
HEMISPHERE

Appendix



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1. PLAN OF ACTION

Technology - research

To start with, different technologies available will be investigated. Then the various abilities of every individual technology will be listed. Within this list, unusable technologies will be crossed out till only the promising technologies remain. After looking at these residual technologies individually, the technology most feasible will be chosen.

Target-group - research

The needs of the target group suitable to MANU will be researched. Thereby their lifestyle and additional needs. During desk,- and field-research trends will be formed, whereof design decisions will be made. But to get to know this target group first, desktop research will be done.

When the target group is determined a survey will be made and spread within the Dutch Vogel's companies. Participants not suitable for the target group will be filtered out. On the base of this survey results, design wishes and demands will be listed. Also, an old focus group session done by MANU in 2016 will be reviewed. The relevance of the mentioned needs participants experienced at that time, will be compared to relevance for today. other resources of information will be viewed to complete the picture of the target group. These results will also be implemented to the list of wishes and demands. From the wishes and demands list the Program of

Demands will be formed.

Sketching - phase

During this process, sketches will be made on the base of the list of wishes and demands. Thereafter it will be investigated if the design would fit MANU and to the examined target group. Within this phase, a large number of as many sketches as possible will be made to get a feeling of learning which shape would fit best to the target group and MANU. the best. These designs sketches will be in favor of the possibilities of the chosen technology.

Concept - phase

Out of these sketches, concepts will be formed. Every concept will have its own characteristics on the basis of consumer insights, together with the chosen technology. These concepts will be tested within the Program of Demands.

Prototyping - phase

When the choice of a concept is made, the prototype phase will begin. In this phase, prototypes will be built and adjusted to technical- or consumer insights. During this process, sketches will simultaneously be made to improve the final design. These prototypes will also be used to perform a Contextual Inquiry test within the target group. The results of this test will be taken along with shaping the design of the final concept.

Technical detailing - phase
 During the technical detail-, and engineering phase the design will be defined technically. The technical details will be thought out and translated into a technical 3D model. This 3D model will be elaborated on to 2D drawings to make the model ready for production.

Visualization - phase
 To make the final design presentable visualizations will be made during the visualization phase. These visualizations can then be used in the final report and during the final presentation.

2. TREND RESEARCH

2.1 TREND 1 SOUNDNESS TRAVEL

Why: mental relaxation, health and experience

What:

Because of the rush of everyday life, people are searching for stillness combined with a wellness experience. They find this wellness in traveling where they can completely de-stress.



By Simon Migaj

Where:

TREND TRAVEL

Photo reportage: anama
 Photographer Petros Koublis made a photo reportage about unseen parts of a Greek Island. The image is designed to envision the island thousands of years ago. This would give the viewer an experience of stepping out of everyday life for a minute. (TREND TABLET, z.d.)

WELLNESS CRUISE

Name: Goop at Sea
 The platform Goop is invented by Gwyneth Paltrow and mend for nonjudgmental conversations to share experience and products. These ingredients combined with wellness will be experienced during this cruise. For people to de-stress and open their minds to new discoveries. (Celebrity Cruises, z.d.)

TRAVEL NEXT LEVEL

Online travel agency
 The online travel agency EQUINOX EXPLORE is about creating a next-level journey. They offer experiences that reach the limit of travel. Going deeper with like-minded travelers to discover soul-touching cultures and excursions. A combination of luxury and body limits. (EQUINOX EXPLORE , z.d.)

Who: The Bucket List Family
 The Bucket List Family is a family originally from the U.S. that was traveling all around the world and shared all their experiences online. They share photos and videos of their journey and visit the most exotic locations in the world. Every journey they stay at a different AirBnB to get in closer contact with the locals. They started traveling to make one last big trip before they would settle down. But because they discovered they could make a living from traveling, they traveled full-time for 3 years and visited 65 different countries. But because of family matters, they do not travel full-time anymore. (The Bucket List Family, z.d.)

Their YouTube channel, Instagram and website give small insights into their daily life and travels they did and still do. They want to inspire people to let go of the daily rush and just enjoy the moments of life. (The Bucket List Family, z.d.)

When: The majority of people now days feel the need for wellness traveling. Comparing to overall tourism, wellness travel is growing twice as hard. Also, most wellness tourists are spending 178% more than the average traveler. These tourists associate traveling with personal well-being and something that would need to fit their lifestyle. Most travelers are higher educated women between 30 and 60 years old. (Rubinstein, 2020)

Why: Mentally ordered, less stress, beauty in surroundings, less worry

2.2 TREND 2

MIND MINIMALISM



By Bench Accounting

What: Because of hectic lives people nowadays live in, a growing need raises to minimize. Minimalization will order the mind until the only necessary basics. It will create peace of mind in mental and physical elements.

Where:

LUXE, MINIMALISTIC Sneaker: JAK Shoes
 This shoe promises to give a Royal, luxury feeling by designing it as minimalistic as possible. Minimalistic is seen as a high-end design feather that should look natural. Therewith it does not compromise in beauty and aging of this shoe should be visible. (Staff, 2020)

THE LONGING FOR LESS Book by: Kyle Chayka
 Writer Kyle Chayka wrote the book The Longing For Less book to found out wat minimalistic actually means. Minimalism is fundamentally about the diversity of vision. Attention to detail is a process that needs to be refreshed every day. (Chayka, 2020a)

MINIMALISTIC MAKEOVER Fashion: KENZO
 With a nomadic lifestyle as inspiration, the brand KENZO decided to bring a more minimalistic look to the Spring/Summer of 2020. This fresh vision follows other brands to go back to nature and necessarily basics. (Silbert, 2020)

Who; Jelle Derckx
Jelle Derckx is an actor, writer, and blogger. After he graduated in 2007 at the Utrecht theater academy he decided to focus on living as minimalistic as possible. During this process, he invented the platform growthinkers together with his girlfriend Claire. On this platform, they publish articles, podcasts, and videos about living sustainable and minimalistic. He hopes to inspire other people to follow his passion and be more aware of the environment. (Derckx, 2019)

In June 2018 he published his book "Verlangen naar minder" together with publisher Luitingh Sijthoff. His book is about learning to minimize belongings to minimize the mind. The fewer things people have to carry around, the more flexible they can

be. Jelle Derckx found his happiness in his minimalistic lifestyle. (Derckx, 2019)

When:
The phenomenon of minimizing belongings to order the mind is becoming more relevant today. Technology has made enormous steps and made life a lot easier today. But because life has made it easier, it also brings more rush, which results in more stress to daily life. Philosopher Richard Gregg already noticed this in 1933; he published an essay about what more technology and machinery would bring. The essay is called "The Value of Voluntary Simplicity" and foresees the need of people wanting to unplug and slow down. He noticed the effect of technology on people and therefore criticized this development. (Chayka, 2020b)

2.3 Trend 3

FLEXIBLE TOUCH

What:

Creating more possibilities for workers to work flexibly will be in favor of their wellbeing. Technology today causes people to not be able to turn off anymore. This results in not only their personal but also work life. People experiencing an increasing amount of performance pressure, which leads to the upcoming need for working flexibly in the near future.

Why: Piece of mind, changing economy, feeling of community, being outside of



By Brooke Cagle

Where:

IKEA Without PARKING
New concept store: IKEA
IKEA has decided to challenge its own concept to open a store without parking places in the center of Vienna. Customers could come in public transport. The building itself is built to be flexible as the top floor will be used as a hostel. (Lieshout, van, 2020)

SUPERLOFTS
Housebuilding project
The Dutch company SUPERLOFTS focusing on modular loft design where customers can compose their own loft. Because they make use of standard fabrication sizes, the loft can be adapted to every need over time. The customer decides the total surface, then mapping inside stays flexible. (SUPERLOFTS, 2019)

FLEXIBLE WORK
Product: Keyless access
The Keyless access from SKEPP offers employees the opportunity to work more flexibly. They could enter their offices on 24/07 and decide for themselves when they want to work. The room will be unlocked by an installed app, this app also registers who is present at that moment. (Reinerink, 2019)

Who:

Annic Ten Duis

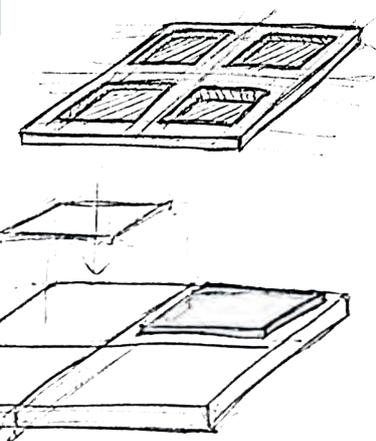
Annic is a Dutch entrepreneur who has more than 17 years of experience in undertaking businesses. In 2009 she launched the fashion website 'I Love Fashion News' what today is reaching 2.4 million visitors a month. In 2012 she started her own coaching and advising company called 'Wonderen Publishing & Consultancy'. Whiten this company she wants to inspire other entrepreneurs to also be successful. But she does this with a twist, she likes to share her knowledge in a casual way. In 2015 she launched a YouTube channel to give insight into her daily life with today 60.000 viewers. Most of the time she is working flexible hours and is engaging others to do the same. This helps to get more creative and be as successful as she is. (Ten Duis, 2020)

When:

Several studies have been done that prove more employees are suffering from the increasing pressure. Workers have difficulty separate work from personal time and are experiencing physical and mental health issues. The cause of this would be that employees are never turned off anymore and is expected to be more flexible. A survey study was done by Quartz insight in partnership with Citrix Systems discovered, having the possibility to work flexible is one of the top 3 most important to employees. Most employees felt being on 'working-modus' all the time. Out of 1000 filled in surveys, 77% said having the opportunity to work flexibly would make them more creative and innovative. (Ali, 2020)

3. Available wireless technology

3.1 Tesla coil



A Tesla coil is a high-frequency voltage energy source in contrast to conventional electricity. It transmits energy without wires, noise, light or producing heat. It also is harmless passing through a human without experiencing any shock effect. It can light a lightbulb from a distance of 60 m to 40 km. (INFORMATION UNITED, z.d.) A Tesla coil exists out of two parts, the primary and secondary coil, including their own capacitor. The Tesla coil is powered by a high energy source and transformer which creates a spark gap between

the primary and secondary coil. The energy will go back and forward between the two coils which will charge the top-load. When the top-load is fully loaded it will send out a high-frequency voltage that can charge other devices. (Dickerson, 2014)

The reason for not using the Tesla coil as a power source today is because it is uncontrollable. It will send energy into the room and will change everything around it, also unwanted metals and devices. It is unregulatable and can not send concentrated energy which makes it less efficient. (Lindsey & Mudge, 2018) The efficiency also drops exponentially over a longer distance. Thereafter the high frequencies the Tesla coil produces are not suitable to charge devices. The high periodic and high-intensity discharges are the exact opposite of what a battery needs and will be damaged. (Carpenter & Remaker, 2018)

3.2 Magnetic Resonance

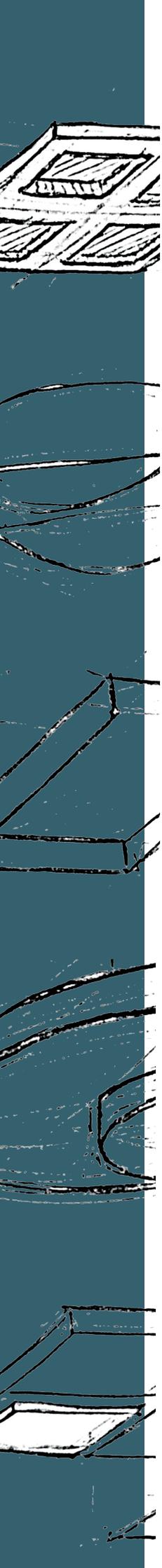
A company who developing resonance charging efficiently for the automotive industry is the company WiTricity. WiTricity is a member of the Airfuel Alliance group and focused on developing technology to wireless charge vehicles. They succeeded in developing the Resonant technology up to a 90-93% efficiency with beyond 11kW charge possibility. The vehicles will be charged, when it is driven on the developed plate and wirelessly connected to the vehicle. WiTricity calls it the future of wireless charging, charging without plugging in or cables. (WiTricity, z.d.)

