

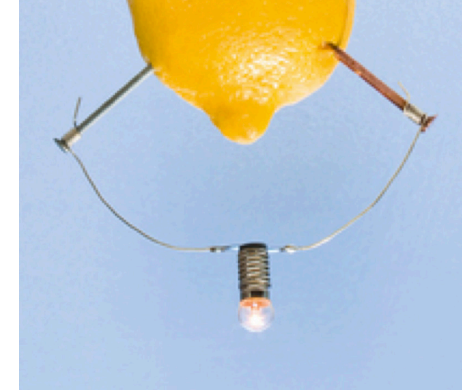
# Find a Fact and Act

Antropocenic World - Consequences of human behaviour on nature

How to help Nature, instead of hurting it?

## Floating Algae

# Starting Point\_Facts, which where interesting for my project



surface sealing

biodiverity, permaculture

ernergy consumption

unsing resources of our nature

awareness/ rising demand\_how to get people down to earth foodproduction



RELATIONSHIP TO OUR FOOD\_ What do we eat, where does it come from, how looks the mother plant, what does it need to grow or to get produced?

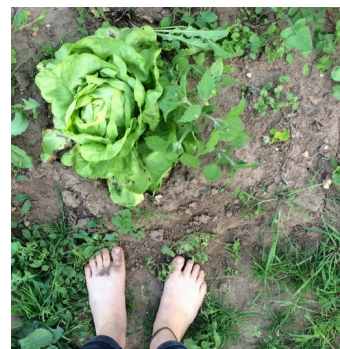


ORGANIC WASTE\_Use the energy and power of bio-mass in a direct way, their minerals and bacterials.



FUTURE PLANTING\_ There are already interesting ways to produce food - Hydroponic, Aquaponic or vertical planting with nutrient solution.

How can we integrate these methods in the city?



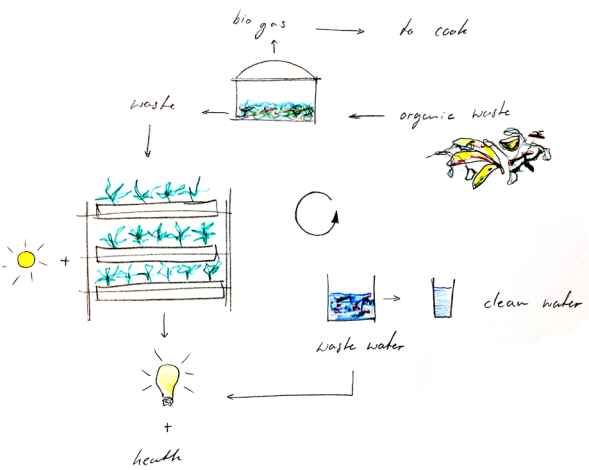
How to get people thinking of their daily impact on nature?

How can we open their eyes for the excessively consumption?



# Different ideas trying to solve some of the problems

## Energycycle at home



getting independent from the energynetwork

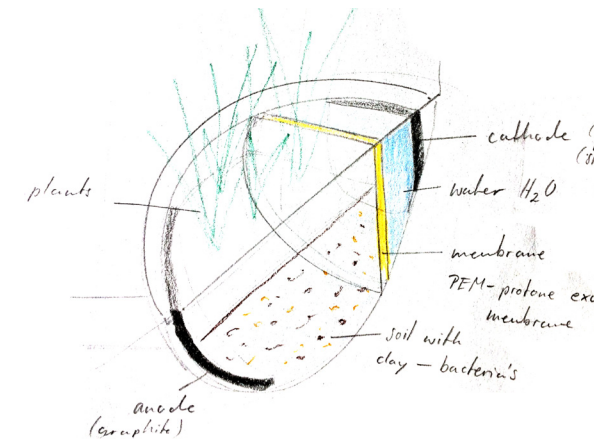


## Water the Trees and producing Energy

combination of two solutions

> energy trough Plant-MicrobialFuelCell

> watering of trees in front of your house



contacts to:

Gieß den Kiez

IM NORDEN gMBH

Grünflächenamt

## Mobile Biogassystem

Contacts:

