vores fest.

Torben. Ja.
ABJ: 21. oktober, det er fredag i efterårsferien, så planlæg en københavnertur, vi holder en fed fest, hvis ellers I også laver et superlækkert oplæg, ikke? Så det er sådan set det, der ligger af kriterier ellers så står jeg for med at kunne skaffe yderligere information end det I har kunnet fremskaffe selv og de spørgsmål I måtte have fundet frem til at I ønsker at have besvaret, så kan jeg selvfølgelig også hjælpe der. Og hvis der er noget, der ikke kan leveres direkte nu, så kan jeg selvfølgelig eftersende.
Anne: Yes, ja. Vi har… vi har jo nogle spørgsmål på forhånd, selvfølgelig…
ABJ: Naturligvis.
Anne: Ja. Sådan lige en hurtig en, vi lige så ude i bogen dér, hvorfor… er der en mening med at i'et er 27 grader?
ABJ: Ja, hehe, det er jo faktisk beskrevet i vores… eh, I kan få en af vores fine jubilæumsbøger med. Den er jo lige kommet på markedet, I kan få en helt nyindpakket, når I går. Der står det beskrevet. Det har jo set ens ud lige siden Miele startede. Miele startede jo for… altså, helt tilbage i det 19. århundrede hedder det jo, og havde nogle andre produktioner før man kom til vaskemaskinen og det… det, hvad hedder det, det kom igennem det der immer besser, det startede allerede før det og logoet så ligedan ud, også logoet med hesten i midten, man kan se derude, som nærmest er et ferrari-logo, det blev også lavet allerede dengang, så det har aldrig været ændret, heller ikke…
Anne: Vi var ude i om det var en fødselsdag eller et eller andet dato…
ABJ: Nej nej, der er ikke noget sofistikeret fin historie og sådan nogle ting dengang, men det har set ens ud lige siden, og det er utroligt vigtigt for alle parter, fordi at det fastholdes fordi vi har så stor genkendelighed på vores brand at vi kan nøjes med at vise i'et, så ved folk hvad det er for et brand vi har gang i.
Torben: Ja.
ABJ: Så vi er rigtig rigtig stærke, vi er et worldwide superbrand. I USA lidt mindre, men ellers er vi worldwide rigtig rigtig store, øh, og meget meget kendte.
Anne: Ja.
ABJ: I Danmark er vi jo så kendte at der er rigtig mange mennesker, der tror vi er en dansk virksomhed.
Torben: Nå, okay.
ABJ: Så vi er sådan rigtig veletablerede der. Og vi har jo også nogle præferencegrader, altså folk de foretrækker, som vi spørger, uanset pris, hvad vil du så have, så kommer det bare "jeg skal have Miele", altså… Det forpligter selvfølgelig også, men det er der, vi er med vores brand, så det er, det er meget meget kendt.
Anne: Så har vi også et med hvor… I lavede hele køkkenkoncepter, gjorde I ikke det, med elementer og...
ABJ: Det gjorde vi jo, det er nemlig rigtigt.
Anne: Hvorfor stoppede I med det?
ABJ: Jamen, det var en værre ballade. Det var jo sådan… vi laver jo indbygningsprodukter og dem vil vi gerne sælge rigtig mange af og så havde vi vores eget kitchen studio, blandt andet i København, som i alle andre store byer, men så de andre køkkenforhandlere begyndte at sige, hey hey, nu stjæler I jo vores primære forretning, for så valgte folk også at købe køkkenet hos os og så var man pludselig ude i en konflikt med de andre køkkenforhandlere som jo egentlig skulle sælge vores produkter, eh, og så gik man ud og sagde at det her det… det var ikke engang tanken, altså, det var egentlig bare for at kunne illustrere, hvad skal man sige, sådan her er det integreret fedt. Det ville man ikke gøre i dag, altså, der er ingen der udelukker at vi kunne finde på at lave et showroom i København, for det kan vi sådan set sagtens finde på, men det vil aldrig være med salg af andet end vores produkter. Det

vil det aldrig være.
Torben: Tænkte nok at det var af den grund det blev stoppet.
ABJ: Ja, men det var det, det gav heller ingen mening, altså, vi havde et eller to designs, så det kunne slet ikke efterleve, hvad folk reelt set vil have, men det gav en frygtelig masse konflikter med forhandlerne i andre dele af forretningsområdet, så det stoppede. Jeg er heller ikke sikker på vi har tjent en bøjet femøre på det, så…
Anne: Hvor lang tid kørte I egentlig med det?
ABJ: Århh, nu har jeg jo ikke været her i så mange år, det er jo lang tid før min tid, så… det stoppede, det må have været, jeg tror, vi har kørt med det i omkring 20 år, dengang vi havde en køkken… decideret køkkenfabrik i Tyskland, der producerede elementerne til os, siden da gik den fabrik så over og producerede vores permanente udstillingsmateriale, vi har masser af shop-i-shop-løsninger rundt omkring, ikke så meget i her, fordi det er jo vores eget, men hvis I går i Elgiganten eller Power eller Punkt1-forretninger, så i de største af dem har vi en in-store løsning med møbler som vi er kommet med, for at kunne udstille vores produkter bedst muligt. I kan, vi kan lige gå en tur i kælderen, så kan I se hvilken type elementer det er, vi bruger…
Torben: Ja.
ABJ: Så… så det producerer vi stadigvæk, men ellers så er vi ude af det der og der er ikke noget salg i det, det er ikke noget som kommercielt værktøj.
Anne: Nej. En anden ting, det er også, hvor meget brugeranalyser laver I som sådan?
ABJ: Det er jo meget forskelligt, øh, altså, Tyskland laver rigtig meget. Og der er landene jo en stor del af, så jeg indgår jo i den skandinaviske analysegruppe på vegne af hele Miele.
Anne: Ja.
ABJ: Og så er der jo en repræsentant fra Asien og en fra Amerika, en fra Centraleuropa og en fra Sydeuropa og i de grupper så definerer vi så… og der er der nogle gange, hvor Skandinaviens rolle er fuldstændig irrelevant, så der nedtoner vi, der er vi slet ikke med, men andre gange er vi vigtige, så der er vi selvfølgelig fuldt integrerede i det arbejde og nogle gange har vi sær-problemstillinger som udelukkende er skandinaviske og så laver vi dem her, øh, for der er nogle ting omkring skandinaver, som er helt anderledes i forhold til resten af verden. Nogle af de ting, som virkelig gør sig gældende og her er Danmark helt sygt langt foran i forhold til nogle andre lande, det er sådan noget som parfumebrug i vaskemidler, vi har jo også vores egen vaskemiddelserie, der er danskerne altså, det er 75% af danskerne som ved lejlighed ikke bruger parfume i deres vaskemiddel og 44% kunne aldrig finde på det. Men vi har jo kun fra Miele, kun med parfume og kun med alle mulige mærkelige tilsætningsstoffer, som Astma-allergi forbundet advarer imod og sådan nogle ting og sager. Og det betyder jo, at vi er nødsaget til her ligesom at kæmpe kampen for at sige, hey, nu må I simpelthen, Danmark er bare foran resten af Europa, så I kan lige så godt gå i gang med den udvikling, fordi det vil også komme til de andre lande og det vil også komme ind i EU, fordi der er en masse ting, der bliver forbudt fordi det er allergifremkaldende og sådan noget. Så derfor har vi lokalanalyse, vi har selvfølgelig al markedsanalyse lokalt, altså markedet, hvor meget sælges der, hvad er vores markedsandele, alt det der, det har vi selvfølgelig også masser af.
Anne: Yes. Grunden til vi spørger, det er fordi vi fokuserer meget på den travle bruger, hvor det bare skal være nemt og nemt at dække det til og sådan nogle ting, om det også er sådan nogle…
ABJ: Det skal være nemt at dække det til, hvad mener du med det?
Anne: Altså, for eksempel, de køkkener vi har set i dag, det er tendensen at det skal være nærmest et rum, hvor du bare kan dække det til, men stadigvæk køkkenalrum for eksempel om man kunne også føre det videre ind i hårde hvidevareprodukter, måske.
ABJ: Ja, jamen altså, der er… altså det er jo hide away-løsninger, som de har, flere af producenterne,

øh, det er jo svært at vide om det er en fremtidens vej eller ikke, det ved vi ikke...
Torben: Eller om det bare er en dille lige nu…
ABJ: Ja, om det bare er et modefænomen og så kører vi det nu, fordi ikke… det er da rigtigt nok, jeg vil også derhjemme være glad for at min espressomaskine den kunne gemmes af vejen, når jeg ikke skal bruge den, men der er også nogen, der giver tilbagemeldinger om at man misbruger meget plads til det, fordi de her låger forhindrer forskellige ting og sager så… men men men den tendens har der været, øh, fra for eksempel, hvis man har været på Milano for 2 år siden, så hos de rigtig store, Boffi og alle de her mærker, der var der rigtig mange hide-away-løsninger af forskellig art, ikke nødvendigvis de store skabe som vi kender, men ned foran ovnen, der røg jalousilågen lige med, altså, i det hele taget, så det hele blev lukket til, så der slet ikke var nogen synlige ting. Det er ikke noget, vi er fan af, vi synes jo at produkterne selv kan tåle at blive set, men der er køkkenproducenterne jo vilde med at de kan sælge en ekstra låge og de kan sælge nogle flere ting…
Anne: Jaja.
ABJ: Men der er ingen tvivl om at en svær grad af integration i køkkenet er en tendens vi virkelig har set… Altså, det skal være planforsænket kogeplader og det skal være, altså der er virkelig mange ting, som så at man får fjernet mange elementer. Der skal heller ikke være håndtag på køkkenelementer, så vores opvaskemaskiner skal jo også være gearet til grebsfrie låger, som jo skal have åbnesupport af en eller anden art, øh, vi har knock-to-open på vores låger, men der er mange andre der har push-to-open og hvad de nu kalder det, altså forskellige løsninger, som gør at produkterne kan integreres bedre i vores. Vi har også lige fået ny køleskabsserie, hvor håndtagene også sidder skjult i døren, så de ikke stikker ud, øh…
Anne: Ja, også fronter på amerikanerkøleskabet, ikke? Det hørte vi i hvert fald fra Unoform at det var helt nyt fra Miele.
ABJ: Ja, men I kan faktisk, de er lige sat op i udstillingen i dag, jeg ved ikke om folien er taget af endnu, men de er lige sat op i dag. Der er helt nye tavlefronte, der er også, hvad hedder det, hvid glas som er superlækker, som passer til vores hvide ovne, som passer til når man har sådan et hvidt køkken, så er det bare fuldstændig brilliant white og det ser vildt fedt ud, øh, også i den sorte udgave, så der er… der arbejdes meget i materialer på den måde. Det kommer der også noget nyt omkring på vores indbygningsprodukter i Milanomessen, der er der yderligere tiltag til at integrere indbygningsprodukterne yderligere i forhold til hvad vi kender i dag.
Anne: Ja. Øhm, vi har faktisk også taget et lille papir med, vi skal jo også lave swot-analyser og så videre…
ABJ: Ja, det er de I skal, gode gamle swot, jeg kan love jer at det virker, det er ikke en uge siden at jeg skulle lave en swot-analyse, så det får man altid i brug.
Anne: Og det er jo til at vide, men vi har i hvert fald… jeg ved ikke om I allerede har, jo, selvfølgelig har I en i begrænset omfang og så videre, øhm, om der er nogle hovedkonklusioner, ja, vi er jo tegn og gæt og så videre, så… (lægger swot-papiret frem), om du har lyst til at inddrage os i jeres…
ABJ: Det kan vi, det kan vi sagtens gøre, men nu er vi jo specifikt i et køkken?
Anne: Ja, lige præcis.
ABJ: Øh, når I siger swot, så kan man jo anskue det på forskellige vis, altså på vores køkkenprodukter, som vi kender det, det kan være fremtidige konkurrenttiltag, som kan blive trusler i fremtiden, så det er jo meget bredt med swot-analysen i det her, og der kan man jo så sige normalt, når vi laver en swot, så er der jo rigtig meget, der ligesom er ren businessorienteret, altså ren "de andre har lavere priser, vi bliver..." også videre, det spiller måske en mindre rolle…
Anne: Yes, vi skal også have businessaspektet med nemlig.
ABJ: I skal også have business…
Anne: Yes, det er mere der hvor vi bruger den. I forhold til trusler og så videre, hvad der kommer ind