3.3 Radio Frequency (RF)

A device developed including this technology is from the company Humavox. Humavox is a company focused on marketing its technology to other companies who can build around their own design. They build ETERNA a power transmitter (Tx) that can serve as a three-dimensional wireless charging station, the technology is called NEST. It is mended as charging station devices can be placed in charge. The case could be designed as a bowl, box or to another interpretation. (Humavox, z.d.)

Another company that is in the development of Resonant technology is the company AirFuel. AirFuel Alliance exists of a group of leading companies creating a wireless environment, focused on developing wireless charging solutions of all kinds. Companies members of this group are; Samsung Electronics, Dell, Qualcomm, Duracell, WiTricity, Energous, EPC, PowerSphyr, ON Semiconductor. They believe there is not a "one size fits all" and want to work with other companies to search for new applications. They, for example, collaborated with Humavox to develop wirelessly chargeable Headphones/Headsets & Earbuds. Or collaborating with Energous to develop solutions to create a complete wirelessly chargeable home for all devices. AirFuel is open to new challenges and sees the future completely wireless. (AirFuel, 2020)

Another in the development of Radiofrequency is the company Airfuel also named before. Radio Frequencies could charge devices over a distance of centimeters to a few meters. When the charging field is lower, the capacity will decrease energy will get lost. In contrast to using the RF technology in a closed box where the capacity is optimal. The technology is very flexible to build in because there are no limitations in size or shape. Thereafter it can charge multiple devices at once. (Airfuel, 2019)



3.4 SAR regulations

To be able to measure the rate of radio frequencies (RF) sent by devices and determine if they affect the human body a standard is created. The Specific Absorption Rate (SAR) measures the absorption of RF-energy by the human body to the device. This measurement method is specifically designed to show the exposure of mobile devices and wireless devices. Based on these measurements can be determined if the devices fit the Federal Communications Commission (FCC) safety guidelines. This commission is an international commission for radio, television, satellite, wire, and cable-based in the United States. An independent commission consists of medical and biological experts focused on studying RF health effects. (Federal Communications Commission, 2020)

To execute the SAR-test, a standard model of the human head is used filled with liquids. These liquids based on different types of human tissues stimulate the characteristics of RF absorption. During the test, the cellphone used will be operated on the highest frequency power level. The phone will be placed on common positions of the head and other various positions on the body. A computer will take all measurements and place them places the device in different categories. (Federal Communications Commission, 2020)

The SAR-test will only indicate if the highest frequency not will exceed the maximum level rated by FCC federal safety limitations. It will not indicate if the exposure of the device will be harmful during normal use over a longer period of time. The FCC advises reducing exposure to RF devices as much as possible. This by not holding a cell phone in the pocket and using headsets to phone someone. (Federal Communications Commission, 2020)

3.5 Radiation explained

There are two different types of radiation, Electronic, and Nuclear radiation. Electronic radiation exists out of energy waves, caused by an interaction between electrical and magnetically waves. These waves produced oscillate, these could be scaled up to produce more energy. These different levels of energy waves are divided on the spectrum. At the lower side of the spectrum radio, microwave and infrared is placed. At the higher energy

level; ultraviolet, x-ray and gamma rays are rated. Society today is shaped by electromagnetic radiation being around all the time. (TED-Ed, 2016)

Nuclear radiation exists in neutrons and protons that form isotopes. Radiation is being formed because neutrons and protons move around to get to a

neutral state. Radiation itself is a natural phenomenon. It is, for example, coming for gas from the ground, but could also be used to power nuclear power stations. Not all radiation is damaging, only when the electron atoms are dart away on impact. Then it can damage DNA, this process is called ionizing radiation. All nuclear radiation is ionizing which means; ultraviolet, x-ray and gamma rays are ionizing radiation. Because telephones and microwaves operate on a lower level of the spectrum, no ionizing radiation is taking place. (TED-Ed, 2016)

Ionizing radiation becomes dangerous if a large amount of ionizing radiation is exposed to the human body in a short period of time. This short term exposure is called Acute exposure. Acute exposure will overwhelm the natural ability of cell repair in the human body. It could cause Cancer, Cellules dysfunction or death, but acute exposure is very rare. The ionizing radiation could be measured by Sieverts. The radiation an average person receives at normal daily life is 6.2 millisieverts per year. A fatal level would be at 4 Sievers per year. (TED-Ed, 2016)

3.6 Infrared

A company with a patent on light-based infrared technology is the company Wi-Charge. Wi-Charge is a company that is focused on creating a wireless environment. Charging devices without needing cables or charging pads. In 2015 Wi-Charge announced the light-based infrared technology and presented a prototype in 2018 at the CES. Currently,

the lights-based technology could deliver 2,25W over a distance of 5 meters. (Wi-Charge, z.d.)

The power source included in the light-based technology searches the light-based receiver and sends concentrated energy towards it. About 100% of the transmitted energy reaches the receiver. The charging capabilities will not be reduced by increasing the distance to the transmitter. (Elinoff, 2019)

3.7 WIFI

The company Energous sees potential in this technology philosophy. Energous is one of the Airfuel Alliance members in the development to create a wireless environment. At the AirFuel wireless Conference & Developers Forum in China 2018, Energous presented the WattUp project. WattUp is a power-at-a-distance and wire-free technology with the same operation as WIFI. Based on Radio Frequencies devices can be charged till a 4,5-meter range. Energous developed a transmitter and receiver chip that could be built in every device. (Press Release, 2018) At the CES 2019, Energous presented the technology to

the consumer market. They believe this technology should be build-in on every device. (Dolcourt, 2019)

Another company called OSSIA announced the first wireless power station called Cota HOME. At CES 2020 OSSIA presented Cota HOME mend for at home, small businesses, or home offices. OSSIA is focused on RF wireless charging and has a patent on RF small antenna technology. Within this technology, multiple devices will automatically be connected and charged in a range of 9 meters. All devices need to be connected to the Cota HOME network via the cloud or mobile app. When the devices are tuned to the same range, the Cota HOME will automatically charge these devices and remain charged. (Grenz, z.d.)



3.8 SOUND

The company that developed this technology is called SonicEnergy. Ubeam the original name of the project, started in 2012 as a startup. Today they granted more than 125 patents on their technology and changed their official

name to SonicEnergy. The technology can charge devices tens of meters away to the transmitter. (Jones, 2019) The transmitter sends ultra-high frequency sound, imperceptible for humans to the receiver. This receiver functions like a microphone pick up the ultrasound and convert it into electrical energy. The receiver needs to be placed on the device. (SonicEnergy, z.d.)

3.9 Meeting at Wireless Power Consortium of Philips

To get a better perspective on the different wireless charging methods, an expert at the consortium of Wireless Charging Technology at Philips was asked for an informative meeting. The meeting was held with Rick Dumont Director Business Development of Philips Intellectual Property & Standards, he is working at Philips for several years.

Philips is one of the founders of wireless charging technology. They invented the first wireless charging technology starting with products like a toothbrush. To create a standard they developed the Qi brand, which is now used in wireless mobile phone charging devices. For convenience, they decided to buy up all patents in this field.

This means Philips holds all patents concerning wireless charging technology and receives a fee for every wireless charger that is sold today. But because other companies also picked up the wireless

phone charging products, Philips decided to withdraw. The main focus of Philips has always been to develop products for the health sector. When something does not fit this philosophy, they decided to take a different direction.

There are 3 wireless charging standards at the moment. The Qi Wireless Charging from 5W-15W, used for mobile devices, phones, and laptops. Medium Power 30W-200W, used for power tools, robots, e-bikes and drones. Ki Cordless Kitchen up to 2200W, used for induction cooktops, smart cookware, and cordless appliances. The Ki Cordless Kitchen is a new wireless technology Philips is developing for kitchenware. This means not having to plug-in devices while cooking but wirelessly use the kitchen counter to provide energy.

A challenge Philips is facing with the new Ki Cordless Kitchen is the freedom of

placing devices on the kitchen counter. In the future, they would like to create a kitchen counter where it would not matter where you position your kitchen devices. But because they are using the induction they are dependent on the position of the coil.

This is a challenge the HEMISPHERE is also facing, for those reasons the Resonance technology seems to be a solution. But after a small discussion about the Resonance technology, it seems to be not possible according to Rick Dumont.

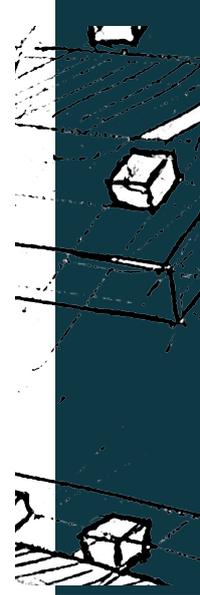
Magnetic Resonance needs to create high-frequency peaks to transfer energy to the device. To create these high peaks, a switch has to operate very quickly to create these frequency waves. The frequencies need to be on high peaks to be able to reach over a distance to charge the device. Because it is not possible to concentrate the energy waves to only the device, a lot of radiation will be diffused into the room. This makes it difficult to charge a device over a larger distance.