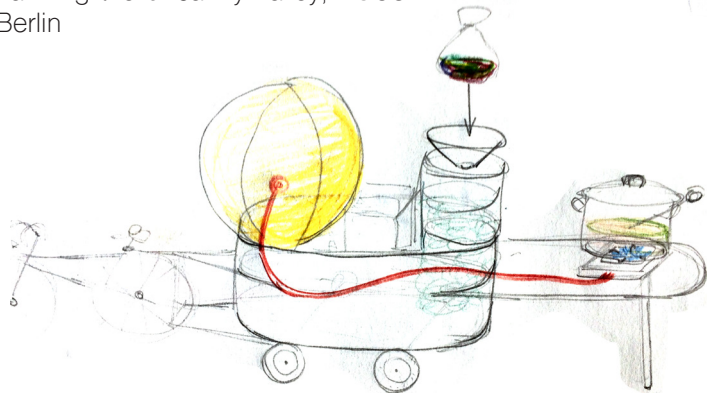
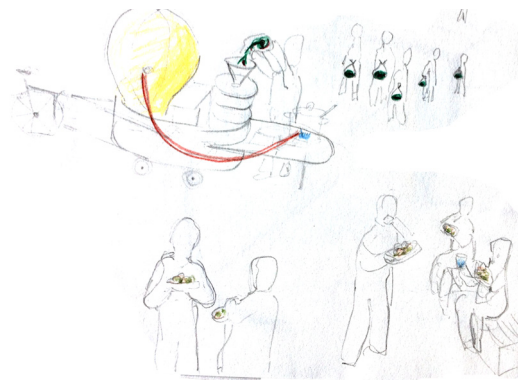
Prinzessingärten, Neikölln, St.Jacobi

> outdoor kitchen

Streichelzoo > animal dung

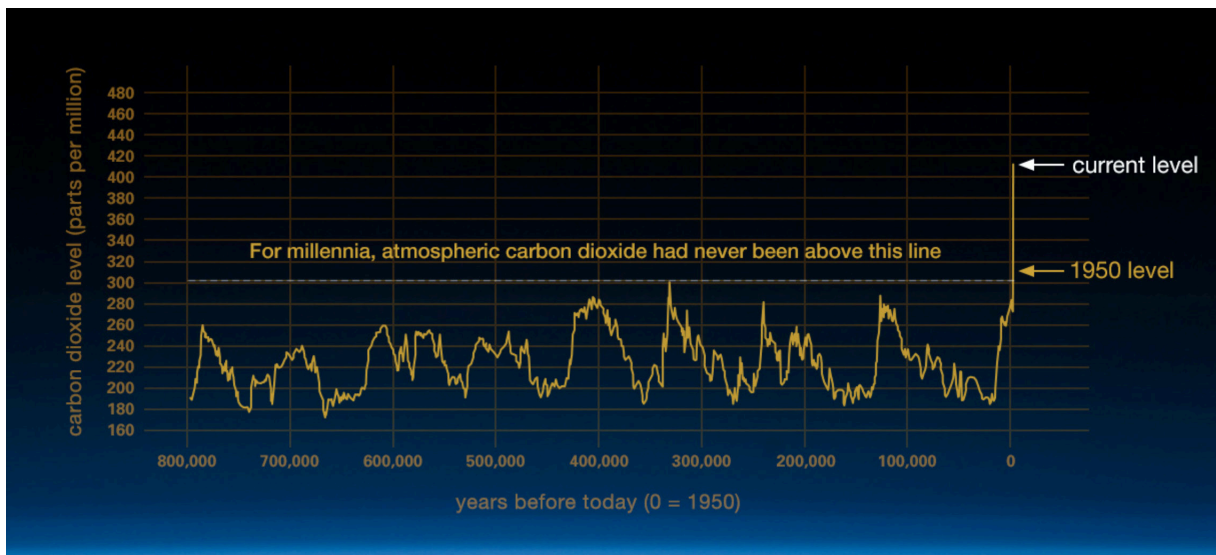
Farming the uncanny valley, YOUSE

Berlin



# Global Warming through greenhousegases

Dried out trees



„Humans have increased atmospheric CO<sup>2</sup> concentration by 47% since the Industrial Revolution began. This is the most important long-lived „forcing“ of climate change.“