af…
ABJ: Ja, men der har vi masser…
Anne: Ja.
ABJ: Så… så hvis man tager en swot-analyse for Miele som sådan, så kan man så sige de primære styrker, vi har, det er vi er et superbrand, altså brandets historie, troværdigheden omkring produktet, at de her præferencegrader, som vi har, altså på at 96% foretrækker et Miele-produkt, hvis de står og bare kan vælge uden at tænke på pris, så… eh, alt omkring det, der er vi rigtig rigtig stærke. Vi er rigtig stærke på produktet, det er også et produkt som har den kvalitet, vi siger, vi går altid ud og underspecificerer og siger, vores vaskemaskine bruger så meget energi, så er det testet under alle former for forhold, så vi ved med sikkerhed, det her, det overholder vi. Uden at trække en parallel til en anden tysk virksomhed, men Volkswagen for eksempel, deres dieselskandale, der har de jo været ude at sige, hvis vi er i et vakuumrum og alt muligt andet, så kan bilen teknisk set godt køre op til et eller andet antal kilometer, hvis man ellers limer dørene til og fjerner hjulkapsler og hvad ved jeg og så laver man specs ud fra det, så på den måde, der er der en troværdighed omkring Miele, som er helt exceptionel, så vi er jo en supersolid virksomhed. Det er sådan at Miele skylder ingen penge væk, og I skal tænke på at Miele er en virksomhed, der er i 47 lande, Miele har ingen gæld, det er forbudt at lease biler som et datterselskab af, fordi Miele har ikke nogen gæld. Miele har sin egen bank, som man kan låne af, hvis det er nødvendigt, det kan der jo være ved etablering af markeder, så vil man køre med underskud i noget tid, der låner man så af Mieles hovedkontor og ikke af en bank. Det er klart, at det er jo en styrke, som ingen kan matche. Altså, det… også fordi, det er jo også vores svaghed, fordi vi kunne gøre ting billigere reelt end at køre egenfinansiering på alting, altså det er jo helt hen i vejret. Reelt set ville man ikke gøre sådan, altså jeg har en firmabil, den er købt og betalt, det giver ingen mening, men det er den, for sådan gør man hos Miele, men det er igen alt sammen for at støtte op om troværdigheden af brandet. Der må aldrig være tvivl om, hvorvidt vi også er her i morgen, vi stiller jo også reservedelsgarantier, som stikker helt af i forhold til konkurrenter, altså, de andre kan jo lancere noget, som… "nå, garantien er udløbet, hva'? ja, vi kan ikke engang garantere dig reservedele", det har vi også garanti for i en 10-årsrække efter du har købt dit produkt osv osv., så der er meget soliditet omkring, så økonomi, klart.
Anne: Ja. Så har vi også omkring politik, er der nogen princip der udover det skal være bæredygtigt?
ABJ: Jamen, der er vi jo knivskarpe, altså, der kan man sige vi… der sker jo det her med Volkswagen, altså dieselskandalen, alle tyske virksomheder bliver bare lagt under pres, hvad sker der, snyder I alle sammen på vægten. BMW og Mercedes og dem alle sammen, de ryster jo alle sammen, hvad fanden, har vi styr på vores processer, Miele gik ud direkte dagen efter og sagde, I kan også finde det på nettet, I er velkomne alle sammen, vi har ingenting at skjule, vi lukker alle fabrikker op, alt er dokumenteret. Og det er jo den her igen med at vi specificerer vores specs, så det betyder at vi kan altid med garanti sige, prøv at hør her, vi har ren røv at trutte i, hvis man kan bruge det udtryk omkring det. Og der er også det her, vi spiller en rolle i det social community omkring vores fabrikker. Det seneste tiltag i Tyskland er ved hovedfabrikken, at vi etablerer en børnehave i kommunen ude foran fabrikken, sådan så at dagligdagen for, der er jo 4000 mennesker, der arbejder på den fabrik, så dagligdagen for folk, som har fået børn, fungerer langt nemmere i dagligdagen med udvidede åbningstider i tilfælde af og sådan og sådan og sådan… så der er vi superstærke, altså, helt vildt.
Anne: Ja. Yes…
ABJ: Ja!
Anne: Haha. Medmindre du har nogle andre ting...
ABJ: Men du kunne jo godt tage denne her [økonomi-brikken] og så sige, vi kunne jo godt gøre tingene billigere…
Anne: Ja, det er rigtigt, den ligger lige på midten…

ABJ: Selvfølgelig er det superstærkt at sige, vi har boksen og det kører bare bom bom bom, men det er også, altså, det giver ikke rigtig mening, altså…
Anne: Nej, men den giver også nogle… den er sådan lige i midten faktisk, den giver jo også nogle muligheder, at hvis I kan låne af Miele i stedet for…
ABJ: Ja, men det er helt… det er en styrke og det er selvfølgelig en mulighed, men du skal jo tænke på… hvis den var brugt anderledes så ville det jo åbne for yderligere opportunities for så ville vi ikke binde likvider i noget som vi ikke ville bruge, så…
Anne: Det kan også være et benspænd, ja… Yes. Så har vi, vi har også en, der hedder materialer, for eksempel udvikler I selv på materialer eller kører I bare i… eller ikke bare, men…
ABJ: Altså, hvis man besøger Mieles fabrikker, så vil man opleve mærkelige ting, blandt andet er det sådan at vores vaskemaskinefabrik, der… altså, selv værktøjet, der laver vores reservedele, det værktøj laver vi også selv, altså vi laver simpelthen hele værdikæden helt tilbage, så alt det her omkring materialer, det er en styrke, så længe vi snakker kvalitet, så længe vi snakker gennemtestethed, viden omkring materialer, brugen af den historie i markedsføringen, det er et plus. Det er et kæmpe minus, når man ser på økonomi for det er pissedyrt at gøre det så eksklusivt som vi gør det hos Miele, så i alt hvad vi skal forklare omkring med brandet og sælge det og så videre, så er det en styrke, men det er bare dyrt, altså det er det.
Anne: Ja. Hvad med i forhold til, nu snakker du meget om bæredygtighed, men laver I også helt ned på kemikalier?
ABJ: Ja.
Anne: Jeres egne materialer?
ABJ: Ja, det gør vi, så langt ned vi kan, vi har nogle få på, øh, vi har nogle underleverandører på nogle af vores detergents, altså vaskemiddel og nogle duftflakoner, som puttes i tørretumblere og sådan noget, der har vi underleverandør på, men det er vores ingeniører, der sidder på deres fabrik, så det er ikke "udfra nogle specs send os det her", der er det vores ansatte, som er allokeret på de her fabrikker. Det er faktisk udelukkende på det der hedder RSC-produkter, altså consumer produkter, det vil sige opvasketabs og sådan nogle ting. Der ryger man over i at der er det et samarbejde, hvor vi har kontrol med det, på de andre, der laver vi det selv og følger det helt tilbage, altså, der har vi jo også folk helt ude hos råvareleverandørerne at kontrollere at det også er lavet ordentligt og sådan noget.
Anne: Ja, men det er ikke nede i sådan plasttyper eller aluminiumstyper og alt muligt forskelligt… blander I også…
ABJ: Jo jo, vi er helt derude, jo jo, det er jo kæmpe batches, der leveres til os og der har vi vores mand med hele vejen, altså der er vi helt ude ved råvareleverandøren og godkender hele proceduren, så… men men om det er en styrke, det er det jo, når vi skal snakke om at sælge nogle varer og ligesom forklare hvorfor… men jeg vil sige, vi går også lidt længere end man, altså, men vil stadig kunne sige at vi var gode uden at gå helt så langt, som vi er her, ikke. Og så vil det jo også altid være sådan at lige meget hvilken virksomhed, du kommer til, så vil der være et eller andet, som vi ikke kan kontrollere, altså der er jo, så er det emballagematerialer, altså, hold kæft altså, underleverandører til en papirvarefabrik, altså så er der virkelig langt derud, ikke. Så det er sporbarhed man skal have omkring, hvor kommer materialerne fra, det gør vi så meget som det kan lade sig gøre og dokumenterer det også, men der er også grænser for hvad der kan…
Anne: Der må også være meget logistik.
ABJ: Jamen, det er jo helt vildt, der er jo et helt hold af folk, der rejser jorden rundt for at følge de her ting hele tiden.
Anne: Ja. Øhm, kan du nævne nogle af de sidste nye materialer i forhold til køkkenet, hvis det er?
ABJ: Altså, der hvor vi er gået over inden for de seneste par år, det er jo meget brug af glas, altså,

hvor vi jo… induktionsplader er jo også glas og sådan noget, fint nok… nu indgår glas jo meget mere i designet af ovne og derfor har vi jo haft ekstreme krav til glasholdbarheden i det her, altså kvaliteten af de glasoverflader, vi har haft, når vi nu er ude at sige 20 år, så skal det ikke være sådan at bare fordi der er en eller anden knægt, der er sur en dag og kaster en kop hen mod ovnen at hov, så gik den sgu i stykker, ikke. Altså, det kan vi jo ikke arbejde med, så… så der har vi været igennem nogle procedurer om at få den kvalitet som kan testes til hård brug i 20 år. Øh, og det har været en kæmpe procedure for, altså, det design, vi har, der er jo rigtig mange, der kopierer det. Rigtig mange, men vi kan jo godt sætte en Miele ovn op her og så kan vi sætte en Witt ovn op herovre og så kan vi stå og kaste bolde, golfbolde efter og så kan vi se, hvornår den ene begynder at smadre og hvornår den anden gør og der er kæmpe forskel, men man kan jo få det til at se ud, altså, du kan sagtens få en glasovn, som er sort, superflot, som koster det halve af en Miele, selvfølgelig kan du det, men det er så ikke den samme proces den har været igennem med materiale. Ja, og en hel del andre ting har vi jo også på materiale i udvikling inden i ovnene, hvor vi har det, der hedder Perfect Clean emalje på alle vores ting, som er ??? (37.06) teflon, problemet med teflon er jo at det bliver slidt over tid og der har vi jo et materiale som gør at du kan stå simpelthen med metalværktøjer og skrabe og alting uden at det går igennem emaljen og det er jo også nogle af de processer som har været rigtig rigtig svære og lang tid undervejs. Og det er ekstremt vigtigt i vores køkkenprodukter.
Torben: Du sagde lige, at man bruger glas på induktionsplader, hvorfor… kan man ikke bruge andet, altså, induktion burde jo gå igennem mange andre materialer.
ABJ: Ja, styrken ved glas er vedligeholdelse, altså rengøringen af det, hvis du vælger andet materiale, så kommer der brugsspor i langt højere grad end der gør på glas. Der kommer også slidmærker på glas, selvfølgelig gør der det og man kan også slide det, men glas har den her renlighed over sig, som næsten ingen anden materiale overhovedet kan leve op til.
Torben: Men hvis man brugte corian eller andet, som alligevel bliver brugt i køkkenet, altså…
ABJ: Jaja, altså, corian ville ikke kunne holde til det pga. varmedannelsen, den er helt ekstrem, men altså det kunne se fedt ud selvfølgelig, men der laver vi jo hvid glas i stedet for, altså der har vi jo også produkter, som er designet på den måde, som på en eller anden måde kan falde ned i det her… man kan desværre ikke, du kan ikke få det i corian,øhm, så det ville kunne bruges…
Torben: Kunne holde til varmen… nej, okay.
ABJ: Der findes nogle enkelte kogepladeproducenter i super high-end køkkener, det er meget mærkeligt, men altså, hvor der i corianpladen simpelthen laves udskæringer til kogezoner som så er nedfældet i den, så det er meget mindre glasstykker, det vil sige det bliver for det første ikke så synligt og det bliver ekstremt, hvad kan man sige, holdbart fordi det er sådan en lille flade, man arbejder med, men altså det er mere et showroom køkken end det er et brugskøkken, fordi det der sker, også bare ved planforsænkede kogeplader det er, at når produkterne slider fra kogepladen til bordpladen, så sker der altså nogle slidspor også på, ja, på begge dele, men faktisk i særdeleshed på bordpladen som gør at det, der lignede en million, da du købte det, det er ikke helt det samme bagefter.
Torben: Okay.
Anne: Øhm, så er der en, der minder lidt om, det er teknologien… der snakkede vi lidt om induktion…
ABJ: Ja, her er vi svagere, ikke, altså det bliver jeg nødt til at sige, der er vi efter, ikke på det her helt fundamentale bageresultat og alle de der ting, der er vi helt fremme, altså, men når man kommer til kan jeg integrere min ovn med min telefon og kan jeg downloade software til min ovn uden at skulle… der er vi way off, det ved vi godt, men der, der er vi efter.
Torben: Er det et valg, der er truffet eller?
ABJ: Faktisk, det er lidt ris til egen røv, det der sker her, fordi alle har jo vidst det her, at det skal man kunne, men Miele igennem tiden valgt at sige, vi laver det selv, dvs. så begynder man at opfinde en