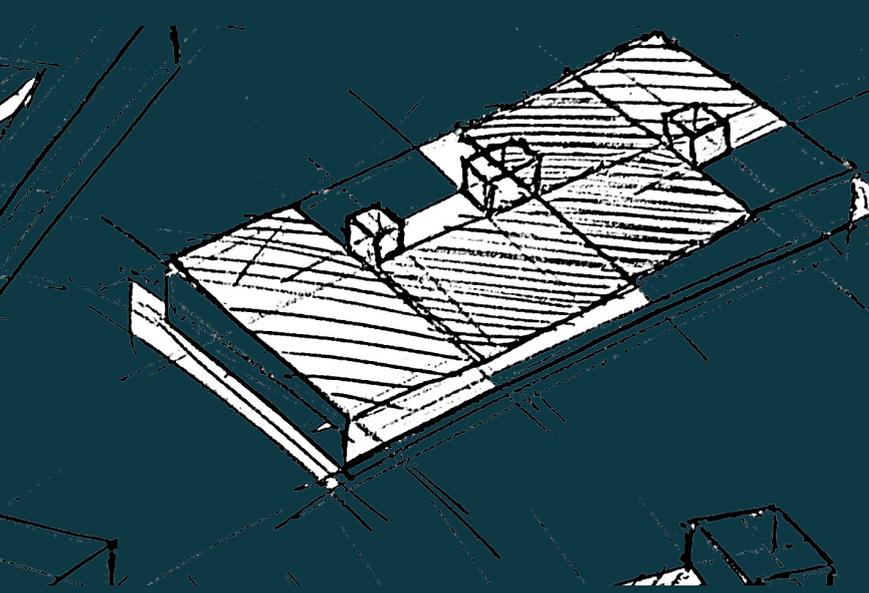
Also, the high-frequency peaks are on a level that is not healthy for humans, the environment and bad for the battery of the devices. Also building a system that could send these high-frequency energy waves would be too expensive for the consumer electronic devices market. In short, according to physics and the financial view, it is not possible to use magnetic resonance.

For those reasons, WiTricity (6.1.3 appendix) focused its technology development in the automotive industry. By charging vehicles two plates are used, one under the car and one on the ground, the distance to one other is very little. Almost no radiation will be lost and therefore the car could be charged very efficiently. To charge the car, the vehicle needs to be parked above the charge plate.

The advice from Rick Dumont was to use the Qi technology and be creative on the possibilities this technology has to offer. But also to look closely at the specific needs of the consumers. The reason consumers buy a new phone is not because of the wireless charging option. Only 10% of the consumers who buy a wireless chargeable phone know of the wireless charge option. His advice was to look at Chinese companies based in Shenzhen, these companies produce a large number of wireless phone chargers that could be an inspiration.

Concluded, Philips is the patent holder of every wireless charging technology now available. At the moment they do not develop new technology for wireless phone charging. The main focus of the company Philips is health, their developments are always toward this. Therefore they noticed a new opportunity in the development of the Ki Cordless Kitchen technology. In this development process, they face positioning problems similar to wireless phone charging. Using Magnetic Induction has its limitations where the Resonance technology seemed to be very promising. But according to physics and financial aspects Resonance charging is not an option. Rick Dumont explained the high-frequency wave needed to charge devices is very harmful to humans, the environment, and bad for the battery of devices. Energy waves can not be concentrated on what results in radiation being diffused into the room. This makes it very difficult to charge a device over a longer distance. Therefore WiTricity focused their Resonance development only on vehicle charging. The charge distance is very small so an efficient charging area can be created. The advice of Rick Dumont was to use the current developed Qi technology and look closely at real consumer needs. But also to get inspired by companies based in Shenzhen who developed a large number of different wireless charge devices.





4. Contextual Inquiry PROGRAM

Huiswerkopdracht:

Om de deelnemers op scherp te zetten voor het deelnemen aan de Contextual Inquiry test, wordt ze gevraagd om vooraf thuis een kleine opdracht uit te voeren. De vraag wordt voorgelegd om na te denken over hoe ze op dit moment apparaten opladen. Daarnaast wordt ze gevraagd na te denken over dingen die opvallen voor, tijdens en na het opladen van verschillende apparaten. Hierbij zullen zicht moeten richten op het opladen van smartphones, koptelefoons, iPad's en of Tablets. Welke behoeftes ervaren de deelnemers wanneer een device opgeladen moet worden? Ook wordt ze gevraagd om na te denken over irritaties rondom het laden van apparaten.

Programma:

Introductie:

Uitleg over het doel van de test
+/- 3 min.

Tijdens de introductie zal verteld worden wat er van de deelnemers verwacht wordt en dat de volledige test ongeveer 20 minuten zal gaan duren. Ook zal uitgelegd worden dat de mening van de deelnemer erg waardevol is en dat er dus geen fout antwoord bestaat. Ook zal de vraag worden gesteld of deze test mag worden opgenomen. De huiswerkopgave zal tijdens deze gebruikerstest behandeld worden.

Het product dat getest zal worden is een prototype ontworpen als uitbreiding op de huidige product portfolio van MANU. MANU is een bedrijf wat zich richt op

ondersteunende draadloze oplaadstations waarbij de nadruk ligt op de smartphone. Daarnaast zouden op deze oplaadstations ook earpods, koptelefoons en iPad of tablets draadloos opgeladen kunnen worden.

MANU staat voor stijlvolle interieur objecten waarbij een draadloos oplaad station een verrijking moet zijn van het interieur. Technology is steeds belangrijker en bijna onmisbaar in ons dagelijks leven met als gevolg dat meerdere apparaten tegelijk opgeladen moeten worden. Om het gerond slomp van kabels weg te nemen is de CHARGER 2.0 ontworpen. Een laadstation waar 3 apparaten tegelijk opgeladen kunnen worden, waaronder 1 powerbank. Deze kan meegenomen worden naar meerdere ruimtes in en rondom het huis.

Opdracht 1:

Unboxing de CHARGER 2.0
+/- 5 min.

Tijdens deze opdracht wordt er van de deelnemers gevraagd om het product uit te pakken. Hierbij is de eerste indruk erg belangrijk en bepalend of deze aansluit bij de verwachtingen die worden geschept tijdens de introductie. Daarom wordt aan de deelnemers gevraagd wat ze van dit product vinden en wat ze verwachten van dit product. De volgende vragen zullen worden gesteld:

- Wat is de eerste indruk tijdens het uitpakken van dit product?

- Wat valt er op tijdens het uitpakken van dit product?
- Wat is de eerste indruk van het product nadat deze is uitgepakt?
- Wat is de eerste indruk van het design?
- Begrijpt de gebruiker hoe hij/zij dit product moet gebruiken?
- Hoe worden de afmetingen van de CHARGER 2.0 ervaren?
- Waar zouden ze dit product neerzetten thuis?

Opdracht 2:

Plaatsing en gebruik van de CHARGER 2.0
+/- 5 min.

Na het uitpakken van het product zal de deelnemers gevraagd worden dit product te installeren. Eerst zal de deelnemers gevraagd worden om het product te testen. Tijdens het testen zullen een aantal vragen worden gesteld:

- Hoe wordt het gebruik van de CHARGER 2.0 ervaren?
- Wat valt op tijdens het gebruik van de CHARGER 2.0?
- Wat zijn de struikelblokken, ongemakken of verbeterpunten?
- Hoe wordt de lichtindicatie tijdens het laden ervaren?
- Zijn er verbeterpunten te benoemen tijdens het gebruik van het prototype?
- Wat zijn de positieve aspecten aan het gebruik van de CHARGER 2.0?
- Wat zijn de negatieve aspecten aan het gebruik van de CHARGER 2.0?

Na het testen wordt aan de deelnemers gevraagd dit product ergens in de showroom te plaatsen. Deze plaats zou ongeveer overeen moeten komen met de locatie waar ze dit in het eigen huis ook neer zouden zetten. Na de plaatsing zal nogmaals gevraagd worden dit product te gebruiken. Tijdens het tweede gebruik van de CHARGER 2.0 zullen weer vragen worden gesteld:

- Wat valt op tijdens het plaatsen van de CHARGER 2.0 op de juiste positie?

- Hoe wordt het formaat van de CHARGER 2.0 ervaren tijdens het verplaatsen?
- Wat valt op tijdens het tweede gebruik van de CHARGER 2.0?
- Wat valt op aan het gebruik van de CHARGER 2.0 in deze situatie opstelling?
- Sluit de gebruikers behoefte aan bij de CHARGER 2.0 in deze juiste situatie opstelling?
- Hoe wordt het aanwezige licht ervaren in de CHARGER 2.0?
- Wordt de CHARGER 2.0 ervaren als een aanvulling op het interieur?

Opdracht 3: Huiswerkopdracht

+/- 3 min.

Om de deelnemers even terug te laten gaan naar de eigen gebruiksomgeving, wordt ze vraagt naar de huiswerkopgave. Hierbij worden de vragen gesteld die vooraf met de deelnemers gecommuniceerd zijn. Opvallende bevindingen kunnen misschien met de CHARGER 2.0 vergeleken worden of zullen juist afwijken. De deelnemers zullen zich na deze vragen waarschijnlijk eenvoudiger kunnen verplaatsen in de eigen gebruiksomgeving en dit kunnen terugkoppelen in combinatie met de CHARGER 2.0.

- Wat wordt de telefoon opgeladen? Wat zijn hierbij de gebreken of juist niet?
- Zijn er andere draadloze apparaten aanwezig die geladen moeten worden? Waar worden deze opgeladen?
- Wat doet de deelnemer bijvoorbeeld als eerste, tweede en derde na het thuiskomen? En waar is dan de telefoon op dat moment?
- Wat zijn andere behoeftes rondom het laden van de smartphone?
- Zijn er andere draadloze apparaten die dagelijks opgeladen zouden moeten worden?

Opdracht 4: Powerbank opdracht

+/- 2 min.