# ecoLogicStudio, London

BioBombola, May 2020

H.O.R.T.U.S. Karlsruhe, Urbanshere 2



photo,synthetica, 2018

captures CO<sub>2</sub> from the atmosphere

luminescent shades at night

# Portable, glowing algae

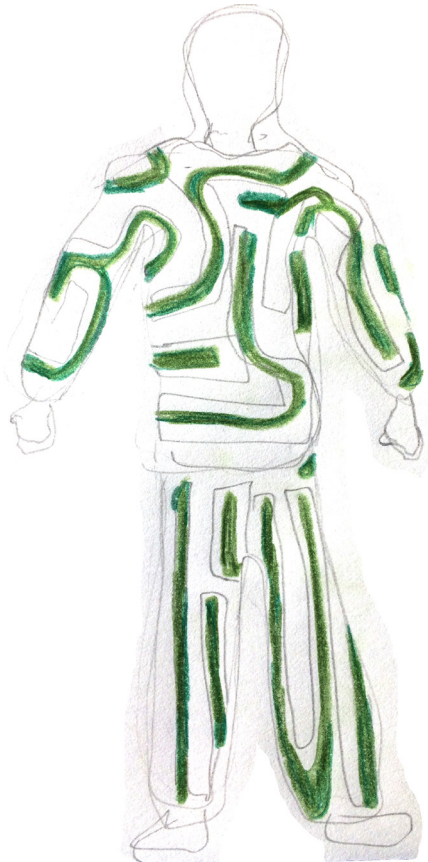
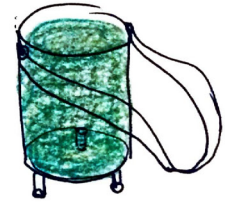
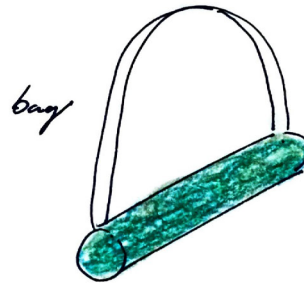
safty device



glowing  
algae backpack

portable CO<sub>2</sub> binder  
and  
light medium

light  
pillar



+ food production ?

What does algae need to grow?

sunlight + CO<sub>2</sub> + moving through  
air

What does afterglowing powder needs to shine?

sunlight (UV-light)



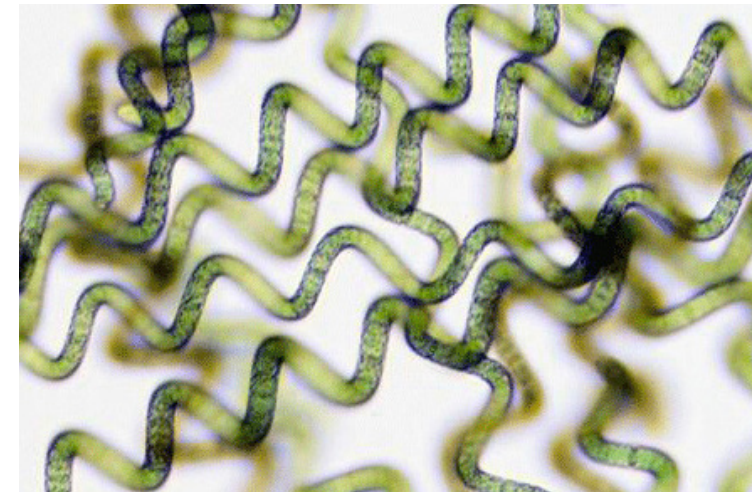
# Spirulina Algae

we need alternatives to capture CO<sup>2</sup>

## ALGAES

very healthy ingredients > food production

one tonne of algaebiomass binds 1,8 tonne of CO<sup>2</sup>

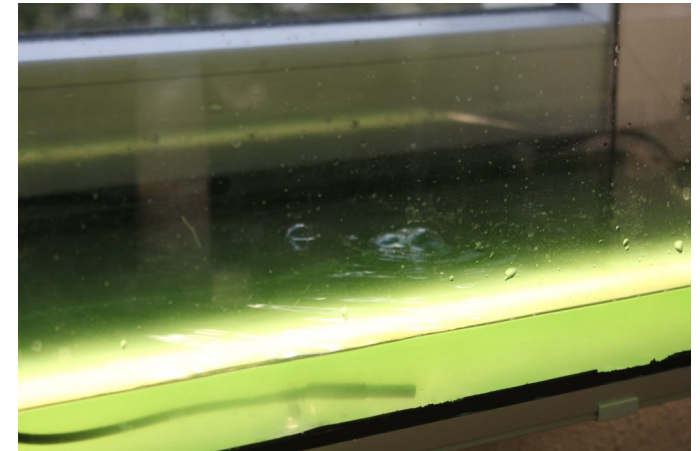


# How to grow spirulina-algae

Selfmade, natural fertilizer:

ww

- 400 Liter Lauge aus Wasser und Asche
- 400 Liter Wasser
- 4 kg Meersalz
- 3, 2 Liter Urin (möglichst nicht rauchen oder Alkohol trinken!)
- 104 g Eisensirup, gelöst in starkem Tee