teknologi som allerede er gennemprøvet derude med egen hardwaresystemer, du skal købe til dit hjem og vi havde haft et koncept, der hed Miele at home, som egentlig er et fedt koncept, der bliver også udvidet her henover året via wifi, tidligere så skulle du lave dit eget netværk derhjemme til kun den her brug og det er simpelthen en kæmpe svaghed at man ikke lige siger, okay, prøv at hør her, wifi, det er jo ikke en integreret del af vores produkt, det er en bæreplatform for data frem og tilbage som er herfra og til evigheden, det er jo ikke noget forbigående fænomen, så det, der må jeg sige, der er vi slet ikke hvor vi skal. Hvis I følger vores presseseancer omkring den messe, der kommer, så vil I se at vi er længere end man tror, altså vi er meget længere end man tror, men vi er efter de andre, fordi Samsung f.eks. som laver elendige ovne, de kan proppe hele deres smartphone ned i, så kan den sige i hvert fald, den kan alt og du kan opdatere og downloade opskrifter og du kan alt muligt, det kan du ikke hos os.
Anne: Nej. Vi snakkede også om hvorfor jeres produkter ikke indbyrdes i det mindste snakker sammen f.eks.
ABJ: Jamen det kan de jo, det er de jo så også forberedt til, men på den gamle teknologi som er Mieles egen baserede…
Torben: Vi tænkte sådan noget som emhætte og kogeplade som altid hænger sammen, hvorfor der ikke er en fjernbetjening til emhætten der sidder nede i kogepladen f.eks.
ABJ: Nå ja, jamen så har I jo ikke læst på vores produkter, for lige præcis på denne her, der har vi faktisk det, der hedder Connectivity, som er fabelagtigt og det betyder at når du tænder kogepladen, så registrerer emhætte selv, hvor mange zoner er i gang, hvor meget er der skruet op, så skruer den selv op og ned for sugeevnen og kører også et kvarter efter, som den reelt set skal gøre, efter du har lavet mad og så stopper den selv efter det der kvarter. Så lige præcis der, superfeature, men der er ikke en eneste grund til at den ikke bare er baseret på en wifiløsning, der taler den direkte med en eller anden mere sådan bluetooth-agtig system, det der, mens det helt trejde system, vi har, det er sådan et, du skal købe den her boks og sætte den op derhjemme, så kan du købe et modul til din ovn og det skal du sætte ind bagi og så kan du ellers gå online, altså totalt 80'er-agtigt nærmest, altså, det går jo ikke.
Anne: Nej, okay, fordi vi snakkede med dem fra Boform i går, de snakkede, de var heller ikke, de vidste det heller ikke, at Miele emhætte og Miele komfur kunne…
ABJ: Det er jeg godt nok ked af, hvis Boform ikke ved det, må jeg så sige…
Anne: I hvert fald lige ham vi snakkede med
ABJ: Ja, men der har vi da en mand, der må være på opgaven. Lige præcis emhætte og kogeplade, der er vi superskarpe og man må også sige, hvis vi går ind og ser på test af emhætter og sådan nogle ting, der er vi totalt overlegne, altså, det er vi, det er vi, i alle henseender, så der er vi meget skarpe, men det er vi slet ikke på ovne, det er vi slet ikke på, vi laver super mad inde i vores ovne, vi har kombinationsovne, vi har alm. ovne, klimaprogrammer og alt, alt er superliret, men der er ingen snakken mellem maskinerne, der er ikke det, der skal være og det kommer over de næste par år, øh, men det burde jo være klar allerede nu, altså det forventer vi jo i hvert fald fra dansk side af, der har vi jo alle sammen sådan en her i en eller anden form (han vifter med sin smartphone), øh og det er jo helt mærkeligt at man ikke kan styre sine ting, altså…
Anne: Ja, eller bare på displayet, ja, nu skal du sætte den i dampovn eller, det kunne godt være de indbyrdes kunne snakke sammen…
ABJ: Ja ja, lige præcis, ikke også, men det kan lige præcis kogeplade og emhætte kan så godt og det er virkelig en feature, som når man får den præsenteret og man også prøver den i praksis, det er vildt fedt, altså, det er sådan virkelig, så står man der og så har man lavet mad og så går der, gud, jeg skal da også have tændt emhætten og alle de der ting og sager, så nej, det der er vi ret skarpe, men det bliver også ændret til at blive wifi-baseret fremadrettet, så det skifter i stedet for det der bluetooth.

Men vi er ikke banebrydende på teknologien. Men vi bruger til gengæld også kun gennemtestet teknologi, så det er meget sjældent, vi lancerer noget, som vi skal trække tilbage igen, det ser man, det ser man fra andre, øh, og jeg vil ikke sætte navn på, men der er en konkurrerende virksomhed som har det, der hedder en baking zone sensor, tror jeg endda den hedder…
Anne: Hmm, er det Siemens? Næ...
ABJ: Nja, det er det nok lidt alligevel, det er det. Baking sensor og det er jo fint, den kan så registrere hvor meget varmen fordeler sig i ovnen, sådan så den giver det bedste resultat, men de kommer til at trække den tilbage igen og det ved vi kommer til at ske om et år, fordi konsekvensen er det, det er at der må ikke være nogen form for silikone i og omkring ovnrummet og I ved, hvordan det er med forskellige forme, de er lavet i silikone, bagepapir er silikonebelagt, selv den her kant, der går rundt i siden af en ovn, den er silikonebelagt og det, der sker er, at den her sensor, den splintrer og det vil sige at der kommer glasstøv i ovnen og ned i maden, så det ved vi så, det bliver de nødt til at trække tilbage på et eller andet tidspunkt. Og det er bare et tegn på at de er, de udvikler også alle mulige ting, der fungerer, men vi implementerer lidt senere, lidt længere henne i processen ift. hvad man kunne gøre for at undgå den slags ting og sager.
Torben: På den måde kommer I også til at virke lidt bagude, som du selv siger.
ABJ: Ja, det er jo konsekvensen af det, ikke, øh, så og vi kunne jo også, Samsung lancerede en vaskemaskine med 1800 omdrejninger og det kunne vi jo også godt lave, øh, vi ved med sikkerhed, for vi købte jo en af dem og så lod vi den køre i en måned i træk og så brød den bare fuldstændig sammen fordi den motor, altså, ophænget i sådan en bliver udsat for et ekstremt pres og det kan de slet ikke konstruere, slet ikke til den pris, så der vil vi altid stå lidt bagefter. Og det gør vi også.
Anne: Ja.
ABJ: Heldigvis sker der noget snart, men så kommer der jo noget andet fra det andre og så er de foran igen, ikke, altså det skal man huske på. Og Samsung kan vi jo slet ikke indhente, altså, de stikker jo afsted.
Anne: Ja, øhm, det, ja, nu vi lige snakker om dem, så konkurrenter…
ABJ: Ja, det er slet ikke Samsung, som vil være en konkurrent her… det, konkurrenter inde i en swot, det kan du ikke…det kan du ikke helt gøre, øhm…
Anne: Nej, men nu er det også high-end køkkener, vi gerne vil lave…
ABJ: Men man kan sige trusler, har vi nogle trusler fra konkurrenter, det har vi jo... eh, altså, truslen er at alle kan lave en vaskemaskine, som på papiret er en hvid kasse med 1500-1600 omdrejninger bla bla bla… og de kan sige de koster 2400 kr. og vores tilsvarende…
Anne: Ja, og energimærket…
ABJ: Jaja, alting, og… og så laver vi en tilsvarende som vi ved, indeni maskinen er bygget og konstrueret på en helt anden måde, men folk kan jo ikke se det, især hvis de køber på nettet, så bliver det meget sådan nå, hvad for en er hvad, ikke… og det er jo en trussel for os, fordi man står i en situation, hvor folk siger jamen, jeg kan lige så godt købe en AEG, den koster 2500 og Mieles koster 7500, hvorfor skal jeg… det er jo helt vildt og hvis den går i stykker, så kan jeg bare købe en ny, ehh…
Torben: Man kan købe tre for samme pris…
ABJ: Ja, lige præcis, øh, så det kan man sige er en trussel, især i Danmark, hvor pris er… I kommer jo selv fra Jylland, ikke, altså det er… der krejles og der krejles, men man skal også vende den rundt og sige selv i Danmark, der er vores majoritet af kunder bor i Jylland og det gør de faktisk ud fra den devise at de her ting, de holder, de performer, de performer på samme måde igen og igen, dvs. der sker ikke den her wear out effect, hvor det pludselig, jamen det startede meget lækkert, men hov, lige pludselig så ryster maskinen, så hoppede den sgu alligevel lidt rundt og så begynder den at larme lidt mere, altså alle de der ting, øh, det oplever vi jo... vi har haft en mandagsmodel engang

imellem, selvfølgelig har vi det, men det oplever vi jo ikke med vores produkter, så vores kunder vender jo tilbage til os igen og igen, øh… men vi skal jo høre for det, de koster jo det dobbelte, hvad sker der med jer… Konkurrenter på indbyg, altså på køkkenprodukterne, der er Bosch Siemens, de formår at lave ovne som er billigere, som er udmærkede specificerede og hvor de kan smide en masse specs i, altså, hvis vi tager f.eks. udtræksskinnerne i vores ovne, eh… det står så på papiret, der er udtræksskinner, det står der også på Bosch Siemens, der… og der er fem udtræksskinner og vi har kun to eller en… og på nettet, folk kan jo ikke se, de kan ikke mærke det, de kan ikke føle kvalitetsforskellen i det her og det vil man opleve, når man står ved den… men det er en trussel, det her med at det er nemt på papiret at matche vores specifikationer. Og så er der nogle konkurrenter, altså, Bosch Siemens er slet ikke dårlige, altså det skal man huske på, især på ovne, de laver mange fine ovne, de vinder også mange tests, fordi de kan komme ud med noget, som prismæssigt kan trække ned i et andet niveau end vores kan, så…
Anne: Ja, den der bedste pris.
ABJ: Ja ja, bedst til prisen, ikke, der er også nogle gange bedst i test, hvor Siemens vinder, eh, vi kommer, altså, vi laver jo de dyre, så alene her har vi jo skåret rigtig mange mennesker fra, altså dem som siger prøv at hør, vores budget er slet ikke til de modeller, men vi laver jo test op imod det og vi ved jo at vi kan jo stå fast i det, vi kommunikerer, så hvis du tager en ovn fra Miele, selv den billigste af dem, der vil du kunne tage 20 kasser bajere og sætte ovenpå lågen og den vil ikke knække, fordi hængslerne simpelthen er så… undskyld, det er dåserammer, der kan sættes, det er ikke kasser, det har man ikke i Tyskland, og det kan den holde til fordi den simpelthen er konstrueret på en helt anden måde, hvor hængslerne er tyndere, meget tyndere, det er ikke noget folk sådan lige tænker over før de har oplevet forskellen… og det vender vi jo tilbage til, hvis vi tage IKEA, som jo har masser af indbygningsprodukter, der vil I jo kunne finde en ovn til 595 kr. hvis du er medlem af Family Club, IKEA Family eller hvad det nu hedder, øh, og vi har jo købt en af dem for at se, hvad det egentlig er, det er jo helt… altså, på papiret, ej, det er ikke rigtigt, den er ekstremt billig, men øh, men øh, det er jo alligevel en ovn, det er en hvid ovn, du kan lave indbygning og du kan lave, du kan da bage en kage, 5-600 kr. og så står vi og vil have, for vores topovn hernede, 28000 kr., altså og den vil endda blive endnu dyrere, hvis vi går op i kombinationsovne, så… så der er meget meget langt, eh, men øh, altså, folk drager jo deres egne konklusioner og derfor så er Miele sjældent, med køkkenprodukter, førstekøbet, folk prøver ofte noget andet, eh, fordi vi er dyrere, altså, I er studerende, man kommer ud, skal til at etablere sig og eh, der følger en hvidevarepakke med huset, nå, jamen så er det da fint nok, det er udmærket og, eh, så derfor er vores målgruppe også lidt ældre, ikke på støvsugere, men på de andre produkter.
Torben: Det passer også fint med den målgruppe, vi har sat.
Anne: Ja, hvad med konkurrenterne inden for det dyre segment, eh, er det den samme opbygning eller er det så forskelligt, så det er det dyre segment, altså…
ABJ: Så du mener kvaliteten af produkterne? Altså, Gaggenau er jo vores primære konkurrent i det rigtige high-end segment. Kvalitet er jo også design, dvs. noget af det bliver jo pludselig også smag og behag og det kan vi jo ikke her, altså, nogen vil foretrække det ene og nogle vil det andet, det kan man jo ikke sige andet end at det er som det er. Byggekvalitetsmæssigt, så er, så er vores, hvis man skiller dem ad af en højere kvalitet i materialerne, øh, der er også, hvad kan man sige…
Anne: Altså slidstærkt eller hvordan tænker du på i kvalitet?
ABJ: Simpelthen, i hængsler, i ophæng i ovnen, i blæsermodul på bagenden, det fuldt integrerede, men så har Gaggenau jo andre ting, så har de blåt interiør og, altså, hvor det pludselig spiller på nogle helt andre ting, eh, og så laver de gode ovne, altså, det er jo ikke dårlige ovne, nu er vi jo oppe og sammenligne virkelig højkvalitets, det er ligesom at tage en BMW og en Mercedes altså, hvad er bedst, men byggekvalitetsmæssigt, der stikker vi lidt af ift. Gaggenau og det ved vi også fordi

fabrikken, der laver Gaggenaus produkter, det er den samme, der laver Bosch Siemens produkter.
Anne: Ja, hvordan synes I ift. emhætter med jer selv og så nogle af de andre store drenge?
ABJ: Jamen, der… der, igen, design spiller ind, der er nogen, der foretrækker en type emhætte, som ??? (52.24) osv. så hvis man, og nu er I jo designere, så det kan man jo ikke bare negligere det, design… folk har svært ved at forstå, hvad er en emhætte, hvad skal jeg egentlig bruge den til, altså… den skal selvfølgelig suge os og folk tror at det er det, det er lugten, den tager, men det har jo ikke noget med sagen at gøre, altså det er jo faktisk fedtlaget, som skal… skal stjæles, eh, så… så...udfra design, der vil jeg lade det være op til publikum selv at vurdere, udfra byggekvalitet, der stikker vi helt afsted på emhætter, vores emhætter især designelementer, de dyre af dem, de er jo alle sammen håndlavede, håndpoleret, bygget, man power hele vejen på vores egen emhættefabrik, eh, som man i øvrigt kan komme ned at besøge, eh, og der får man et indtryk, okay, det her det er altså ikke tilfældigt. I vil også kunne se det på vores produkter, I kan se, at i hjørnerne f.eks. samlingerne, altså sådan nogle hjørner som her på vores emhætter, er en helt anden forarbejdning end hvis I går ud og ser konkurrerende produkter fra Thermex f.eks. derude, at det er der, hvor man virkelig kan se forskellen i denne her caring for produktkvaliteten.
Torben: Hvad med evne, øh, sugeevne?
ABJ: Jamen, der kan I bare tage testen, der vinder vi alle tests…
Anne: Også ift. Gutmann?
ABJ: Yes, også ift. Gutmann. Gutmann er jo fantastisk på design og har rigtig godt fat i køkkensegmentet og bl.a. de køkkenbutikker I har været ude at besøge her, der mener de jo ofte at Gutmann er lidt mere progressive i deres design kontra vores, som er mere, eh, kan man sige, langtidsholdbart, men stikker slet ikke af på samme måde, som Gutmann kan gøre. Der er også noget, der hedder Atag, som er lige sådan med super design og alt muligt andet, eh… og, og Gutmann har også loftintegratorer, altså, hvor den er i loftet, det har vi også, det er jo ikke det, men der begynder design at være sådan lidt mindre, men Gutmann og… har virkelig fat i de her high-end butikker, eh, og rigtig dygtige…
Anne: Ja, for vi har hørt ros fra mange af dem, der på sælgerne, så lyder det lidt som om det er Gutmann, der vinder eller hvad kan man sige…
ABJ: Jamen, det gør det jo, sælger skal jo selvfølgelig sige, sige… han tjener mange flere penge på en Gutmann and han gør på en Miele…
Anne: Jamen det kan jo også godt være sådan nogle parametre, der får ham til at sige det.
ABJ: Det er helt sygt, hvad han kan lave, altså, hvis han sælger en emhætte til 30000 kr. så er vi helt oppe i… så kan han på en Miele måske tjene 8000, hvor han på en Gutmann kan tjene 15000, altså, så der er selvfølgelig også en naturlig præference hen imod den, men Gutmann er en lækker emhætte, altså, øh, og er en anden type, vi har faktisk heller ikke helt det samme publikum, fordi Gutmann og Atag har begge to sådan nogle designvarianter, som går lidt en anden retning end vores, lad os kalde vores meget klassisk, så… men men, eh, ja, performancemæssigt, så kan de bare gemme sig, altså, der må man sige, der stikker vi helt af, men vi hører det derude, om vi ikke kan komme med lidt mere inspirerende design og det har vi også forsøgt at gøre i forskellige sammenhænge.
Anne: Ja.
ABJ: Nu sker der jo lovmæssigt det, at det, der hedder en emhætte til recirkulation, dvs. hvor der ikke er aftræk, det kommer til at blive forbudt at etablere i nye boliger fra allerede her til sommer…
Torben: Nå.
ABJ: Dvs. mange af de her, øhm…
Torben: Altså, det er kulfilteremhætter?
ABJ: Ja, kulfilteremhætten… som designer er det jo en fed ting at du f.eks. har en kogeø, ikke…