Na de huiswerkopgave zal aan de deelnemers gevraagd worden om de powerbank te testen. Hierbij zal gekeken worden naar de waarde die de deelnemer hecht aan de powerbank en hoe hij/zij deze denkt te gebruiken. Daarnaast

zal ook gevraagd worden in welke situaties deze powerbank van toepassing zal zijn. Dit zal worden gedaan aan de hand van een aantal vragen:

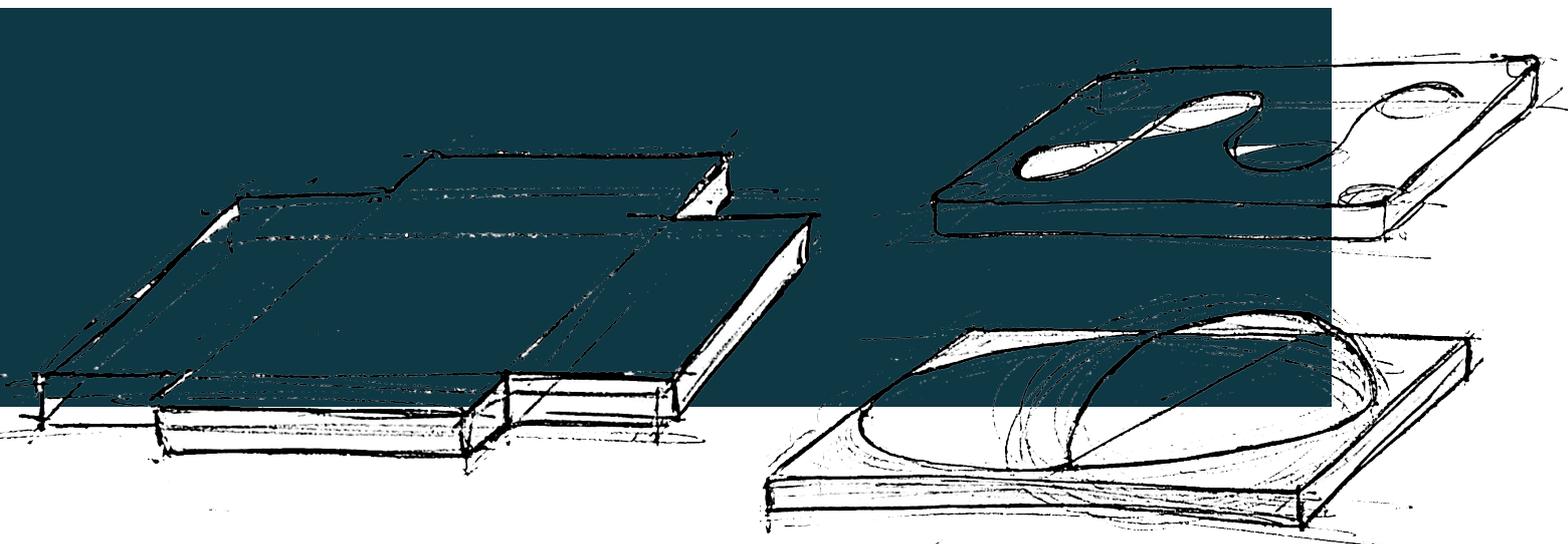
- Wat valt op tijdens het oppakken en meenemen van de powerbank?
- Hoe wordt de vorm en het formaat van de powerbank ervaren?
- Waar zou de powerbank op geplaatst worden tijdens het laden van de telefoon?
- Voelt de powerbank veilig in gebruik?
- Zou de gebruiker de powerbank mee naar de tuin nemen?
- Vindt de gebruiker de powerbank geschikt om mee te nemen in een tas?
- Hoe wordt de waarde van een powerbank ervaren? Is dit een meerwaarde?

Afsluiting: Ervaringen van de user test
+/- 2 min.

Tijdens de afsluiting zal kort geëvalueerd worden op de bevindingen en ervaringen tijdens de user test. Aansluiten zullen nog een paar korte afsluitende vragen worden gesteld rondom materiaal keuze en de uiteindelijke kostprijs. Daarnaast zal de deelnemer worden gevraagd of hij/

zij geïnteresseerd zou zijn in de aanschaf van de CHARGER 2.0 wanneer deze doorontwikkeld zou zijn. De vragen die worden gesteld:

- Wat is de algemene indruk van de user test?
- Wat waren positieve punten en wat waren de negatieve?
- Als wat voor soort product wordt de CHARGER 2.0 ervaren? (laadstation / Interieur object)
- Hoe is over het algemeen het gebruik van de CHARGER 2.0 ervaren?
- Zijn er nog behoeftes rondom het draadloos laden die niet opgelost zijn in dit ontwerp?
- Zouden er nog andere toevoegingen gedaan moeten worden aan de CHARGER 2.0?
- Waar zou dit product verkocht in de toekomst verkocht worden?
- Hoeveel zou dit product mogen kosten?
- Wat zou de gebruiker vinden van een kostprijs tussen de 100 en 150 euro?
- Zou de deelnemer geïnteresseerd zijn om dit product in de toekomst aan te schaffen? Waarom wel/niet?
- Zou de deelnemer dit product aan vrienden of familie aanraden?

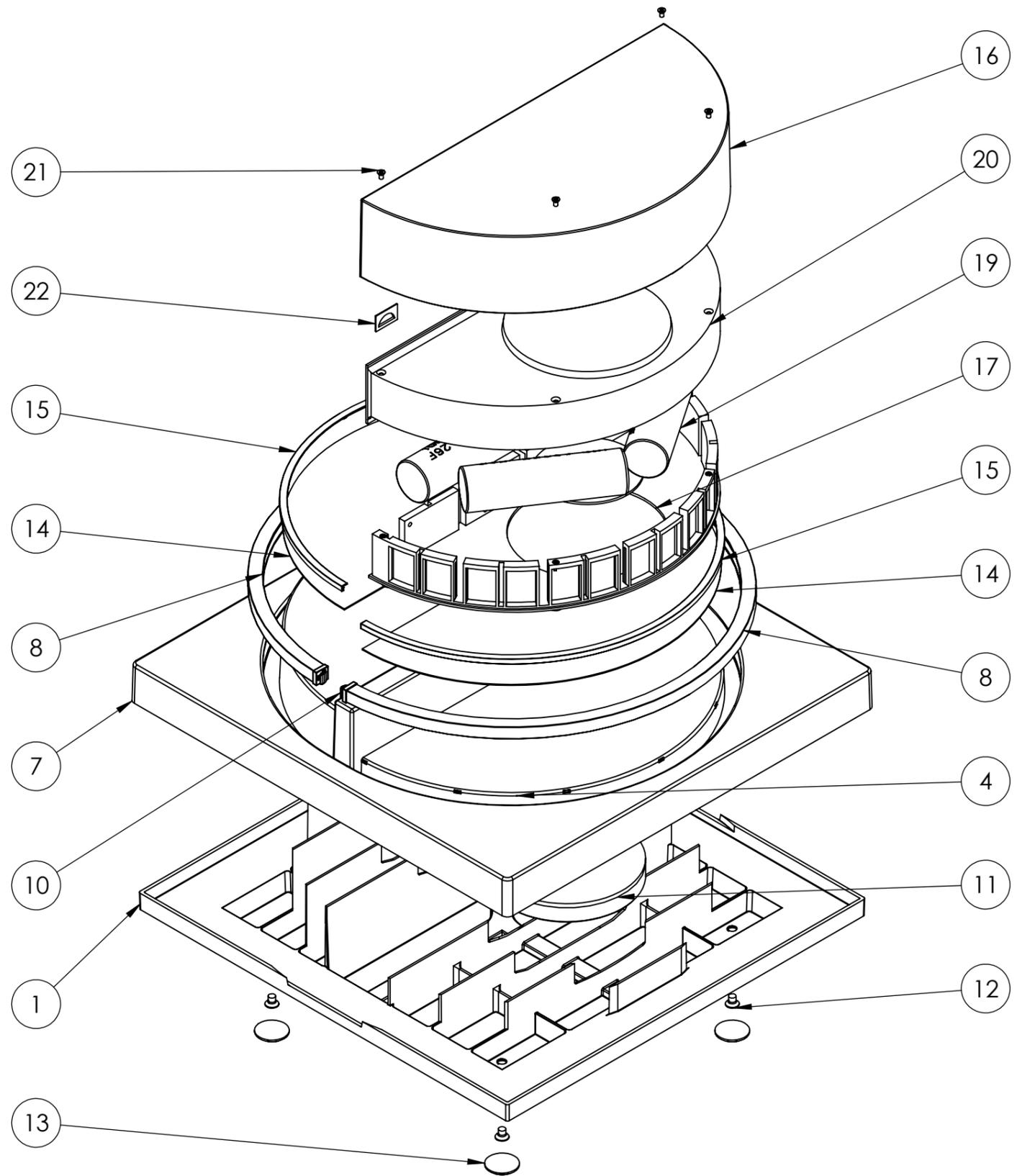
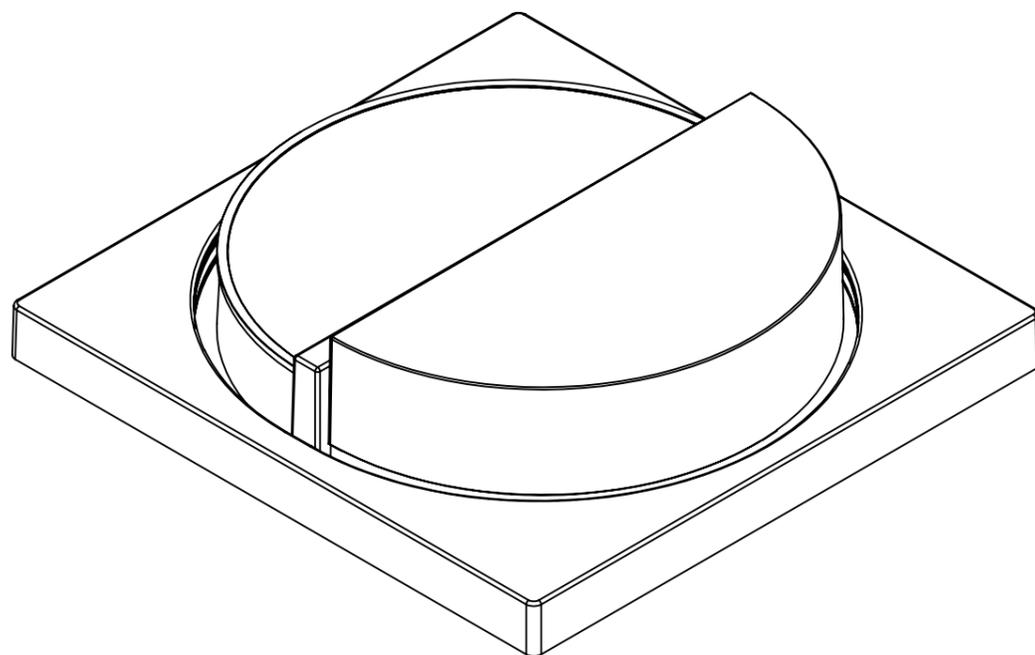


5. KESSELRING METHOD

Functional requirements	<i>Weighting (1 till 3)</i>	<i>Concept 1</i>	<i>Concept 2 (1 till 5)</i>	<i>Concept 3</i>
Ease of positioning of the smartphone	3	15	12	15
Visible attractive concept viewed from all sides	3	12	12	12
Disconnection of the user to their phone while charging.	3	9	12	15
The HEMISPHERE makes charging of smart technology more user friendly.	2	8	8	10
While charging the phone has to lay flat.	2	0	10	10
Minimalistic, neutral and timeless designed charging station	2	6	10	10
Dimension of the concept should be not be to large, (should fit on a small table).	2	6	8	8
Posibility of viewing the phone screen during charging.	1	5	3	1
Suitable in use for man, woman and children	2	6	10	10
The smartphone should not lose charging contact wile charging	3	6	15	15
Total:	115 110%	73 63%	100 87%	106 92%