> Temperatur der Spree

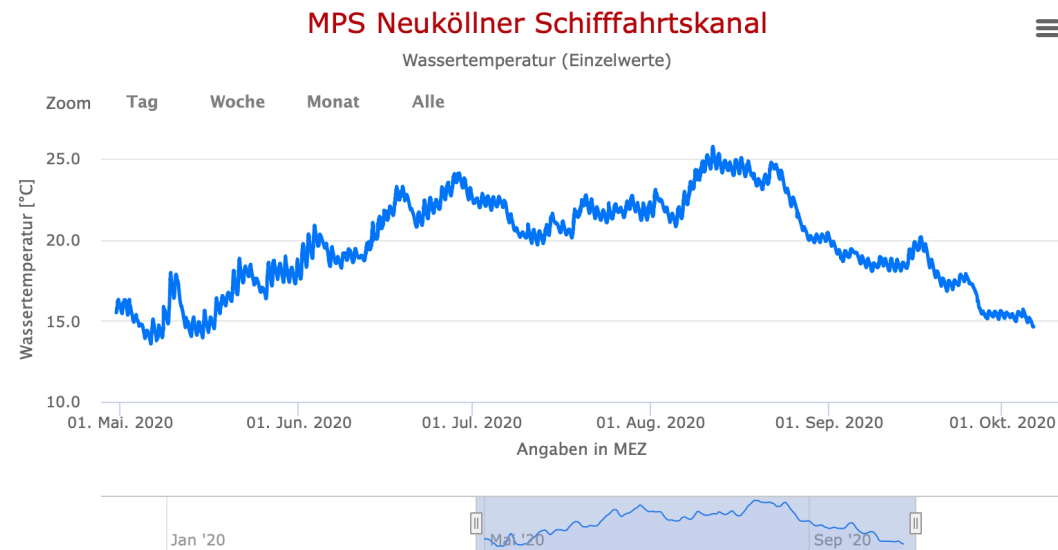
pH- Wert: between 10-11

mix them up, through air or with a spoon

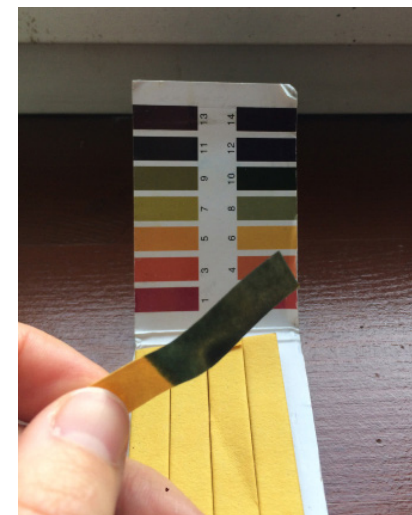
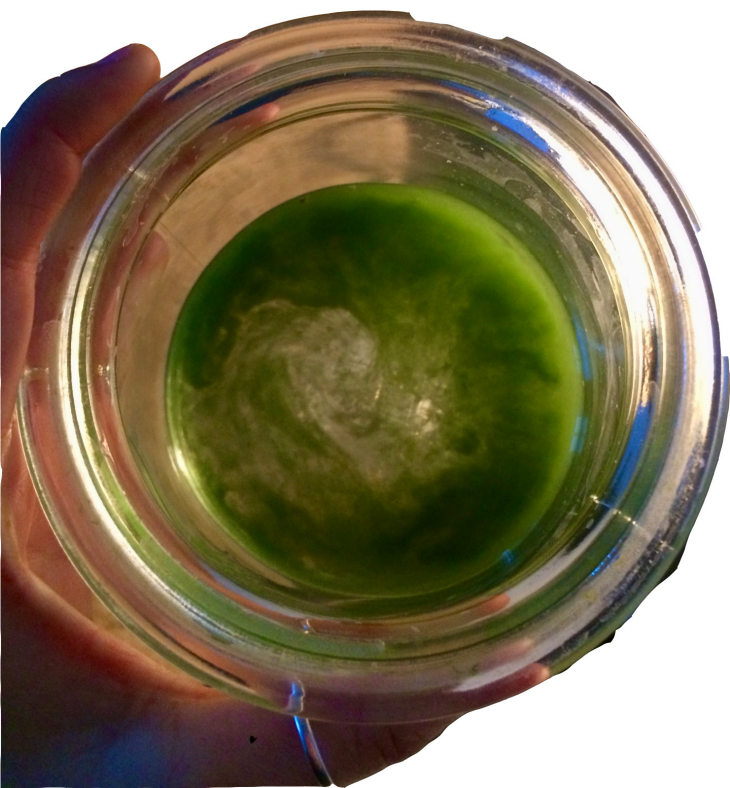
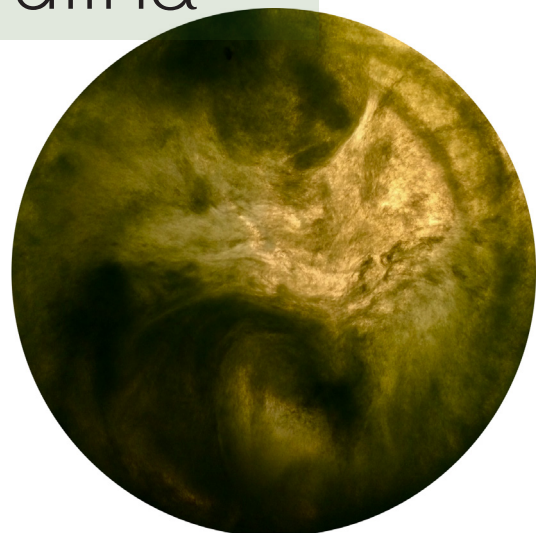
Temperature, about 22° C minimal