Anne: Ja, og så svæver den…
ABJ: Og så kan den svæve henover her, fordi du ikke behøver at få en, en ventilation. Eh, men det bliver ikke længere tilladt.
Torben: Hvorfor? Af hvilken årsag?
ABJ: Det er EU, de… jeg har lige fået tilsendt lovgivningen her for et par uger siden, jeg har ikke helt gået ned i detaljen omkring det, men øh, det kommer til at ske. Det betyder jo at, der findes jo en bordemhætte også, som… sådan down draft, så den kommer op fra bordet, den vil stadig kunne løse opgaven, den fylder så hele skabet med ting og sager og den skal stadig have adgang til udsug, dvs. den skal ned gennem gulvet, hvis det er en fritstående kogeø, vi har gang i, så det er meget meget tricky at få det til at hænge sammen, men det kommer til at udgå, man må gerne, hvis man har den i dag, skifte den til en ny model, det må man gerne…
Torben: Men de forsvinder så automatisk, når man ikke… hvis du kun kan sælge dem til gamle huse…
ABJ: Vi har allerede her taget beslutningen, prøv at hør her, vi har dem i bagkataloget, hvis folk vil have dem, så får de dem, men det kommer til at ryge fra udstillingen hernede…
Torben: Hvad så, på ovnen er der jo en katalysator, der fjerner fedtpartikler…
ABJ: Yes.
Torben: Kunne den ikke indbygges i emhætten og ville det så gøre det muligt at have en svævende emhætte?
ABH: Øh, nej, det er noget med aftrækket…
Torben: Det er noget med aftrækket simpelthen.
ABJ: Det er aftrækket som simpelthen skal have access til fri luft og det er… jeg ved ikke, jeg har ikke læst hvorfor, jeg har kun læst lovgivningen, at den er blevet godkendt og skal implementeres. Præcis hvorfor, det ved jeg ikke.
Anne: Nej.
ABJ: Lovgivning… lovgivning er på de vegne, der er vi langt foran, så det er faktisk en styrke for os… vi er på alt omkring energiforbrug på vores produkter, vask, tør, støv, alt sammen, der er vi langt langt foran og allerede klar til de ting, der skal implementeres i 2017. Dem har vi allerede styr på hos os, og ikke mindst på emhætter, der har vi virkelig vundet, for i starten så var de andre ude at sige, jamen ih og åh vi har slet ikke, og vi overholder det, rigtig mange er blevet sendt tilbage i udviklingsafdelingen, for EU har siddet og sagt prøv at hør, det der skal justeres, det skal rettes ind, øh, måden I opgør jeres biks på osv. der er der nye regler for det, så det har givet dem nogle store udfordringer på den måde.
Anne: Ja. Er der andre af de hårde hvidevarer som er... de store hårde hvidevarer, der kommer nye lov på, f.eks. emhætten?
ABJ: Ja, støvsugere, støvsugere er slemme…
Anne: Ja, men ift køkkener
ABJ: Til køkken… øøøh, altså, nej, for det er mere generelle termer som kommer, altså standby-effekt må max være sådan og sådan, øh, nej, der er nogle ting der
Anne: Ja, 40 minutter, i hvert fald på kaffemaskiner…
ABJ: Ja, det er noget med hvor meget strøm det er, øh, og det kan faktisk være et problem nogle gange for nogle af maskinerne driver jo bl.a. et ur eller programmeringsting, altså, ovnen skal starte med at lave noget du har sat ind, men først starte om tre timer, hvis du har lagt noget, det er noget sous vide, du har lagt ind og gjort klar til, men så kan den simpelthen efterhånden ikke holde den kørende standby nok til at starte på programmet, så de er virkelig stride hos EU, altså, det er lige før de spolerer nogle features for producenterne, men det løser vi selvfølgelig, men det er meget skrapt, men det går på tværs af kategorierne, og så må jeg lige se engang, på kogeplader og emhætter, der er der ikke noget nyt, det er lige implementeret nu. Så er der køl frys kommer der altid nye regler

på, altså helt historisk set, så har der været med drivhusgasser og alt muligt og de værste skurke, der fandtes, det var jo køleskabe, så kravene til kondensorer osv. inde i køleskabe er altid under pres, øh, vi overholder det nu, vi afventer nogle høringer, der kører i EU i øjeblikket på hvad det næste bliver, for der ved vi at de har fokus på det, øh, af hensyn til udledning af forskellige ting og sager.
Torben: Er det når det skal, det er når du skal af med køleskabet igen, du tænker, det er ikke under…
ABJ: Ja, det historiske… det er jo det, der er problemet, hvad der sker med køleskabet, når du smider det ud…
Torben: Det er ikke under brug at den udleder en masse?
ABJ: Nej, det gør den ikke, nej nej, der bruger den bare meget strøm, der er der ekstremt meget fokus på det, og samtidig så ønsker vi jo at opretholde kvaliteten og vi har f.eks. i vores produkter, hvad kan man sige, to kredsløb, for at sikre os at der er kredsløb til fryseren som holder en frysertemperatur og vi har et kredsløb til køleskabet som holder køleskabstemperatur, en billigere køle-fryseskab, som holder...
Torben: Der er åbne-lukke klap i…
ABJ: Ja, det er nemlig det, der er, så hvis du tager fryseren og lukker døren lidt hårdt, så kan du se køleskabsdøren gøre sådan her, fordi de simpelthen bare hænger sammen og så ved man bare, at kvaliteten af temperaturstyringen, at den er bare dårligere, altså, vi har selv sådan et derhjemme, det er slet ikke det...men men det er bare nogle ting, der er vigtige for os og det betyder også at når man skal overholde alle mulige andre krav om materialeforbrug og strømforbrug og alt muligt, så er det jo en balance…
Torben: Ja, det… en af vores konceptidéer har været et køleskab, lidt ligesom en centralstøvsuger, hvor du smider køleenheden op på loftet og så en masse skuffer eller lignende, småskabe, som, når du åbner, så åbner du ikke for hele køleskabet.
ABJ: Nej, så åbner du for dele af det… det er en supergod idé, altså vi har jo i vores, vi kan jo lige gå forbi, nej I har måske været oppe og nået at se de nye køleskabe, men indeni det, der har vi jo det, der hedder PerfectFresh Pro-skuffer, altså det er så inde i køleskabet, man netop har den tanke her, at der ligesom lukker lågen til, så selvom vi åbner døren til køleskabet, så lukker man ikke op ind til de madvarer, der ligger dernede, dvs. der kommer ikke ilt til, dvs. holdbarheden af de produkter, der ligger i de her skuffer, bliver, altså, vi snakker gange 8 i holdbarhed på frugt og grønt ift. hvis man bare dem liggende i en almindelig grøntsagsskuffe…
Anne: Men hvorfor er det, vi har set tit, Miele de har tit dobbeltkonfekt med en front og så hiver du en skuffe ud, både i en opvaskemaskine og i, hvad hedder det, køleskabet også…
Torben: Fryser…
Anne: Altså, der er åbne en låge og åben en skuffe, det giver jo ikke mening…
Torben: Vaskemaskinen… eller opvaskemaskinen, specielt…
ABJ: Du mener trække lågen ud, sådan så skulle skufferne komme ud…
Torben: Og så skal du… ja, eller at du bare havde en skuffe…
Anne: Fra starten af…
Torben: Fra starten, at du bare trækker en skuffe ud.
ABJ: Det fandtes faktisk engang, sådan en dobbeltskuffe, som var…
Anne: Det findes også hos noget der hedder Fisher and Paykel.
ABJ: Ja, en fed tanke, der egentlig var, den gjaldt ikke i Danmark af en eller anden årsag, men der var mange singlefamilier, hvad hedder det, singlehusstande, som brugte så lidt service, at de havde en todelt, altså to skuffer, som kunne køre uafhængigt af hinanden.
Torben: Det var også det, der var idéen...
ABJ: Og så brugte man, så smed man ned der og så tog man bare nyt fra en anden, man satte det slet ikke op i skabet, fordi man brugte så få ting…

Torben: Nej nej, det kørte bare rundt i sådan en cirkel…
ABJ: Yes, og det… altså, jeg ved faktisk ikke hvad der gjorde det, det var før jeg startede hos Miele, at de ikke er blevet en succes, for grundlæggende var tanken fed.
Torben: Vi tænker også lige så meget til små lejligheder, som ikke har opvaskemaskine, at du kan nøjes med at købe et halvt element, som så... to skuffer mindre i din lejlighed ja, men du har en opvaskemaskine…
Anne: Ja, eller den ene kan køre, mens den anden propper du i, altså.
ABJ: Jamen det er det, hele det der fleksibilitet, superfedt, jeg har ingen anelse om, hvorfor det ikke… ikke har fået vinger… jeg ved det faktisk ikke.
Anne: Det kan også være timingen...
ABJ: Altså, jeg ved at Frankie Goes To Hollywood, de udgav en plade i 83, den solgte ingenting, så udgav de den to år efter og så blev det verdens mest solgte plade…så det er, man kan aldrig vide det.. altså, det kan lige ramme ind i...
Torben: Vi kører den igen, så kommer den rigtig.
Anne: Måske, måske ikke.
ABJ: Jamen altså, hvis I tager megatrends, så en af de største megatrends worldwide, det er jo at housing bliver mindre fordi alle vil bo i byerne, og lejlighederne bliver mikro, de her multifunktionelle møbler, hele den der trend er gigantisk og der vil de her ting og tanker jo pludselig dukke op igen, for det der med at amerikanerne de har sådan nogle store komfurer og de skal bare, altså, hvis I ser vores amerikanerprodukter, de, det er helt vildt, men…
Anne: Men tror du også danskere er sådan?
ABJ: Nej nej, jamen det der sker med hovedstæderne, altså København vil det ramme på et tidspunkt, men når du kommer til Asien, hvor kvadratmeterne koster sindssyge summer, der kommer det her til at være et giga forretningsområde, jo mere du kan udnytte de kubikmeter, der må være til rådighed i din lejlighed.
Torben: Vi har været inde at kigge på udviklingen af, ja, det er jo så, hvad hedder det, huse, og hvad hedder det, plantegninger og sådan noget og der er tendens lige nu og de næste kommende at køkkenerne bliver større, køkkenområdet, altså selve køkkenrummet bliver større.
ABJ: Ja, der er også mange, der siger at stuen behøver ikke være helt så store længere som køkkenet, fordi det er derude det hele er, og folk skal alligevel bare sidde og hygge sig til tv'et inde i stuen og sådan noget...
Torben: Ja, men det er jo det, og så bliver selve køkkenet større, ja, og det er jo, så det hænger også lidt sammen, altså i Danmark bliver det større, men hvis det så på mega…
ABJ: Danmark er jo privilegeret, vi skal huske på, hvis man tænker det her, Danmark er et af de lande, hvor vi har allerflest kvadratmeter pr. person og det vil sige at vi, ikke lige i København, men når vi kommer til Jylland, altså I har jo fandme allesammen råd til at købe et kæmpehus med kæmpe køkkenalrum og alt muligt andet, øh, og så er det jo klart, så er det mindre relevant med multifunktionelle møbler, fordi det kan sagtens hænge sammen alligevel, ikke.
Anne: Ja. Så kultur, har du set at f.eks. tit så er der trends med at man tager inspiration fra Asien eller noget, har du spottet eller ja, hvad skal man sige, hvad tror du det næste kunne blive, hvis det var man skulle…
ABJ: Altså hos os? Hos Miele? Ja, altså, der følger, det har man virkelig, Danmark eller Skandinavien er en gigant trendsætter inden for køkkener sammen med Italien. Og Miele kigger meget til Skandinavien fordi der er det her naturlige strømlinede look, som er bæredygtighed og alting og alting er vindenergi fra Danmark og alt sådan noget, så derfor er det meget den skandinaviske kultur, der inspireres af, vi ved også, hvad der sker med det nordiske køkken og verdens bedste restaurant, øh, og alle de ting, alle de trends gør at Miele har koblet sig utroligt meget op på det inden for