Manufacturing requirements	<i>Weighting (1 till 3)</i>	<i>Concept 1</i>	<i>Concept 2 (1 till 5)</i>	<i>Concept 3</i>
The charger should be universal to use for every smartphone device including the Qi technology.	3	15	15	15
HEMISPHERE should be suitable for, living room, bed room and hall.	2	6	10	10
The charging station should be suitable to charge 3 devices at once.	2	10	10	10
The charging station should be suitable to charge all kind of devices including the Qi technology.	3	6	12	15
Phone should not damaged during charging.	3	9	12	15
The smartphone is in a safe device/closed case while charging	2	2	8	10
The design of the HEMISPHERE will be in favor of the implementing technology	3	3	15	15
Wirelessly charging multiple personal devices at once suitable.	1	1	3	3
Minimalistic designed including cubic forms charging station.	2	4	10	10
Possible to place multiple coils next to each other inside the device.	2	4	10	10
Total:	115 110%	60 52%	105 91%	113 98%

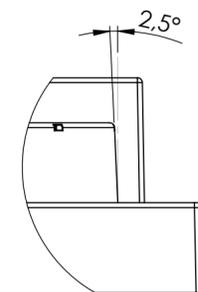
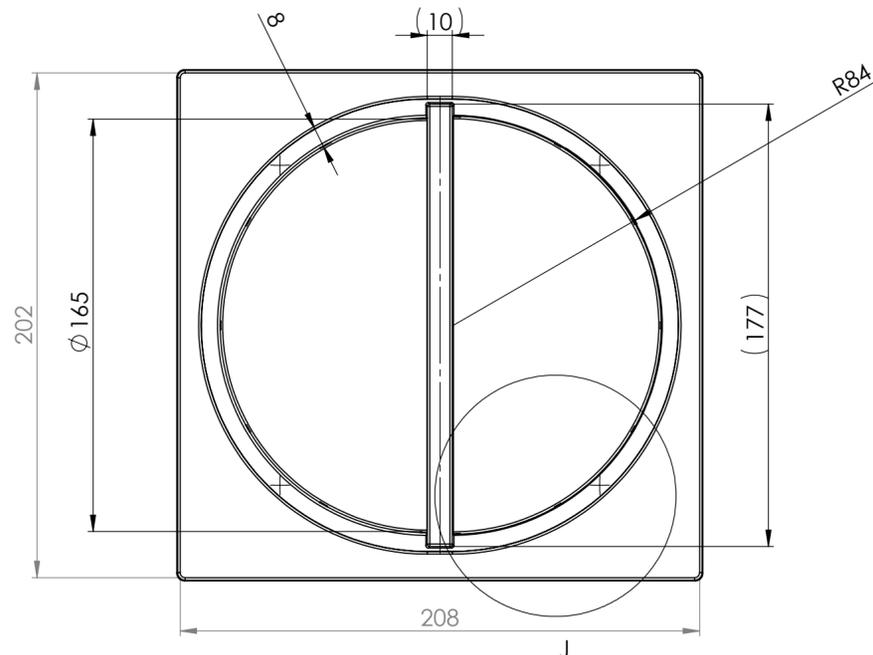
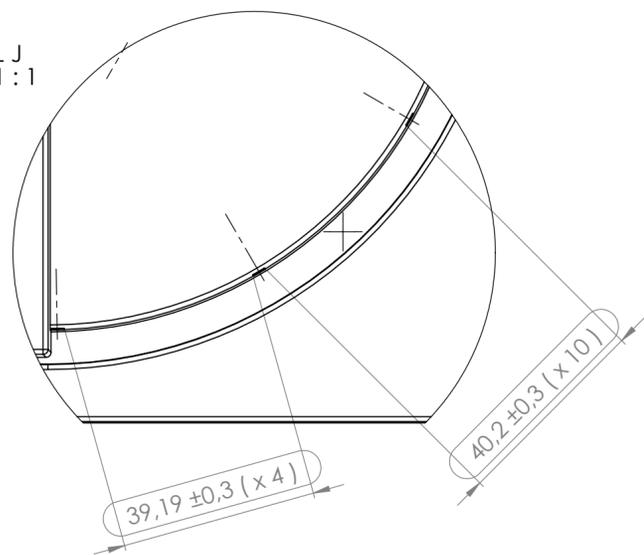
ITEM NO.	PART NUMBER	QTY.
1	M2 Station onderkant part 2	1
2	mid base.STEP	1
3	1mm via hole.STEP	240
4	copper layer.STEP	2
5	top layer.STEP	2
6	USB-type-A(USBR-A-S-F-O-VU)2	1
7	M2 Station bovenkant part 1	1
8	Light part 1	2
9	Light part 2	2
10	Light part 3	4
11	Wireless ZENS charger	2
12	ISO 7046-1 - M3 x 4 - Z - 4N	4
13	Rubber feet Bumper Specialties, Inc	4
14	Textiel	2
15	Stof top klem	2
16	M2 Powerbank buiten part 3	1
17	Powerbank part1.1	1
18	QI WIRELESS CHARGER COIL2	2
19	Samsung icr18650	4
20	Powerbank part2.1	1
21	ISO 7046-1 - M1.6 x 3 - Z - 3N	4
22	Powerbank knop	1



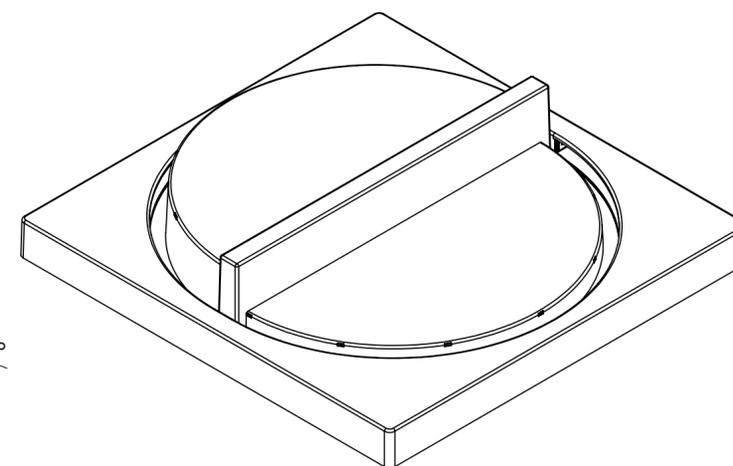
DO NOT SCALE DRAWING

DATE 09/06/2020	DIMENSIONS: MM		DRAWINGNO. 01
MANU		DWG NO.	Final Assem
		Drawn: Manouk Verschure	SHEET 1 OF 7
SCALE:1:2		A3	

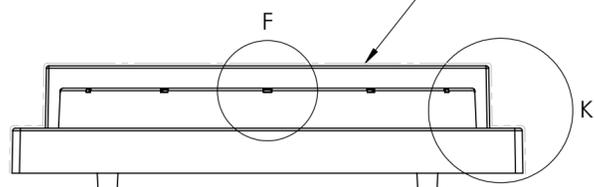
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SCALE 1:1



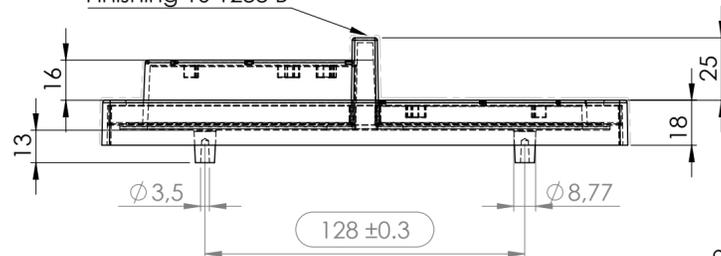
DETAIL K
SCALE 1:1



Finishing YS 1288 B



Finishing YS 1288 B

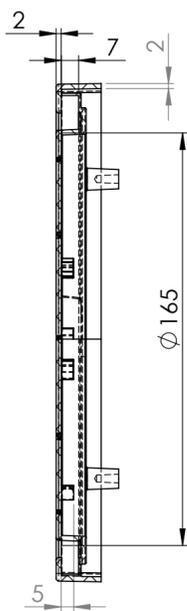
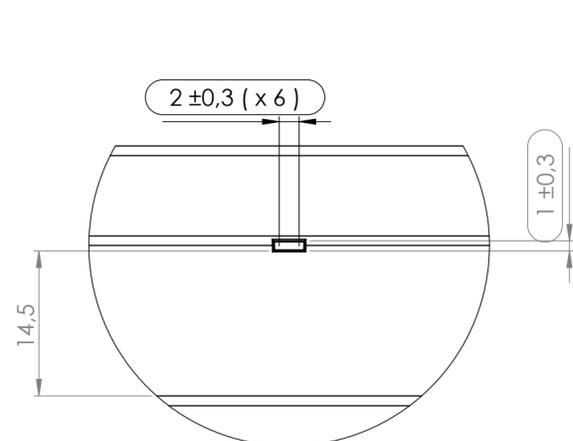


- CAD MODEL IS MASTER FOR ALL UNSPECIFIED INFORMATION.
- TOLERANCES UNLESS OTHERWISE STATED ACC. TO DIN 16901-REIHE 1
- VOLUME : mm³
- ALL SURFACES DRAFT 0.5 DEGREES EXCEPT:
 - * MAIN, NON GRAINED SURFACES : DRAFT 1 DEGREE
 - * MAIN, GRAINED SURFACES : DRAFT 2 DEGREES UNLESS OTHERWISE STATED
- ALL EDGES R0,2mm UNLESS OTHERWISE STATED (EXCEPT PARTING LINE)