it has to be always dark green but not to thick

sunlight, UV



# Home grow Spirulina





# Glowing medium

## Bioluminescence: Luciferase

Microorganism: Photobactirium Aliivibrio fischeri\_ Heringe & Kalamare

- > used to control the waterquality, through lightning
- > DSMZ Leibnitz Institute Collection of Microorganism

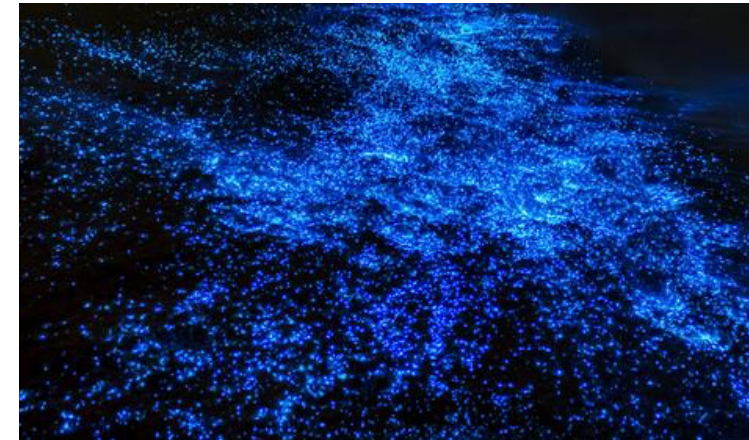
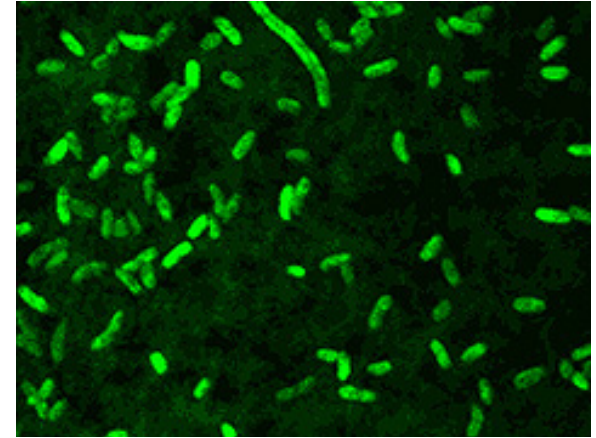
Algaes: Dinoflagellaten

- > very expensive, 75 euro „Pyrocystis lunula“, startculture

Dr. Thomas Leya  
Fraunhofer Institute for Cell Therapy and Immunology, Branch Bioanalytics and Bioprocesses IZI-BB  
Extremophile Research & Biobank CCCryo  
Am Muehlenberg 13, 14476 Potsdam, Germany

## Phosphorescence: „Erdalkalisilicat“

- > after glow effect until 12h, lasting over 15 years
- > needs only UV-light to load





# After-glow materials

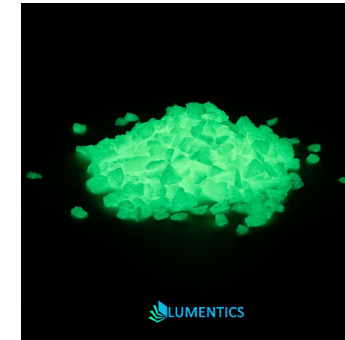
## Acryllack

paint the shape of the algae container



## Granulat

mixed with the algae?