deres design og de produkter, der præsenteres i Milano, hele fotoskydningen er sket i Danmark, dansk fotograf, en dansk stylist, der har været på opgaven hele vejen igennem, fordi det er det, vi ønsker at udtrykke, det er den bølge vi ønsker at køre videre på, fordi vi også ved at på et eller andet tidspunkt, så dribler det ud i andre lande, hvor man er en lille smule mere funktionsorienterede, altså, vaskemaskinen skal vaske, ovnen skal lave mad, jo større jo bedre og sådan nogle ting og sager, men der virker de der tendenser fra Skandinavien, så det er den vej Miele bliver inspireret, især med køkkenprodukter, øh, og er, så synes jeg også vi leverer varen på den front, altså hvis man ser et rigtig fedt køkken sat op, så spiller vores produkter fint sammen med det… men altså, hold øje med posten som det hedder, der er kun tre uger til det løber af stablen nede i Milano…
Anne: Hvad med i… nu gør vi jo meget i det private køkken, øh, og hvis man nu sammenligner med industri, laver I også vakuumpakkere, sous vides og…
ABJ: Det gør vi og det gør vi også til private køkkener, øh…
Anne: Ja, hvordan går det med salget af det?
ABJ: Det er lige lanceret, men vakuumforseglerskuffen er superliret, og så er den kombineret med at vi jo ikke kører sous vide som er i vandbad, men vi kører sous vide via vores dampovne og det er brugervenlighedsmæssigt, øh, hvad kan man sige, resultatmæssigt osv. en langt stærkere vej at gøre det, øh, fordi… hele ovnen kan programmeres til det, hele den her, hvad kan man sige, vandplaskeri, er den nu dækket helt over af vandet og alle de her ting og sager, der må man bare sige at der har vi, der er også andre, der gør det, altså AEG gør det og Gaggenau gør det også med deres vakuumforseglerskuffe og tilhørende dampovne… men det tror vi rigtig rigtig meget på, fordi vakuumforseglerskuffen er jo ikke kun til sous vide, det er til fødevareopbevaring og forlængelse af holdbarhed og hele det her madspildstema, som der også kører rigtig meget omkring og det… det kommer til at blive kæmpestort. Man kan sige, det er vildt dyrt at købe en Miele eller en Gaggenau vakuumforsegler, men de er fandme også fede…
Anne: Jaja.
ABJ: Altså, det… den er oppe i udstillingen, tror jeg…
Anne: Vi så ikke vakuumpakkeren.
ABJ: Nej, den er ude i outletbutikken ude bagved, jeg kan godt lige vise jer en sidste tur rundt derude, for der er lige et par produkter, I skal se.
Torben: Vi havde et spørgeskema ude, hvor vi også spurgte ind til vakuum og der var der kun 1% der brugte?
Anne: Nej, det var 9% ud af 416, der har svaret, der brugte vakuumpakkeren…
ABJ: Ja, det kommer til at blive større… nu kan man…
Anne: Nu er det også Nordjylland, skal jeg lige hilse at sige, højst sandsynligt at de fleste besvarelser kom fra…
ABJ: Ja, men okay, altså, København, det vil ikke være et højere tal.
Anne: Nej, okay.
ABJ: Det vil måske være 25 eller, max. Der er ikke noget der. Men mange af dem køber jo en billig vakuumforsegler og så bruger de den til diverse og det er funktionelt også rigtig fint… når man kommer op i de rigtige vakuumforseglerskuffer, så effekten af det og brugen af det til sous vide, der er kvaliteten så højt at det bliver resultatet af madlavningen også…det kan du ikke med en billig vakuumforsegler...
Torben: Hvad var det, vi så i går… den hed?
Anne: Det var Brabra, nej, hvad hedder det? Bra… nej, hvad hedder det, nej, det hed Crushet, nej, hvad hedder det?
Torben: Jo, ja, sådan noget, et eller andet…
Anne: Cru… arh, ja, et eller andet, noget med...lød som Grand Crushet eller sådan et eller andet i den

stil…jeg kan ikke huske det.
Torben: Men ja, den fyldte nærmest et helt skab.
Anne: Ja, det larmede så meget, det var helt frygteligt, fik et chok.
ABJ: Ja, men man skal også huske på at den skal suge så meget ilt ud af de poser og forsegle dem, for ellers så ryger hele effekten, eh, så lige pludselig, så kan der også være bakterier inde i posen sammen med og sådan noget, så det duer simpelthen ikke at man har en… det er fint nok, hvis man skal… børnenes madpakker og frugten lige skal holde en dag og sådan noget, så er det fint nok, men men hvis det skal være sådan rigtigt, så skal du op at have en reel vakuumforsegler, og de er dyre, eh, altså vores koster vel 18000 og det gør Gaggenaus også, AEGs koster vist 14 eller 13 eller noget i den stil…
Anne: Det bliver nok også billigere med tiden.
ABJ: Det kommer… alting, nye innovationer dribler altid gennem sortimentet, så hvis vi går 10 år frem, så vil man kunne få en for 3-4000 kr. selv med Mieles navn på og så… så er det det, ikke.
Anne: Ja, der er ikke kommet andre nye end sous vide og, hvad hedder det, vakuumpakkeren, som du lige tænker at industrien er startet… tit så starter det jo der inden det ryger ind i hjemmet…
ABJ: Ja, altså, man kan jo sige, det er en helt type af form af madlavning og grunden til at den får mere, hvad kan man sige, afsæt, det er at folk samtidig hører om det nordiske køkken og Noma bruger sous vide, nå men så ved man pludselig i hvert fald at man har læst om det eller et eller andet, så det gør, at den får lidt mere afsæt end hvad der ellers har været, men generelt set… altså, dampovne i almindelighed, kombinationsovne, altså hos os hedder det en DBC'er altså, hvor du har den traditionelle ovn, men muligheden for at i processen bearbejde den med damp, det giver nogle helt andre resultater og det kan vi jo se i vores salgstal, at det er der mange der har taget til sig, det har de forstået, at hvis de bager brød, hvis de bager steg osv., så er det noget helt andet, de får ud af ovnen, end hvis du har købt en ovn fra IKEA og du trækker den ud og så sådan lidt, nå, det var en sandkage, ikke, altså, det har vi kunnet se at den tendens blev jo brugt i de professionelle køkkener før, hele den her… der, danskerne, det de gjorde før, det var jo at sætte et glas vand ind i ovnen fordi så kom der noget damp ind i ovnen… og det fungerer jo også til en vis grænse, øh, men hele det her programmering af ovnen som så den kører nogle faser igennem sådan så stegen bliver prepareret på rigtig vis og sådan noget, det kommer fra den professionelle industri og vi kan bare se de lander big time i privaten også, så den tendens kommer ind. Så er der i det hele taget, lidt mere kedeligt en masse køleskab, hele fødevareopbevaringen, altså, hvordan man kan få madvarer til at holde længere ud fra forskellige zoner i køleskabet, det er jo en fast integreret del af alle kvalitetskøleskabe i dag og hvis du bare går 10 år tilbage, jamen så var det bare et køleskab med nogle skuffer, du smed nogle ting ned i og sådan nogle ting, men, men det kom også fra den professionelle verden, de kunne simpelthen ikke købe ind og opbevare, det var selvfølgelig langt større skabe, men den teknologi blev så presset ned i køleskabet, ikke, så der kommer meget fra den hånd af.
Anne: Hvor meget går Miele egentlig op i belysning, at tomaten har den rigtige farve og alt sådan noget fis, går I også meget op i det?
ABJ: Arh, altså vi går mest op i, hvilken type belysning, vi har, altså LED og det skal være lavenergi og så går vi rigtig meget op i, øh, hvis vi f.eks. tager vores køleskabe, så har vi produkter, hvor lyset sidder i hylden, dvs. når du flytter hylden tager du lyset med, dvs. du spærrer ikke for den belysning, så du får en bedre belysning i hele skabet, uanset hvordan du har valgt at indrette det med vores hyldesystem, øh, så… så det går vi selvfølgelig meget op i, det giver en utrolig lækker, øh, hvad kan man sige, oplevelse af maden, når det er belyst, at man ligesom siger, nå, okay, det ser dejligt ud, det sætter vores brugere jo rigtig meget pris på. Og så LED, så er energiforbruget jo også røget så langt ned at vi slipper for det bøvl, der var med halogenpærer, som udover at være dyre i drift, så gik i stykker for et godt ord, og skulle skiftes hver anden uge, ikke…

Torben: Og varme…
ABJ: Ja, og varme, ikke mindst, det er jo rigtig skidt i et køleskab, ikke.
Anne: Øh, ja, nu har du godt nok snakket lidt om produktionen, men hvis der er mere du lige tænker på ift. styrker og svagheder? I laver selvfølgelig alting selv, det kan selvfølgelig både være en styrke og en svaghed…
ABJ: Ja, det er nemlig det, der ligger i det, det er at, også omstillingsmæssigt, nye innovationer, hvis vi vil igennem det og skal lave det på egen fabrik, så er det en hel omstilling af hele produktionen, der skal til, hvorimod hvis vi gik i byen og sagde hey, der er nogen, der allerede har udviklet et eller andet, lad os koble os på dem, så ville vi jo have en langt højere grad af fleksibilitet, så det er en svaghed. Det er superliret ift. at være sikker på at kvaliteten er i orden og alt det her, der spiller det jo…
Torben: I kan heller ikke sætte det i udbud, når I selv laver det, altså, høre om der er andre, der kan give et bedre tilbud på at få lavet nogle…
ABJ: Det begynder vi jo på, på nogle områder i dag, bl.a. på wifi-teknologier og sådan nogle ting, der er vi jo gået ud og sagt, hey, der skal vi have en partner. Der har vi fundet en partner eksternt, som fremadrettet, og de bliver lanceret allerede i sensommeren i år, hvor de første produkter, vores opvaskemaskiner, vaskemaskiner og robotstøvsugere begynder at operere på wifi-styring og sådan nogle ting og sager, og så stille og roligt, der kommer også apps, så der kommer det alt sammen ind, øh, så der er fundet en partner der, som selvfølgelig er kvalitetsgodkendt og skal skrive under på jeg ved ikke hvor meget, for ellers kan man ikke være leverandør til Miele, men det giver en grad af fleksibilitet og det skal vi have, for ellers begynder det at gå for langsomt.
Anne: Ja, øhm, så er der en, der hedder strategi, men det lyder jo mere som om det er jeres brand I går fuld tryk på…
ABJ: Brand er, jamen, det, faktisk er vores strategi en kontinuitetsstrategi, dvs. vi står for de her værdier, det er også derfor jeg siger, hvis man tror man skal lave et produkt for Miele om 10-15 år eller om 10 år eller hvad det er, der er jeres… så kan man tage udgangspunkt at det, vi siger i dag, det siger vi også om 10 år omkring bæredygtighed, omkring nogle af de her sociale ansvar, omkring høj kvalitet, vi er i high-end segmentet, øh, det kan man være helt sikker på at den fastholdes, selvfølgelig bliver vi bedre og bedre til salgsmekanismer og alt muligt andet, men det helt overgribende, det er en fastholdelsesstrategi omkring at være det mest foretrukne hvidevaremærke overhovedet derude, så den kommer der ikke til at blive pillet ved, der bliver ikke lavet en eller anden, hey, nu laver vi en ungdomsserie for Miele og så flyder vi dem ind og så lærer de at sætte pris på… altså, det gør vi ikke, men selvfølgelig har vi også kampagnemodeller, altså selvfølgelig lancerer vi ved lejlighed og siger, vi løfter lige 1000 kr. ned i segment for lige at få en, få noget volumen til fabrikkerne, fordi det skal vi selvfølgelig også sørge for de kører…
Anne: Så det er i mindre omfang I laver…
ABJ: Ja, det er i meget mindre omfang, og vi er slet ikke, der er også mange, der spørger, hvorfor laver I ikke, ligesom KitchenAid, køkkenmaskiner og sådan nogle ting og sager, altså, der er vi slet ikke i den retning der…
Anne: Nej. Vi snakkede jo om at lave… vi har i hvert fald et bud på, her... nu skal jeg lige finde den… nå ja, arh men vi kan vel godt...
ABJ: Nu skal I jo ikke afsløre alle hemmelighederne…
Anne: Nej nej, men vi snakkede om at lave en vask af en art, hvor at vi tænker… at Miele, så er det... lige så snart der kommer noget elektronik eller lidt mekanik ind at så… og så noget med vand, så tænkte vi at I måske godt kunne være interesserede, hvis det var.
ABJ: Ja ja.
Anne: Øhm, f.eks. denne her, der snakkede vi om at… og, ja, hvad hedder sådan… først og fremmest, så har vi observeret at folk de vil højst sandsynligt godt vil have to vaske eller i hvert fald