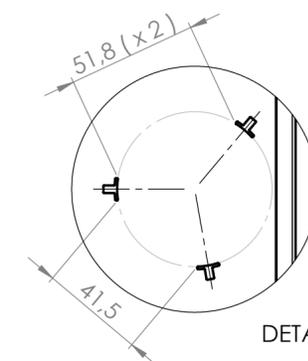
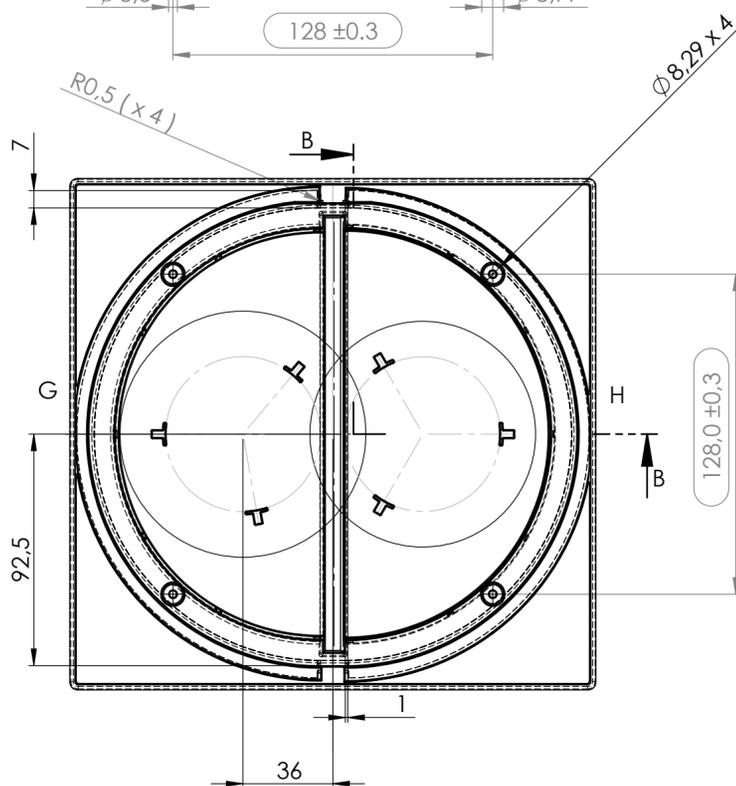
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Inside	Inside	Inside
Outside	Outside	Outside

- DIMENSIONING OF EJECTOR PINS, CORING, SPRUE AND PARTING LINE ONLY AFTER APPROVAL BY VOGELS
- REQUIREMENTS FOR MANUFACTURING
 - * EJECTOR PINS MUST BE 0 - 0,15 mm BELOW SURFACE
 - * FLASH LENGTH MAX : <0,2mm ON PARTING LINE
- SURFACES INDICATED BY TEXTURED
TEXTURE Yick Sang YS 1288 B
- MARKING OF PRODUCT ACCORDING TO VPS10.001
- OUTER APPEARANCE ACCORDING TO APPROVED SAMPLE
- Mass, to be decided on the base of approved samples

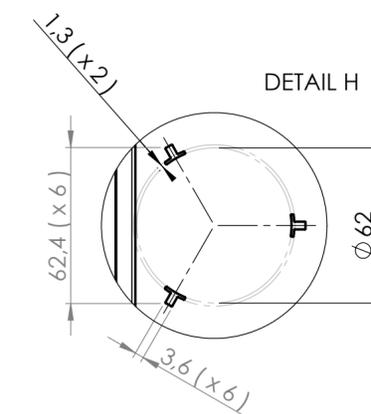
DETAIL F
SCALE 2:1



SECTION B-B



DETAIL G



DETAIL H

DO NOT SCALE DRAWING

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MANU Drawn: Manouk Verschure		MATERIAL: Bio- PE High Density	DWG NO. Station top
		WEIGHT: 150,35	SCALE:1:2 SHEET 2 OF 7

- CAD MODEL IS MASTER FOR ALL UNSPECIFIED INFORMATION.

- TOLERANCES UNLESS OTHERWISE STATED ACC. TO DIN 16901-REIHE 1

- VOLUME : mm³

- ALL SURFACES DRAFT 0.5 DEGREES EXCEPT:
 * MAIN, NON GRAINED SURFACES : DRAFT 1 DEGREE
 * MAIN, GRAINED SURFACES : DRAFT 2 DEGREES
 UNLESS OTHERWISE STATED

- ALL EDGES R0,2mm UNLESS OTHERWISE STATED (EXCEPT PARTING LINE)

Dimension	Draft=PLUS	Draft=Minus
Inside Outside	Inside Outside	Inside Outside

- DIMENSIONING OF EJECTOR PINS, CORING, SPRUE AND PARTING LINE ONLY AFTER APPROVAL BY VOGELS

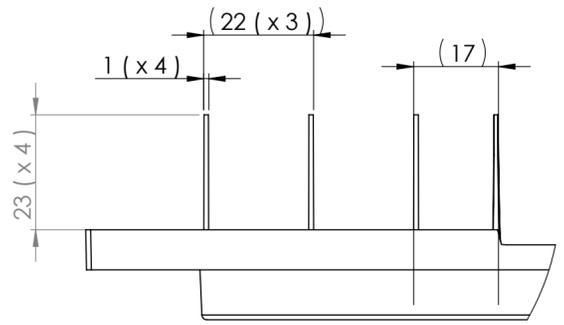
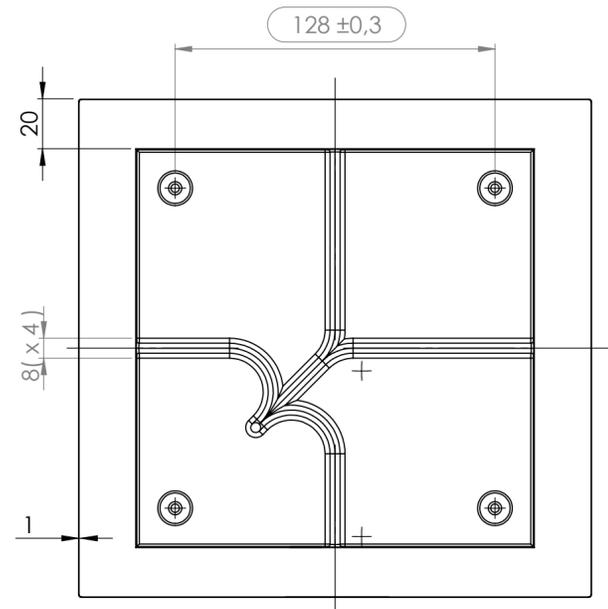
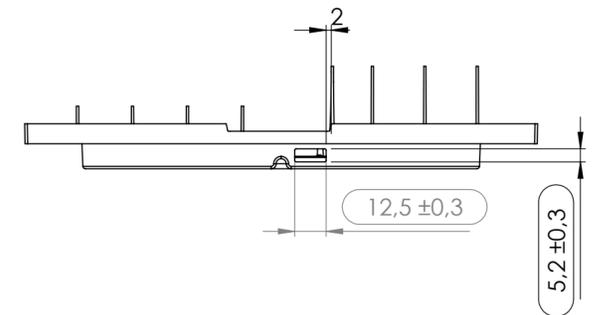
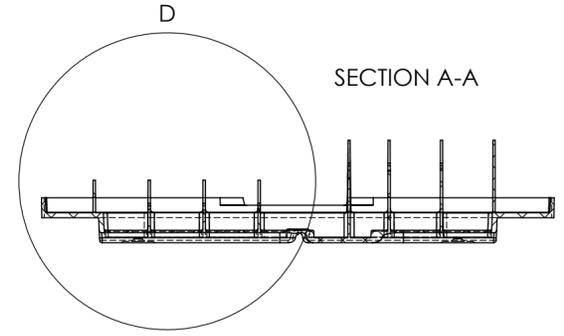
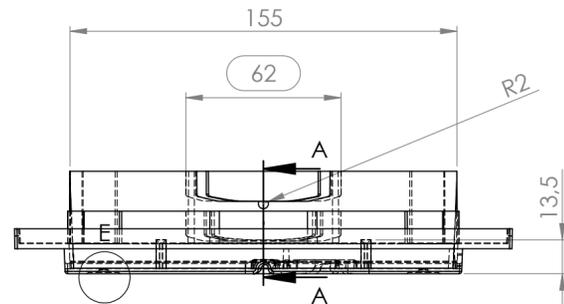
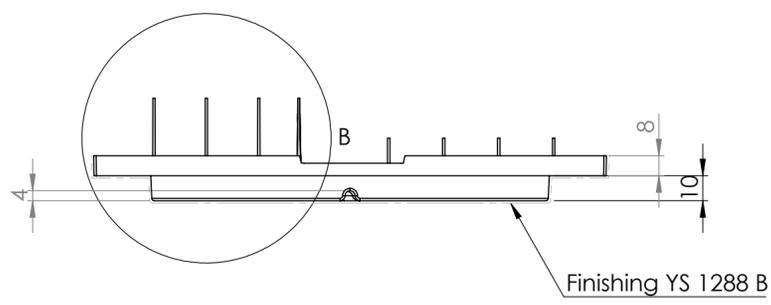
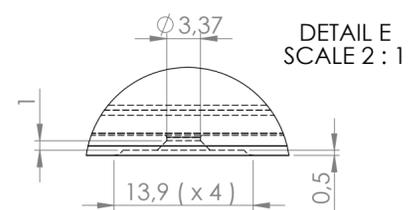
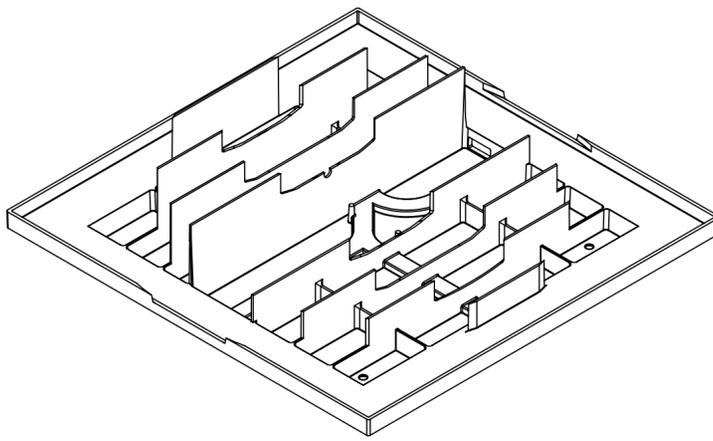
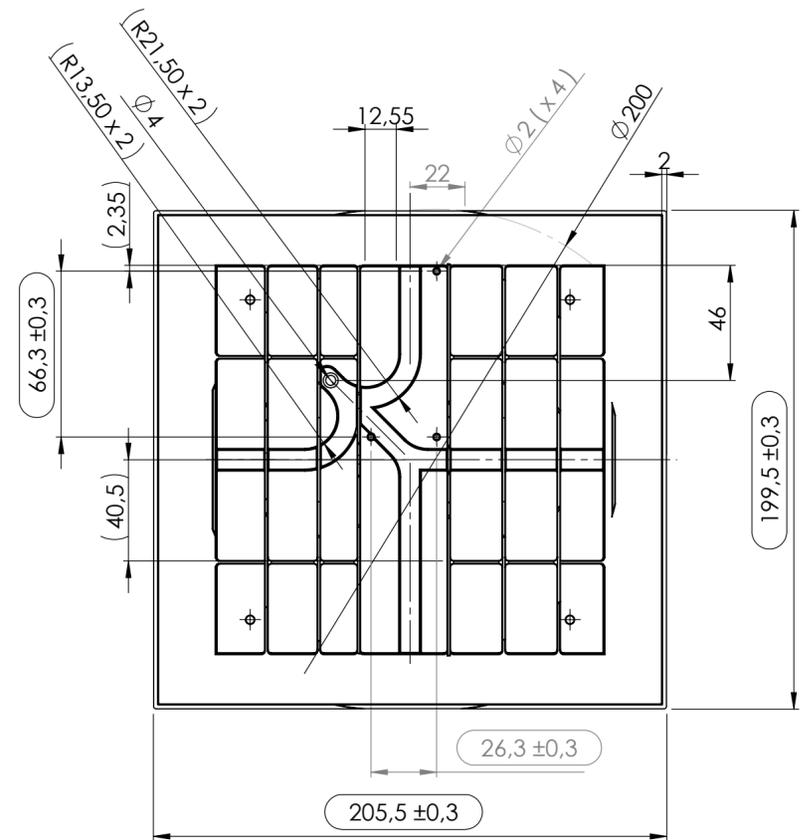
- REQUIREMENTS FOR MANUFACTURING
 * EJECTOR PINS MUST BE 0 - 0,15 mm BELOW SURFACE
 * FLASH LENGTH MAX : <0,2mm ON PARTING LINE