Ordered material... to light up the algae

2 colours = green and blue

It glows over 8 hours!

found a sustainable company

## Phosphorescence

after glow effect until 6-10h, lasting over 15 years

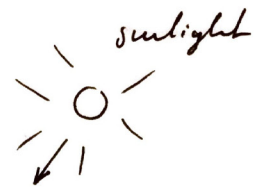
more material, better glow

It only needs sunlight!

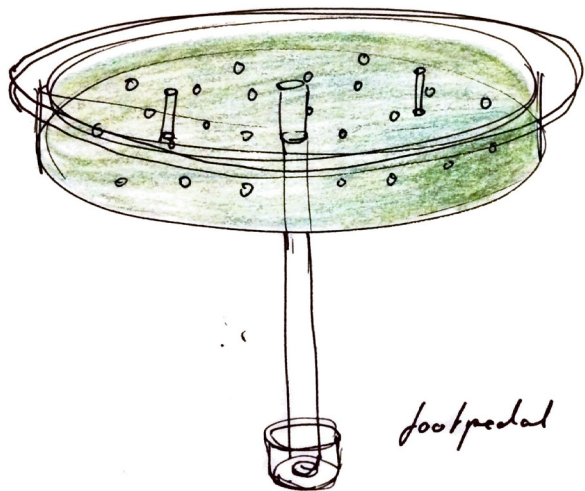
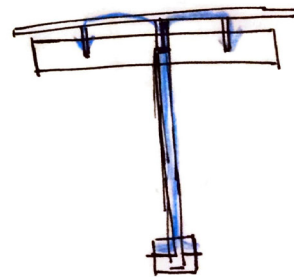
Summer system



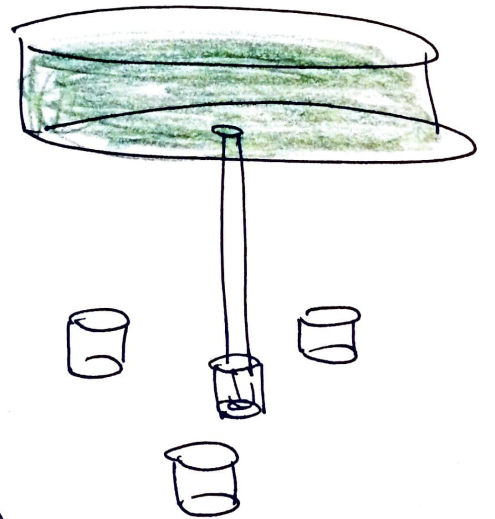
phosphorescence  
lightning granulat  
☼☼



air



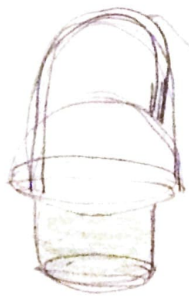
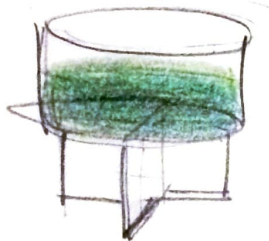
footpedal



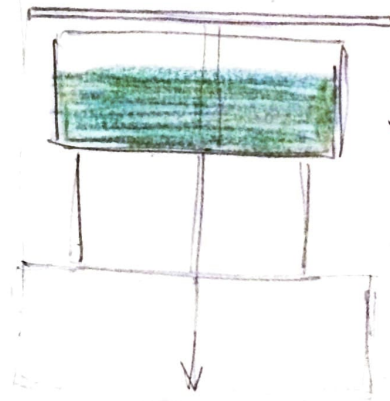
# Floating glowing Algae

↳ algae installation

fertiliser system  
is  
missing!