meget brede vaske, så der kan være bradepander og det i selvfølgelig, for det er det folk bliver meget irriterede over i dag, så har vi snakket om at… at karkluden, den er der ikke rigtig nogen, der smider ud i tide og så videre, men at man kunne lave et lille rum til den for sig, som så kunne blive desinficeret eller… vasket.
ABJ: Jaja, på en eller anden måde, ligesom vi har i vores professionelle afsnit...
Torben: Ja, vi tog lige brochurerne…
ABJ: Der har vi også dentalopbevaring og til… og til… til… også til mopper og til alle mulige ting, der har vi virkelig det her proces kørende på alle mulige…
Anne: Ja, så vores idé var selvfølgelig at gøre den så lille som muligt.
ABJ: Ja, det er klart, køre den ned i en, øh… men der er jo meget hygiejne og mange ting omkring renlighed og sådan noget, og det ved vi jo at især Skandinavien rigtig meget går op i at det skal spille max, ikke… så, spændende…
Anne: Ja, nu lige det der koncept går ud på at alt skal være plant, det er derfor det ser meget fladt ud… de her det var så skærebrætter der skulle sættes ovenpå, så de dækkede hullet…
Torben: Og så er det meningen at den skal kunne falde ned, hvad skal man sige, hvis du har… vasken er f.eks. så høj normalt, men så når du har brug for mere plads kan den falde ned og blive dybere og, ja…
Anne: Ja, det snakkede vi i hvert fald om, hvis man kunne lave enten mekanisk, at den kunne gå nedad eller bare i materiale at den kunne være stærk nok til og… tage også ift. larm, at når du så smed kartoffelskrælleren i vasken eller tabte noget, at den så lige kunne mindske lyden i det mindste ved at tage noget af faldet, stødet…
ABJ: Ja ja, i stedet for at vi står og smider alt muligt ned og så larmer det af helvede til…
Anne: Ja, f.eks. eller bare vandet, når det løber ned, det så bliver brudt lidt.
ABJ: Ja, i stedet for, ja, der er det lige før man skal tænke sådan en eller anden form for konisk ting, det er jo simpelthen når det bare rammer at den laver de plask der...
Torben: Ja.
Anne: Ja, det er sådan noget i den dur af lyd, vi vil gå ind i, hvor hårde hvidevarer prøver at absorbere eller hvad skal man sige, eller i hvert fald bryde lyden op i flere dele, så det ikke lyder så voldsomt, specielt ift. impulslyd også, som når metal mod metal kører mod hinanden, så måske vælge noget andet end metal, det er frygteligt ift. til lyd.
ABJ: Ja, det er det jo, det er det jo.
Anne: Det var lige… så I tænker godt I kunne udvide jer til vaske også f.eks. og sådan noget? Eller det hele?
ABJ: Prøv at hør her, vi tænker nemlig… vi har, vi har det, der hedder køkken og så, hvad hedder det, tøjpleje, det er de to områder, vi er i. Der er også mange, der har været inde og snakke om ligesom Quooker har den her varmtvandsvandhane om det var et område, som Miele kunne gå ind i eller ej. Svaret lige nu er jo så nej, men altså, det er jo der, hvor det er balancen mellem de brancheglidninger, der kan være. Styrken ved at tænke, øh, ud fra eksisterende kategorier, det er jo vækst i den samlede forretning, i forretningsområder, hvad kan vi gå ud med osv., så derfor så… vi har jo, hvis I gik en tur før, I så sikkert også noget der hedder en Fashion Master, som er sådan en strygestation med damp… alle mulige i sig… den koster en hulens masse penge, men det er jo også en ting, der er lavet for at sige, hey, den her kan vi gå ud, uden vi ødelægger vores anden forretning, det er rent på toppen, øh, af det her. Så… så derfor er der alt muligt, hvad hedder det, perspektiv i at tænke ud af de traditionelle køkkenprodukter.
Torben: Men uden at træde andre over tæerne, altså, specielt dem, som I skal leve af, som er køkkenfirmaerne…
ABJ: Jeg kan sige dig, nu… vi lever, vi konkurrerer jo ikke med en køkkenvaskleverandør, altså,

køkkenforhandleren laver ikke selv sin køkkenvask, altså, der er nogen af dem, der vil have en fuldintegrerbar køkken, øh, hvad hedder det…
Anne: Køkkenbordplade.
ABJ: Bordplade, øh, som vil kunne have en holdning til det, men ikke almindelige traditionelle vaske, dem laver de jo ikke selv, dem køber de bare ude i byen…
Torben: Ja, men det er også det… vi skal passe på, man ikke kommer op med noget, som vil træde dem, som skal sælge jeres produkter, over tæerne…
ABJ: Ja, det er væsentligt, det er væsentligt og der er… en eller anden måde, så skal man, øh, når man tænker denne her ind, så skal man kunne forklare, hvorfor gør vi det, altså, hvad er… hvad er tanken for det her, altså en ting er business-wise, der er et forretningsområde, det er til at forstå, men hvad er det for en ting, vi løser med det her produkt, øh, kunstigt behov eller et reelt behov, som folk bare ikke har opdaget, altså, det er jo altid balancen mellem det her, ikke… Så, så tricky case og superspændende, men, øh, men der er I jo meget mere kreative end os andre, ikke.
Anne: Ja, det var også mest for at høre dit… hvad I tænker eller om det mest bare var en ny type ovn eller en ny type emhætte eller hvad, det var sådan noget I søgte efter eller en kombination af begge dele…
ABJ: Vi har helt bevidst skrevet, at vi slet ikke blander os i, hvad det er for en tanke, der skal være. Der skal være samhørighed til de værdier, jeg beskrev i starten, som vi siger, prøv at høre her, det er den rolle, vi spiller. Der skal det hænge sammen med. Og deri ligger det jo også at det må ikke bare være et modefænomen, som siger, nå tjuhej tjuhej, og så tre år senere, så skal vi finde på noget andet, det skal være noget man tror på, at det her det kan faktisk komme til at spille en rolle, øh, fremadrettet, og hvis det så endda samtidig kan hænge sammen med et produkt, nu kommer der jo meget med wifi-styring og alt muligt, hvis der kan være et eller andet samspil mellem den løsning her og vores egne, øh, andre produkter, så er det jo superliret, øh, så så det… der er slet ikke noget galt i at gå i de spor der overhovedet.
Anne: Nej, det vi snakkede om med den her, det var f.eks. vores, eller den der skuffeopvasker, så kunne man jo trække det samme vand… øhm, hvad hedder det, indgang…
Torben: Ledning, ja.
Anne: Så man får vandhanen til det her rum, hvis det var, så det ikke blev, hvad kan man sige, kæmpestort i sig selv og tog alt skabsplads og sådan nogle ting.
ABJ: Jajaja, lige præcis, lige præcis, men det er jo også muligt jo, som regel er det jo også i nærheden af hinanden, håndvask og opvask, så det skal klart kunne lade sig gøre.
Anne: Det er rigtigt, så det her det var så bare den opvaskeskuffe, du har set, som så vi har lavet… bare idéen om at det var en skuffe i stedet for dobbelt op.
ABJ: Ja, fordi… der er, det… det er en skæg ting med det her amerikaner… jeg havde en snak med en amerikaner, sagde han, han snakkede også omkring sådan noget omkring opvaskemaskine, hvorfor er det, du ved, man skal det her med at bukke sig ned, hvorfor kan... mange mennesker… nu har vi jo godt nok skyl-tingene-af-programmer i opvaskemaskiner også, men han mente også at man skulle have simpelthen, at man kunne have sådan et sted, altså så man bare trykkede ned, så man så sætter det ned i håndvasken og så kan jeg trykke ned og så kører det så, ligesom, ned i skabet og så kører det automatisk. Jeg ved slet ikke, hvad det var han havde i tankerne, der er sikkert også en masse ingeniører, der vil have holdninger til om det kan lade sig gøre eller ej og sådan noget, ikke… men det er bare den der samhørighed imellem flere opgaver, du har i køkkenet, at så bliver det ligesom løst i en enkelt strøm, ikke…
Anne: Ja, øhm…
Torben: Vi så faktisk en amerikansk opvaskemaskine, hvor hun… det skulle være et fancy nyt hjem-agtigt og så… så viser hun opvaskemaskinen, der åbner de en skabslåge, hvor opvaskemaskinen

simpelthen står på en træk-ud-skuffe og så skal du åbne opvaskemaskinen ovenfra, så det var sådan tre…
ABJ: Tre gange åbning…
Torben: Det var helt forfærdeligt… det var endnu værre.
ABJ: Desværre kan vi ikke lave en åbning, fordi… som opvaskemaskiner er lavet i dag, hvis nu man lavede sådan en åben her, så kørte det automatisk ud, så var det ti gange nemmere og sådan noget… ja, der er de to niveauer og så er der det problem, at den øverste skuffe, den drypper altid, så hvis man nu hev begge to med ud, altså, så sker der en bevægelse i vandet, som ligger på toppen af en kop eller et eller andet og så vælter det altså ned over, så der er en eller anden procedure omkring, men man kunne jo godt have den nederste skuffe, for det er den, der skal tømmes først, øh…
Torben: Ja, så vil man også tvinge folk til at tømme den først…
ABJ: Jaja, så man ikke røg ind i den anden problemstilling med det der, ikke…. så, så det… og så er det igen, fordi så har vi jo i vores låger, har vi jo lavet vores dyre modeller. Øh, hvis man… jeg er ikke designer, så jeg kan ikke tegne… men det er lågen, den er lukket op her og så herinde står kurven osv. så har vi jo fået lavet saltpåfyldning i lågen i stedet for på de traditionelle, hvor det er inde i maskinen, det er sindssygt irriterende at skulle derind. Øh, og der vil sådan en procedure gøre, hov, nu kører den hen over, så når jeg skal ned til salten, hvad skal jeg så gøre og sådan nogle ting, men altså, det kan man jo nok finde en løsning på, øh, men bl.a. saltindtaget her, det er en af vores key features på opvaskemaskiner fordi folk de gider simpelthen ikke at skulle ind og skrue det der låg af, som der er derinde og hælde ned i noget vand og…
Torben: Er det ikke noget… er det ikke… salt eller afspændingsmiddel, jeg kan ikke huske, hvad det er, men er det ikke sådan lidt områdebaseret, hvor man er i verden, fordi jeg har en ven, der lige er flyttet til Oslo og der er en af de to ting, der ikke er i deres opvaskemaskine fordi vandet er anderledes deroppe.
ABJ: Ja, der er jo altid noget med kalkindhold også og hvor rent vandet i øvrigt også er, som sætter sig ind her. Der har vi varianter til forskellige dele af verden og vi har også forskellige anbefalinger til hvornår du skal afkalke din kaffemaskine. Hvis du køber en i Danmark, så er det meget oftere at den kommer op på skærmen og siger, hey, så er det altså nu, for ellers går den her maskine i stykker. Det gør de og det er ikke fordi den er dårligt bygget, det er simpelthen fordi der er så meget kalk i vandet, at så skal du altså gøre de her ting, så der er lavet, hvad kan man sige, varianter til rundt om i verden. Og selv inden for landets grænser er der også stor forskel, ovre i Esbjerg, så er der ikke noget kalk i vandet overhovedet, det så… mens i København, så er der supermeget kalk i.
Torben: I Aalborg er der supermeget kalk i.
Anne: I Randers er der også meget kalk i, nå, det er så en anden ting.
ABJ: Sådan er det jo.
Anne: En anden ting, hvor tit har Miele i hvert fald fundet ud af, at folk skifter køkkener, hvor mange år tager det…
ABJ: Jamen, det er jo næsten køkkenleverandører I skal spørge om det her…
Anne: Jaja, det har vi også spurgt om, men det er for at sammenligne tal…
ABJ: Det går nemlig op og ned, ikke… fordi op til finanskrisen i 7-8 stykker, der skiftede folk jo hver 10. år, der var man pludselig nede på at sige nu skifter vi bare, vi skal have noget andet, fordi de kunne lånebasere alting, så det er jo meget konjunkturer, der bestemmer det her, fordi så sker der det, så crasher hele verden… køkkenforhandlere, hvis der er nogen, der kan fortælle om krisen, så er det køkkenforhandlere, fordi det er jo ikke et must-have ting…
Torben: Nej.
ABJ: Så der har folk bare sagt, vi fastholder bare det her køkken eller også køber de et billigere, altså

IKEA kommer jo ind og tog en kæmpeandel, fordi man kunne få nogle rimelig pænt, hvis man altså synes, så det varierer meget med konjunkturerne og det er ekstremt følsomt her, øhm, omkring det. Og der må man sige at Miele er også ramt af konjunkturer, selvfølgelig er vi det, men ikke på samme måde som… fordi folk skal have en vaskemaskine. Og så taber vi måske, hvis det er lavkonjunktur, på at folk siger nå, så køber jeg den billige til 2000. Men altså, over tid, så får vi den kunde tilbage, fordi så har de købt den maskine og så begyndte den at larme og så er de pisseirriterede og så, ej, så køber jeg kraftedeme en ordentlig maskine, ikke, altså så, det går selvfølgelig op og ned for os, men fordi vi jo ikke har hele markedet, vi har 10-11% af markedet, så er vi knapt så følsomme overfor… for konjunkturer ift. så mange andre, især køkkenforhandlere, det må have været et helvede i 2008-9-stykker, øhm…
Anne: Ja, ja, fordi… øh, vi mangler egentlig en, der hedder samfund, men det er jo…
ABJ: Ja, det er jo det med konjunkturer og politik, ikke, altså lovgivning er jo også en del af den og det bliver vi selvfølgelig ramt af, men men man kan sige, at vi er ikke helt så konjunkturfølsomme som andre kan være, også fordi vores virksomhed som helhed ingen gæld har, så dvs. vi ryger ikke pludselig ud i shit mand, nu skal folk inddrage deres og vi skal indløse alle mulige krav fra leverandører, så der slipper vi ud af den.
Torben: Nå, er der mere? Du tænker og tænker...
Anne: Ja… jeg synes kun jeg har spurgt om tre ting, vi snakkede om fire…
Torben: Nå, på den måde.
Katrine: Jeg tror, vi har været igennem det, har vi ikke det?
Anne: Jo, det kan godt være…
ABJ: Ellers kan I jo lige tænke over det, vi kan lige gå den runde og se de sidste ting, som I ikke havde set, bare lad tingene ligge...

MAIL CORRESPONDENCES

DANHAUS

Mette Fredensborg
Til: tjarg11@student.aau.dk
Tak for jeres mail.