- SURFACES INDICATED BY TEXTURED
 TEXTURE Yick Sang YS 1288 B

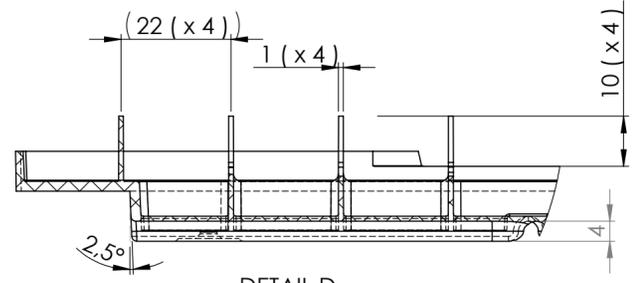
- MARKING OF PRODUCT ACCORDING TO VPS10.001

- OUTER APPEARANCE ACCORDING TO APPROVED SAMPLE

- Mass, to be decided on the base of approved samples



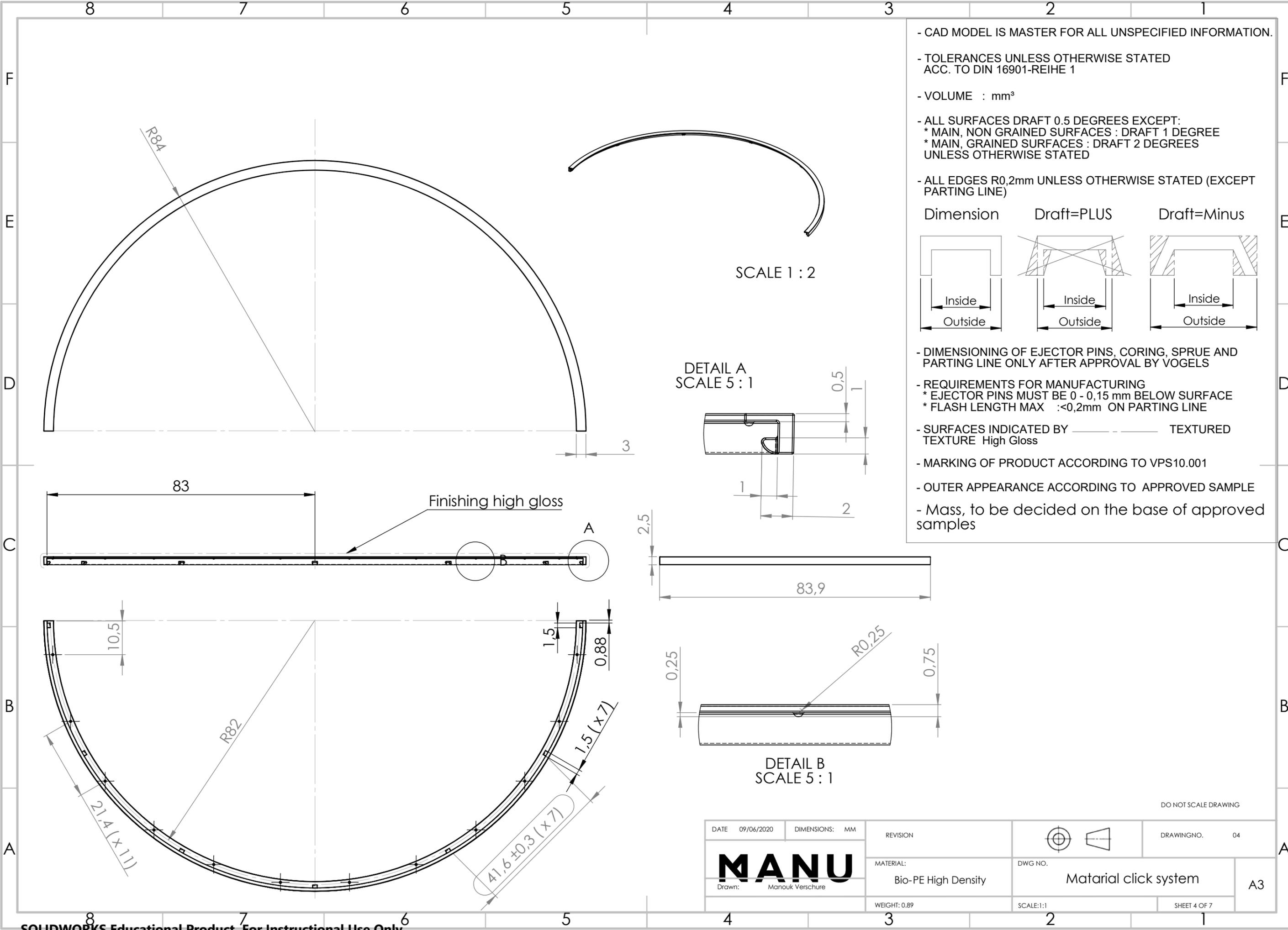
DETAIL B
SCALE 1 : 1



DETAIL D
SCALE 1 : 1

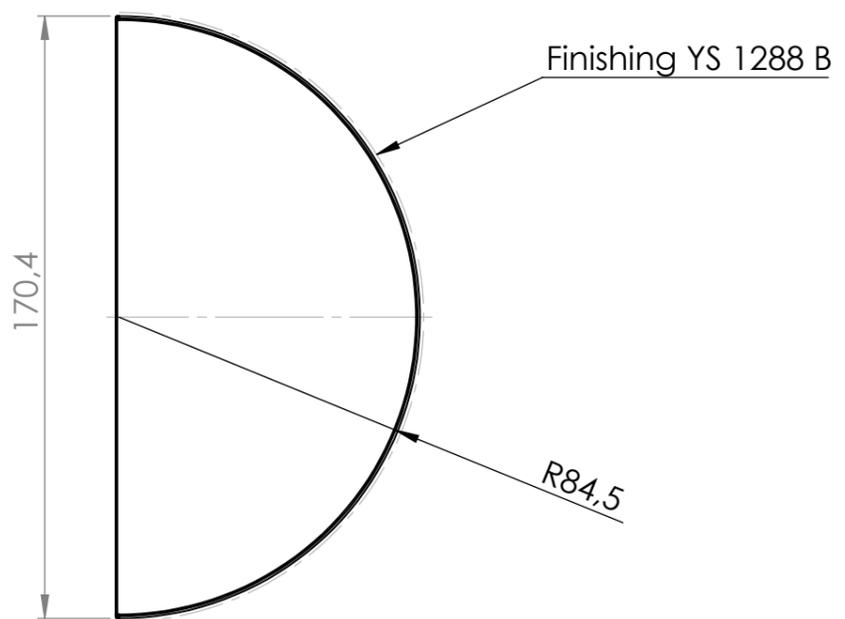
DO NOT SCALE DRAWING

DATE: 09/06/2020	DIMENSIONS: MM	REVISION		DRAWINGNO. 03
MANU		MATERIAL: Bio-PE High Density		DWG NO. Station bottom
Drawn: Manouk Verschure	Approved: -	WEIGHT: 124,28	SCALE:1:2	SHEET 3 OF 7

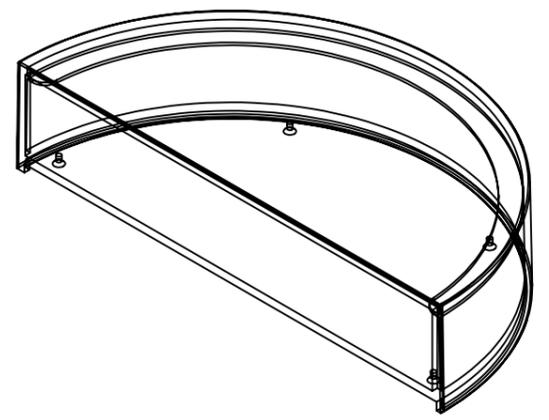
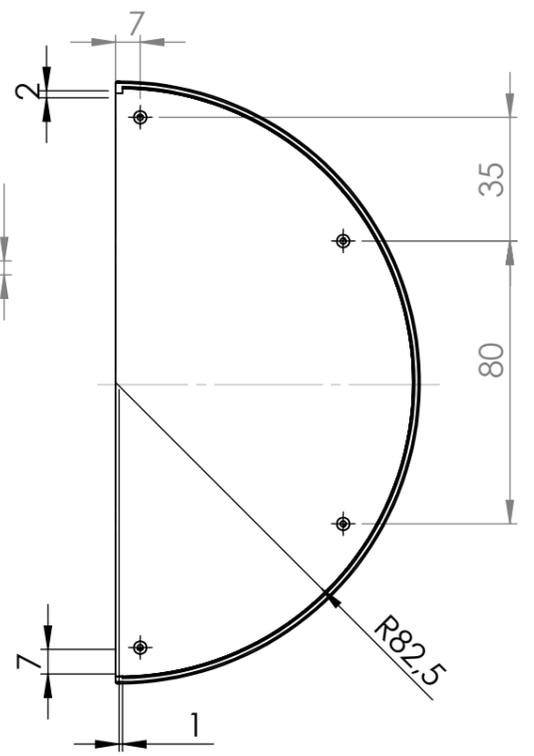
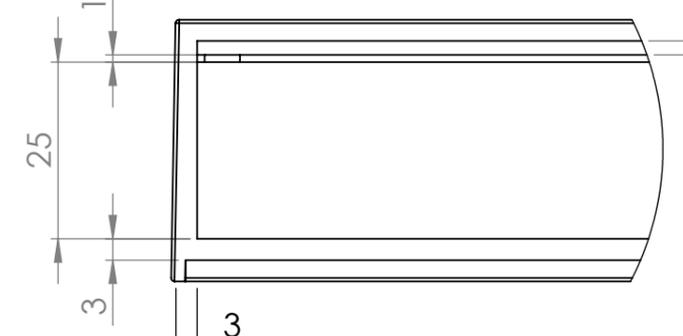
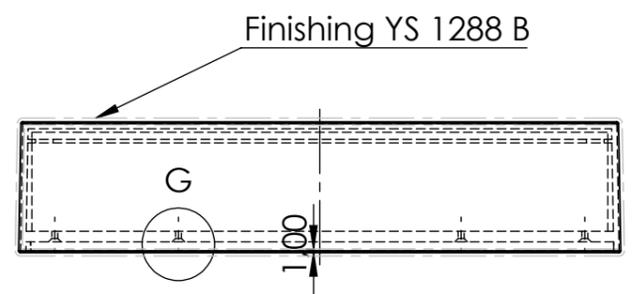
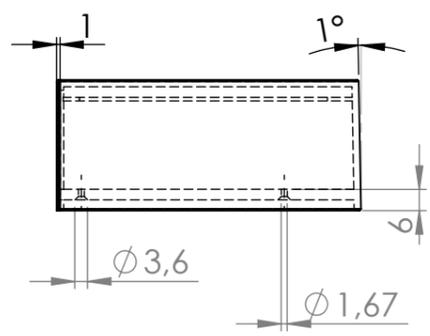
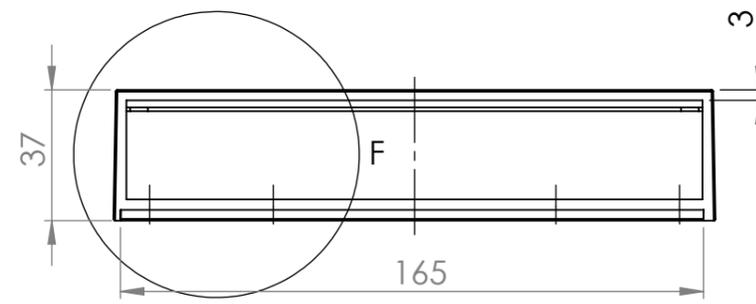
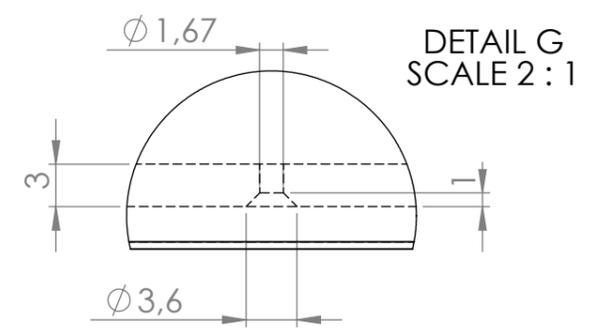