25. februar 2016 kl. 11.40
Indbakke - Skole

MF

Hej Anne, Katrine & Torben.

Top 3 – huse som vi sælger flest af:
Vinkelhuse
Længehuse
1½-planshuse

Størrelse køkken.
Typisk så er et køkken/alrum gennemsnitlig omkr. 27m², hvoraf selve køkkendelen ca. er omkr. 11-14m².

Køberne ligger vægt på funktionalitet, personlighed og design.

Held og lykke med jeres projekt.

Med venlig hilsen/Mit freundlichen Grüßen/Kind regards
Mette Fredensborg
Salgs- og boligrådgiver
Danhaus Bolig A/S
Telefon: +45 20 49 47 61
www.danhaus.dk

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MAIL CORRESPONDENCES

HUSCOMPAGNIET

-----Oprindelig meddelelse-----
Fra: Torben Jørgensen [mailto:tjarg11@student.aau.dk]
Sendt: 25. februar 2016 09:31
Til: Thomas Lindholt
Emne: Hjælp til kandidatprojekt

Hej Thomas

Vi er en lille gruppe studerende der er igang med at skrive vores afgangsprojekt ved Aalborg Universitet på linjen Industrielt design. Vi arbejder med køkkenet og kigger derfor på udviklingen det har gennemgået de seneste år. Derfor vil det være spændende at vide hvilken type huse der bliver solgt flest af, for deraf muligvis at kunne se et mønster i hvordan udviklingen er lige nu.

Det vi godt kunne tænke os at få svar på fra dig er:

Hvilken type huse sælger i flest af (top 3-5)?

Hvor stort er et typisk køkken?

Hvad lægger køber vægt på?

Ser I en forandring ske nu eller i nærmeste fremtid?

Mvh
Anne, Katrine og Torben - 4. sem Master Industriel Design - Aalborg universitet

APPENDIX NO: 3 DATE: 25.02 2016 RESPONSIBLE: TORBEN DEADLINE: 25.02 2016

T R I A K T

MAIL CORRESPONDENCES

HUSCOMPAGNIET

Julie Thorngaard Larsen
Til: tjarg11@student.aau.dk
Hjælp til kandidatprojekt

1. marts 2016 kl. 15.47
Indbakke - Skole

JT

Hej Anne, Katrine og Torben

Jeg har lige fået jeres mail fra Thomas Lindholt og vil prøve at besvare jeres spørgsmål så godt jeg kan.

Hvilken type huse sælger i flest af (top 3-5)? Vi sælger typisk flest 1) vinkelhuse i klassisk stil (med sadeltag) omkring 150 m2., 2) længehuse, 3) H-huse

Hvor stort er et typisk køkken? I langt de fleste tilfælde, stort set altid, bliver køkkenerne bygget som et samlet køkken/alrum (samtalekøkken), der typisk ligger omkring de 30 m2.

Hvad lægger køber vægt på? Hvad tænker i på her? I forhold til køkkenet? Umiddelbart har vi mange kunder der nævner mange skuffer og meget bordplads som vigtigt for dem. Derudover ser vi en tendens til at flere og flere tilvælger depot/viktualierum som en del af køkkenløsningen. Vi samarbejder med HTH i forhold til køkkenløsninger i vores huse, og de vil formentlig bedre kunne svare jer på hvad kunderne lægger vægt på, da vores kunder kommer til et møde direkte med HTH for at vælge deres drømmeløsning.

Ser I en forandring ske nu eller i nærmeste fremtid? Hvad tænker i på her? Forandring i forhold til hvad?

I er velkommen til at vende tilbage såfremt i har supplerende spørgsmål.

Med venlig hilsen

Julie Thorngaard Larsen
Salgstrainee

Mobil 29 13 78 42 / jtl@huscompagniet.dk

HusCompagniet

Blytækkervej 18-20 / 9000 Aalborg / huscompagniet.dk

MAIL CORRESPONDENCES

EURODAN HUSE

Torben Jørgensen 23-02-2016 08:26

Hej Tommy

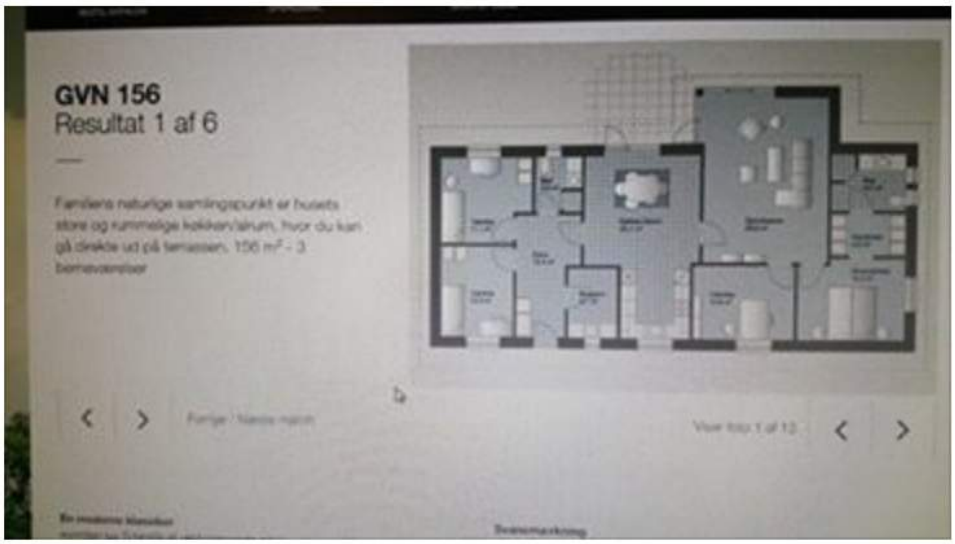
Jeg sidder og arbejder på et projekt med fokus på køkkenet. Derfor kunne jeg godt tænke mig at høre om du kan fortælle hvilke type huse i sælger flest af og hvilken rolle køkkenet har? (Er det et central rum? Ligger det afsides eller midt i huset? Er det noget køberen ligger meget vægt på? Hvor stor er et typisk køkken idag?)

Håber du kan hjælpe og svare på mine spørgsmål 😃

Tommy Johansen 23-02-2016 09:20

Køkken/alrummet er næsten altid centret i huset og fungerer også som adgangsvej til mange af husenes andre rum for at sparer gangarealer. Typiske størrelser ligger på 25-35m2.

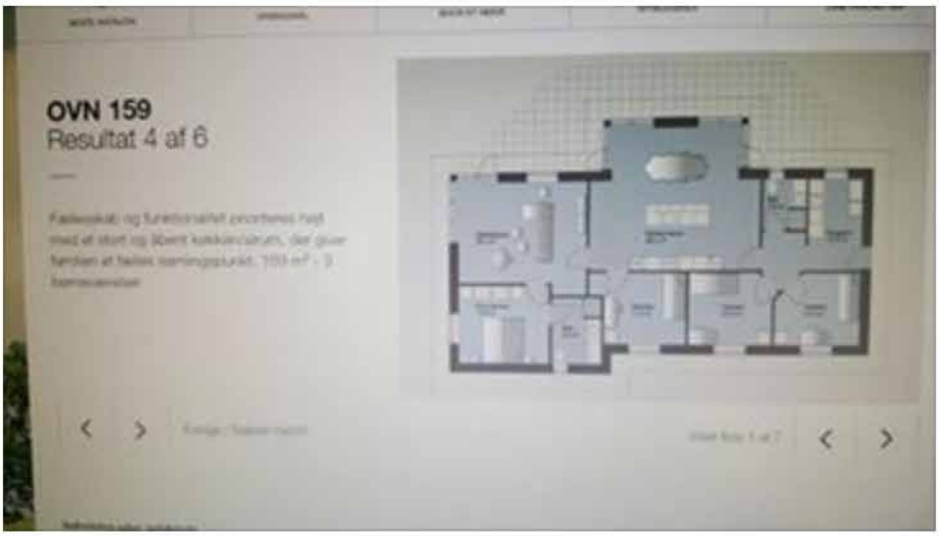
Tommy Johansen 23-02-2016 09:20



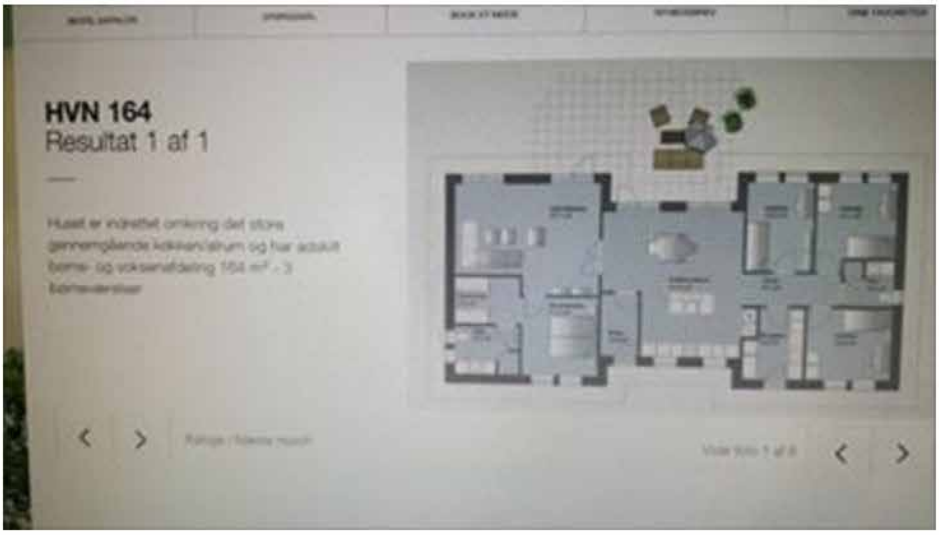
MAIL CORRESPONDENCES

EURODAN HUSE

Tommy Johansen 23-02-2016 09:21



Tommy Johansen 23-02-2016 09:22

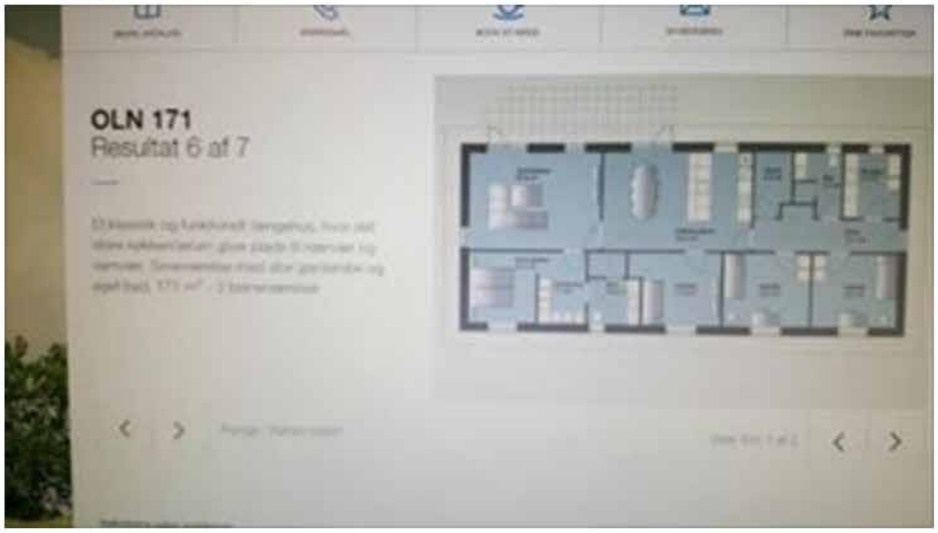


T R I
A K T

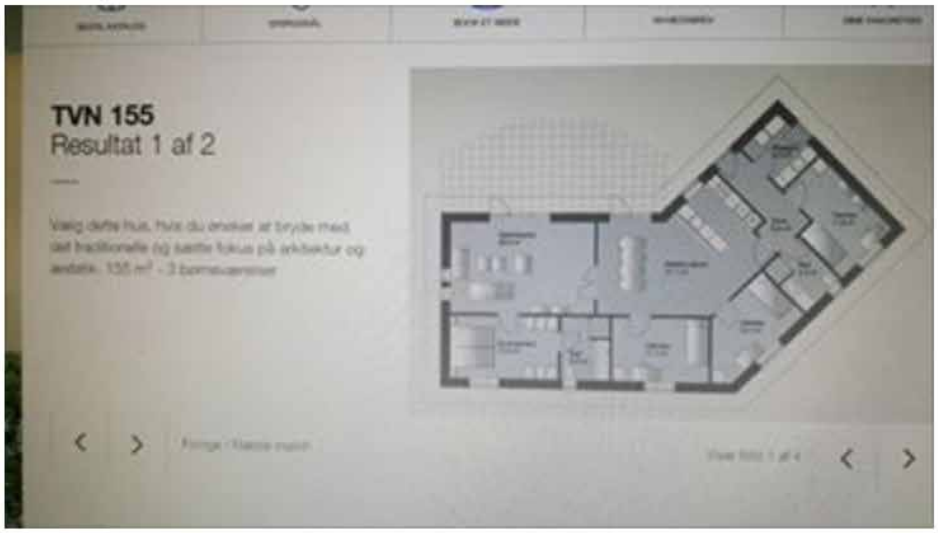
MAIL CORRESPONDENCES

EURODAN HUSE

Tommy Johansen 23-02-2016 09:23



Tommy Johansen 23-02-2016 09:24



Tommy Johansen 23-02-2016 09:25

Her er nogle af de mest solgte hustyper

3. marts

T R I
A K T

MAIL CORRESPONDENCES

Miele about the new law about recirculation in cooker hoods

Torben Jørgensen
Til: asger.bache.jensen@miele.dk
Spørgsmål

1. april 2016 kl. 15.34
Sendt - iCloud

TJ

Hej Asger

Da vi var over ved jer d. 22. marts, snakkede du om en ny lovgivning omkring emhætter og direkte tilslutning til fast aftræk. Er det muligt at du kan sende et link eller en kopi af dette lov forslag?