- CAD MODEL IS MASTER FOR ALL UNSPECIFIED INFORMATION.
 - TOLERANCES UNLESS OTHERWISE STATED ACC. TO DIN 16901-REIHE 1
 - VOLUME : mm³
 - ALL SURFACES DRAFT 0.5 DEGREES EXCEPT:
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 - * MAIN, GRAINED SURFACES : DRAFT 2 DEGREES UNLESS OTHERWISE STATED
 - ALL EDGES R0,2mm UNLESS OTHERWISE STATED (EXCEPT PARTING LINE)
- | Dimension | Draft=PLUS | Draft=Minus |
|-----------|------------|-------------|
| | | |
| Inside | Inside | Inside |
| Outside | Outside | Outside |
- DIMENSIONING OF EJECTOR PINS, CORING, SPRUE AND PARTING LINE ONLY AFTER APPROVAL BY VOGELS
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 - SURFACES INDICATED BY TEXTURED
TEXTURE High Gloss
 - MARKING OF PRODUCT ACCORDING TO VPS10.001
 - OUTER APPEARANCE ACCORDING TO APPROVED SAMPLE
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DATE 09/06/2020	DIMENSIONS: MM	REVISION			DRAWINGNO. 04
MANU Drawn: Manouk Verschure		MATERIAL: Bio-PE High Density	DWG NO. Matarial click system		A3
		WEIGHT: 0.89	SCALE:1:1	SHEET 4 OF 7	

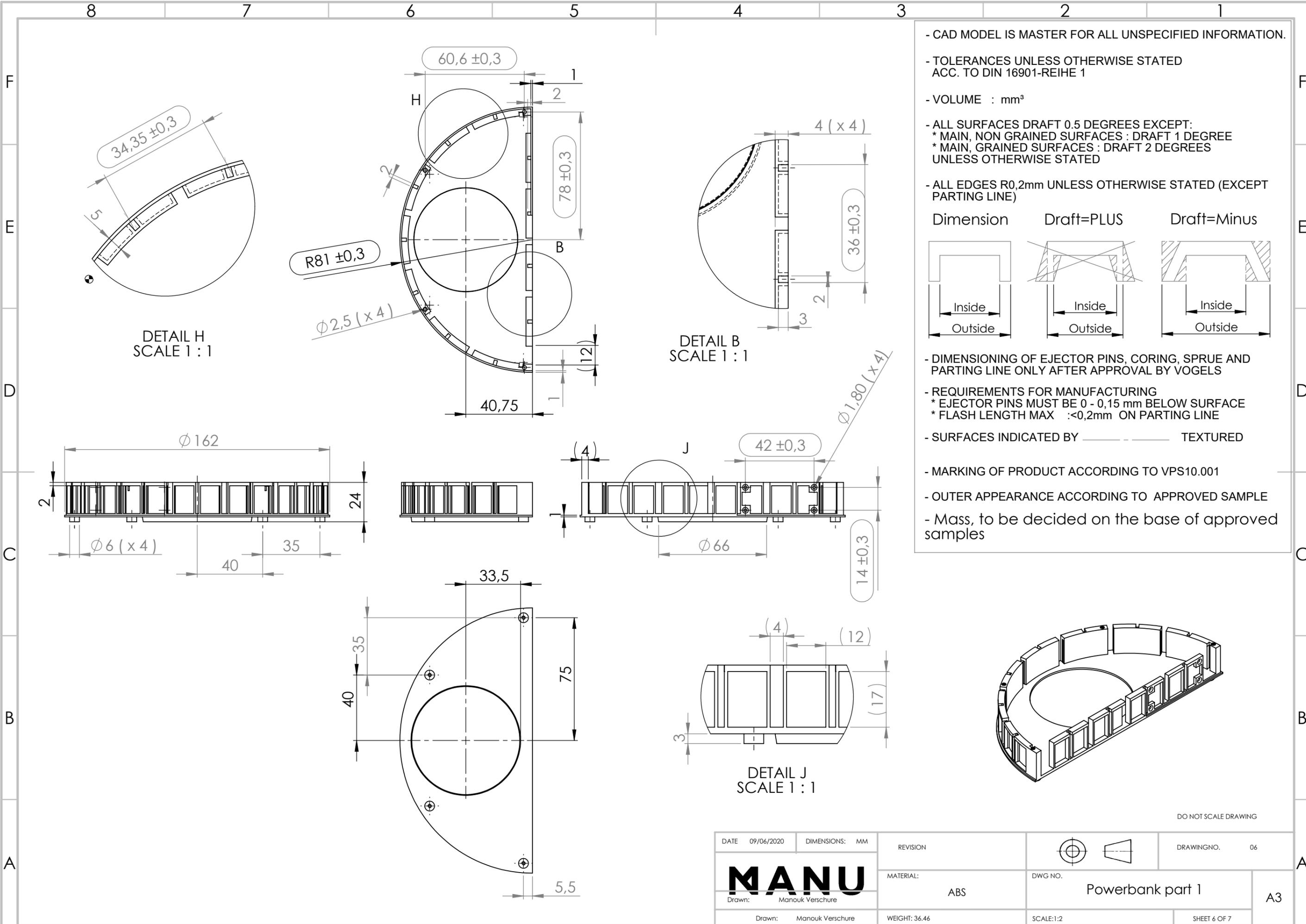


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 - TOLERANCES UNLESS OTHERWISE STATED ACC. TO DIN 16901-REIHE 1
 - VOLUME : mm³
 - ALL SURFACES DRAFT 0.5 DEGREES EXCEPT:
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 - * MAIN, GRAINED SURFACES : DRAFT 2 DEGREES UNLESS OTHERWISE STATED
 - ALL EDGES R0,2mm UNLESS OTHERWISE STATED (EXCEPT PARTING LINE)
- | Dimension | Draft=PLUS | Draft=Minus |
|-------------------|-------------------|-------------------|
| | | |
| Inside
Outside | Inside
Outside | Inside
Outside |
- DIMENSIONING OF EJECTOR PINS, CORING, SPRUE AND PARTING LINE ONLY AFTER APPROVAL BY VOGELS
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TEXTURE Yick Sang YS 1288 B
 - MARKING OF PRODUCT ACCORDING TO VPS10.001
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 - Mass, to be decided on the base of approved samples



DO NOT SCALE DRAWING

DATE 09/06/2020	DIMENSIONS: MM	REVISION		DRAWINGNO. 05
MANU Drawn: Manouk Verschure		MATERIAL: Bio- PE High Density	DWG NO.	Powerbank part 3 A3
		Drawn: Manouk Verschure	WEIGHT: 72.89	
			SHEET 5 OF 7	



- CAD MODEL IS MASTER FOR ALL UNSPECIFIED INFORMATION.
 - TOLERANCES UNLESS OTHERWISE STATED ACC. TO DIN 16901-REIHE 1
 - VOLUME : mm³
 - ALL SURFACES DRAFT 0.5 DEGREES EXCEPT:
 - * MAIN, NON GRAINED SURFACES : DRAFT 1 DEGREE
 - * MAIN, GRAINED SURFACES : DRAFT 2 DEGREES UNLESS OTHERWISE STATED
 - ALL EDGES R0,2mm UNLESS OTHERWISE STATED (EXCEPT PARTING LINE)
- | Dimension | Draft=PLUS | Draft=Minus |
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| Inside | Inside | Inside |
| Outside | Outside | Outside |
- DIMENSIONING OF EJECTOR PINS, CORING, SPRUE AND PARTING LINE ONLY AFTER APPROVAL BY VOGELS
 - REQUIREMENTS FOR MANUFACTURING
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 - * FLASH LENGTH MAX <:0,2mm ON PARTING LINE
 - SURFACES INDICATED BY TEXTURED
 - MARKING OF PRODUCT ACCORDING TO VPS10.001
 - OUTER APPEARANCE ACCORDING TO APPROVED SAMPLE
 - Mass, to be decided on the base of approved samples

DO NOT SCALE DRAWING

DATE 09/06/2020	DIMENSIONS: MM	REVISION		DRAWINGNO. 06
MANU Drawn: Manouk Verschure		MATERIAL: ABS		DWG NO. Powerbank part 1
		WEIGHT: 36,46	SCALE:1:2	A3
SHEET 6 OF 7				