Mvh Anne Østergaard, Katrine Møgelmose og Torben Jørgensen

asger.bache.jensen@miele.dk
Til: christopher.jorgensen@miele.dk Cc: Torben Jørgensen
SV: Spørgsmål

1. april 2016 kl. 15.45
Indbakke - iCloud

A

Hej Chris

Kan jeg bede dig hjælpe vores gode venner med nedenstående?

God weekend

Med venlig hilsen/Kind regards

Asger Bache Jensen
Marketingdirektør

Miele A/S - Marketing
Erhvervsvej 2 DK-2600 Glostrup
Telefon Nr.+45 43271402
Telefax Nr. +45 43271309

www.miele.dk

Se mere fra Torben Jørgensen

MAIL CORRESPONDENCES

Miele about the new law about recirculation in cooker hoods

christopher.jorgensen@miele.dk
Til: Torben Jørgensen Cc: asger.bache.jensen@miele.dk
SV: Spørgsmål

1. april 2016 kl. 16.11
Indbakke - iCloud

C

Kære Torben

Der træder et nyt byggereglement i kraft, som har indflydelse på installationen af emhætter til recirkulering.

Kilde: www.bygningsreglementet.dk

Byggereglementet BR15 træder endeligt i kraft d. 1. juli 2016. BR10 vil derfor fortsat kunne anvendes i overgangsperioden indtil denne dato.

Der er lavet en ændring for ventilationen i beboelsesbygninger (herunder køkkener) for at forbedre luftkvaliteten og indeklimaet. Et af punkterne bestemmer at der fra 01/07/2016 i nye køkkener kun må anvendes emhætter med udsug og afkast til det fri:

Bygningsreglementet 01.01.2016 → 6. Indeklima → 6.3 Luftkvalitet → 6.3.1 Ventilation → **6.3.1.2 Beboelsesbygninger**

Stk. 2	**(6.3.1.2, stk. 2)**
Køkkener skal forsynes med emhætte med udsugning over kogepladerne. Emhætten skal have regulerbar, mekanisk udsugning og afkast til det fri og have tilstrækkelig effektivitet til at opfange fugt og luftformige forureninger fra madlavningen. Udsugningen skal kunne forøges til mindst 20 l/s.	Kogeplader kan være f.eks. el- eller gasopvarmede og indbygget i et komfur.

Forbrugere og køkkenforhandlere skal kontakte den lokale kommune for afstemmelse omkring hvad der er i orden og ikke i den konkrete byggesag.
Københavns Kommunes Bygge Center Dialog Team, oplyste mig at der gælder følgende for dem:

- Nye køkkener: Paragraffen skal overholdes. Køkkener skal forsynes med emhætte med udsugning over kogeplader/komfur.
- Eksisterende køkkener: Skal gøre brug af den naturlige/oprindelige udluftning af køkkenet i bygningen. Dette er et krav. Men denne ventilation skal ikke partout ske via emhætten, hvis køkkenet ikke var sådan sat op. I så fald kan en emhætte i recirkulering godt erstattes med en ny til recirkulering. (Men jeg vil stadig anbefale at den enkelte bekræfter det med den enkeltes kommune)

MAIL CORRESPONDENCES

Vi vil gerne gøre opmærksom på at vi ikke kan afgøre eller rådgive om hvad der er tilladt og ikke i hver sag. Der bør tjekkes med den lokale kommune (byggereglementet.dk) for info og afgørelser.

Punktet ovenfor er kun et punkt ud af flere i det nye byggereglement.

Med venlig hilsen/Kind regards

Christopher Dahl Jørgensen
Produktchef

Miele

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www.miele.dk

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JOURNAL, PROJECT PROCESS

WEEK 5

Monday 1/2 2016
Semester introduction, moving into the group room. Decided group name and logo. Listed known/potential methods to use.

Tuesday 2/2 2016
Mapping of electrical devices in our apartments, followed by open ideation on possible directions/focus for the project (taking starting point in some of the electrical devices (fridge, lamps etc.). Researched quickly on sensor types.
Worksheet writing, making time schedule, layout template and log book.

Wednesday 3/2 2016
Design brief overview (what should the content be), read about Remoni, research on sensors, visit at AK Print, print calendar/make scrum, casual ideation on office space etc.

Thursday 4/2 2016
Supervision
Research on electricity consumption.

Friday 5/2 2016
Formland, research on trends

WEEK 6

Monday 8/2 2016

Tuesday 9/2 2016

Wednesday 10/2 2016
Change of subject from Remoni to Miele competition.
Making a survey about kitchen habits/problems.

Thursday 11/2 2016
Supervision w/Kaare about change of subject.
Research on Concept Kitchen 2025, old kitchenware, Miele.

Friday 12/2 2016
Field research at kitchen companies to hear about current products and trends and their opinion about future trends.

WEEK 7

Monday 15/2 2016
Evaluation of survey, write about Miele background.
Supervision w/Kaare and Mikael. The competition element gives the possibility to create something new and innovative to Miele, outside their usual product line.

Tuesday 16/2 2016

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JOURNAL, PROJECT PROCESS

Write program (introduction, project plan, summary of kitchen research + survey, target group, next step)

Wednesday 17/2 2016
Program hand-in, research on electrical kitchen devices/machines, research on competitors (white goods/ domestic appliances)

Thursday 18/2 2016
Research on future kitchen concepts, future lifestyle

Friday 19/2 2016
Sum up important findings from research

WEEK 8

Monday 22/2 2016
Research on history of the kitchen, finish Miele text + calm fusion text + energy conscious text, start putting text into report, visit Miele center + Hanstholm Køkkener.

Tuesday 23/2 2016 (hos Anne)
Brainstorm on "what is a kitchen?", mail to Remoni, supervision w/Kaare, ideation/brainstorm on the three directions "smart objects", "back to basics" and "flexible/mobile".

Wednesday 24/2 2016
Internal status

Thursday 25/2 2016
Time lines: history of kitchens + kitchen appliances. Writing research for the report. Found research on what Danes eat etc.

Friday 26/2 2016
Concept development, pros and cons for each direction (smart products, back to basics, flexible + mobile)

WEEK 9

Monday 29/2 2016
Concept development, preparation for status seminar.

Tuesday 1/3 2016
Statusseminar 1

Wednesday 2/3 2016
Research on what is a kitchen, history of kitchens, scenarios/Maslows text,

Thursday 3/3 2016

Friday 4/3 2016
Report texts (introductions + conclusions/reflections), kitchen types

WEEK 10

Monday 7/3 2016

APPENDIX NO: 4 DATE: 01.02 2016 RESPONSIBLE: KATRINE DEADLINE: 25.05 2016

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JOURNAL, PROJECT PROCESS

Making flyers to get in contact with target group, research on future materials + technologies, finish text for kitchen history

Tuesday 8/3 2016
Foodexpo Herning: speech about food trends/general tendencies in society + speech about food culture in Denmark

Wednesday 9/3 2016
Research on RKS Design method (probably not useful), supervision Kaare
Prepare slides for internal status

Thursday 10/3 2016
Prepare slide for internal status
Internal status
Report text

Friday 11/3 2016
Report text (research phase), worksheet pros+cons, rewriting design brief,

WEEK 11

Monday 14/3 2016
Corrections in report (research phase)
Ideation (one-man show)
Worksheets (noise level/acoustics, Foodexpo, stress level)

Tuesday 15/3 2016
Portfolio day

Wednesday 16/3 2016
Ideation: Associationsteknik, forced relations (→3 directions: cooker hood, sink, optional), 3:3:5 method (→ cooker hood, sink, climate drawer)
Supervision
SWOT-"game" to Cph., scan sketches, worksheet on ideation + sound level

Thursday 17/3 2016
Worksheets on ideation 1 + status + future lifestyles, scan sketches
Text (today's consumer + future lifestyles + design brief)

Friday 18/3 2016

WEEK 12

Monday 21/3 2016
Copenhagen: Visit at Boform, Kvänum Køkken, Interstudio (Armani/Dada)

Tuesday 22/3 2016
Copenhagen: Visit at Boffi, Miele showroom + interview

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JOURNAL, PROJECT PROCESS

Wednesday 23/3 2016
Work at home: Worksheets about CPH visits, transcription of Miele interview

Thursday 24/3 2016
Worksheets about CPH visits, sound test worksheet, transcription of Miele interview

Friday 25/3 2016
Easter holiday

WEEK 13

Monday 28/3 2016
Read Miele interview –make SWOT analysis
Make worksheet list
Rewrite Miele text, update report layout, reflection for calm fusion text

Tuesday 29/3 2016
Rewrite Miele text, read worksheets, finish sound level text/worksheet

Wednesday 30/3 2016
Finish Miele text, read worksheets, report research section layout
Internal status

Thursday 31/3 2016
Ideation, using ideos design kit (bundle ideas)
Supervision w/Kaare + Mikael

Friday 1/4 2016
Ideation
Choice of product to detail: cooking area - how to eliminate noise from cook/roast/fry activities
Looking for inspiration

WEEK 14

Monday 4/4 2016
Concept development: origami cooker hood, which responds to noise level and need for ventilation.

Tuesday 5/4 2016
Edit design brief, origami modelling
Dishwasher + cooling drawers in 3d

Wednesday 6/4 2016
Sketch origami concept, making principle model, begin layout of concept dev. phase (report)

Thursday 7/4 2016
Sketching on "closed system" concept
Internal status: likes the "living"/adaptable part of origami concept
Supervision Kaare: likes origami concept, we should be crazier regarding hotplates as well
Sketching on hotplates...

Friday 8/4 2016
Origami folding

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JOURNAL, PROJECT PROCESS

WEEK 15

Monday 11/4 2016
Origami folding 1:1 mock-ups, researching on materials working with induction, origami worksheet, buy induction hotplates

Tuesday 12/4 2016
Induction material testing, pick up old cooker hoods, look for rubber painting/coating

Wednesday 13/4 2016
Making 1:1 model of triangle origami, test of opening (how it feels, placement), ideation on hotplates, what features should/could it have.

Thursday 14/4 2016
Ideation on display/how to control the hotplates, preparing suction test
Test 1:1 model continued
Presentation for status

Friday 15/4 2016
Practise status 2 presentation
See Msc2 milestone

WEEK 16

Monday 18/4 2016
Statusseminar 2

Tuesday 19/4 2016
Getting an overview of all documentation tasks we are missing, making worksheets.

Wednesday 20/4 2016
Worksheets (status 2, kitchen elements history, domestic appliances today etc.)
Supervision Kaare (Skype): contact to future researcher, we should decide on either cooker hood or cooking top, make the cooker hood less complex
Supervision Mikael: likes our "sculpture", sources for material research

Thursday 21/4 2016
Worksheets, report, documentation

Friday 22/4 2016
Work at home (worksheets, report, documentation)

WEEK 17

Monday 25/4 2016
Documentation, worksheets, report

Tuesday 26/4 2016
Ideation of interaction and feedback + hotplates layout. Bodystorming on hotplate layout.

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JOURNAL, PROJECT PROCESS

Wednesday 27/4 2016
Ideation on cooker hood (how to make it more simple), wave idea chosen.

Thursday 28/4 2016
Supervision Kaare: Likes the concept, thinks we should do more about the hotplate area to make it the same level of "new" as the cooker hood.
Supervision Mikael: Thinks the concept is possible to make, we should focus on detailing the cooker hood fully and leave the rest as loose concepts.

Friday 29/4 2016
Documentation, worksheets, report

WEEK 18

Monday 2/5 2016
Documentation, worksheets, report

Tuesday 3/5 2016
Documentation, illustrations for wave concept, small mock-up wave concept.
Mikael supervision: we should stop detailing until we have the basics ready.

Wednesday 4/5 2016
IDA seminar

Thursday 5/5 2016
Photoshoot, mock-up wave concept, report reading/updating requirements + design brief 1.
3d cookware.

Friday 6/5 2016
3d cookware, report text wave concept + trends, reading guide + preface, epilogue intro, worksheet 35.

WEEK 19

Monday 9/5 2016
Detailing of lamellae, edit text in process report, worksheets

Tuesday 10/5 2016
Detailing of lamellae, edit text in process report, worksheets

Wednesday 11/5 2016
Detailing, report writing/editing

Thursday 12/5 2016
Detailing, report writing/editing

Friday 13/5 2016
Detailing, report writing/editing

Saturday 14/5 2016
Detailing, report writing/editing

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JOURNAL, PROJECT PROCESS

Sunday 15/5 2016
Detailing, report writing/editing

WEEK 20

Monday 16/5 2016
Business and marketing, edit text in process report, 3d modelling

Tuesday 17/5 2016
Business and marketing, edit text in process report, 3d modelling, update final requirements

Wednesday 18/5 2016
Supervision Kaare
Reflection, conclusion, calculations on beam, 3d printing lamellae profile, edit text in process report, 3d modelling

Thursday 19/5 2016
Illustrationslist, table of contents, CAD modelling, last finish on the proces report

Friday 20/5 2016
Print proces report and CAD modelling, structuring the product report

Saturday 21/5 2016
Making product report, renderings and kitchen setup, value proposition and product report text

Sunday 22/5 2016
Making renderings for colourations, interaction scenarios and cleaning scenarios, last finish on the product report

WEEK 21

Monday 23/5 2016
Send product report to print, read worksheets and appendix

Tuesday 24/5 2016
Technical drawings, check worksheets, make appendix and USB ready for hand-in

Wednesday 25/5 2016
Project hand-in at 9.