to set  
in the  
water by your  
self



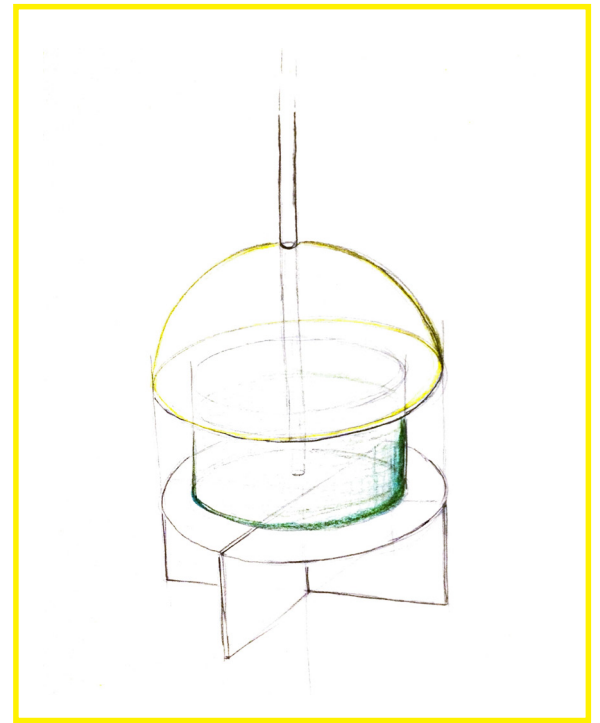
get dirty

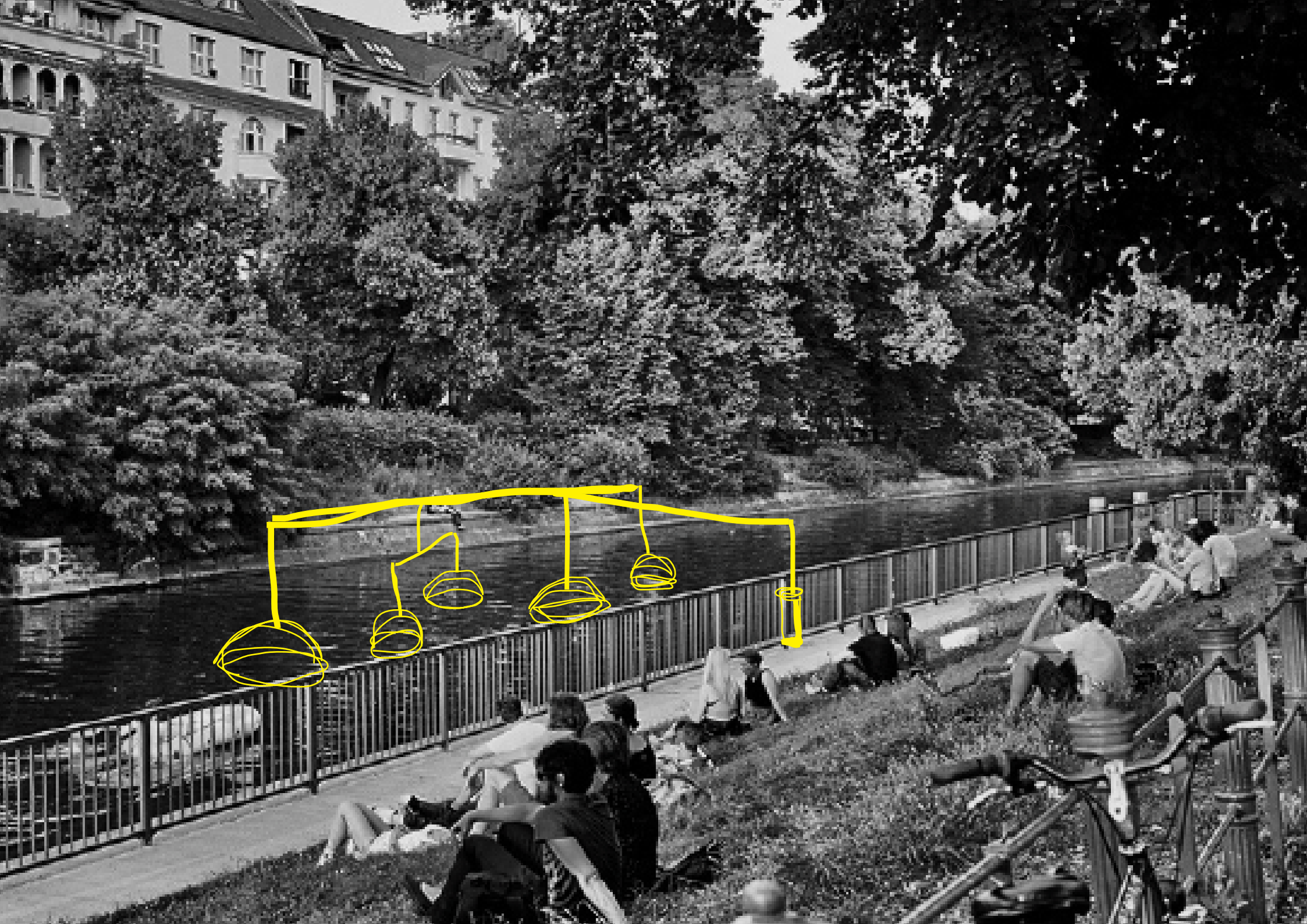


have to  
be above  
the water  
LIGHT

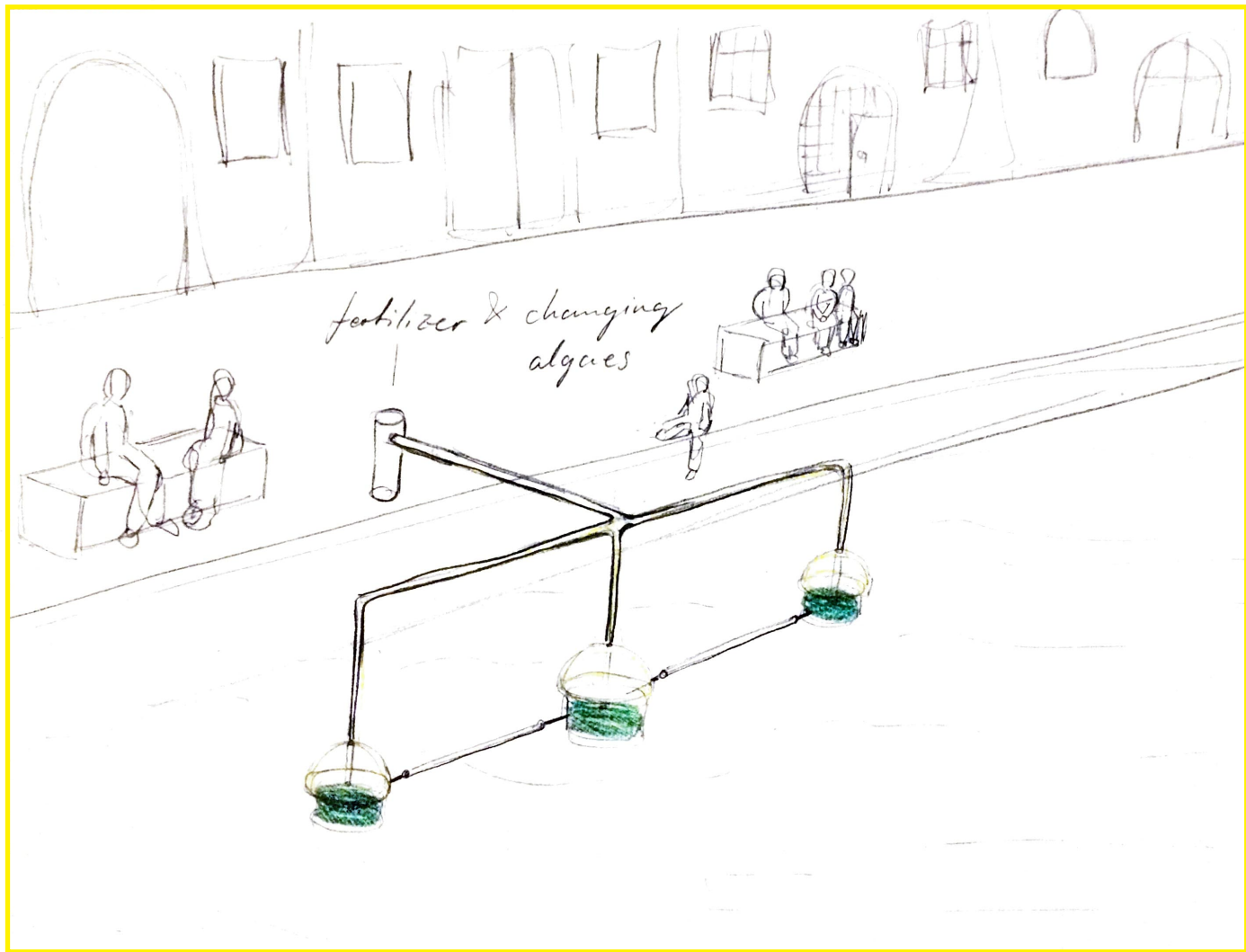


or  
with little  
holes?



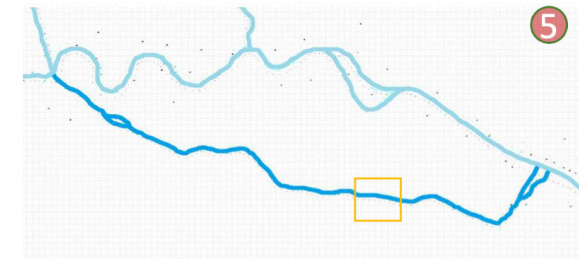






## Standorte für ökologische Maßnahmen am LWK

Urbanhafen /Baerwaldbrücke, Bootsanleger (km 7,145 - 7,074 links)

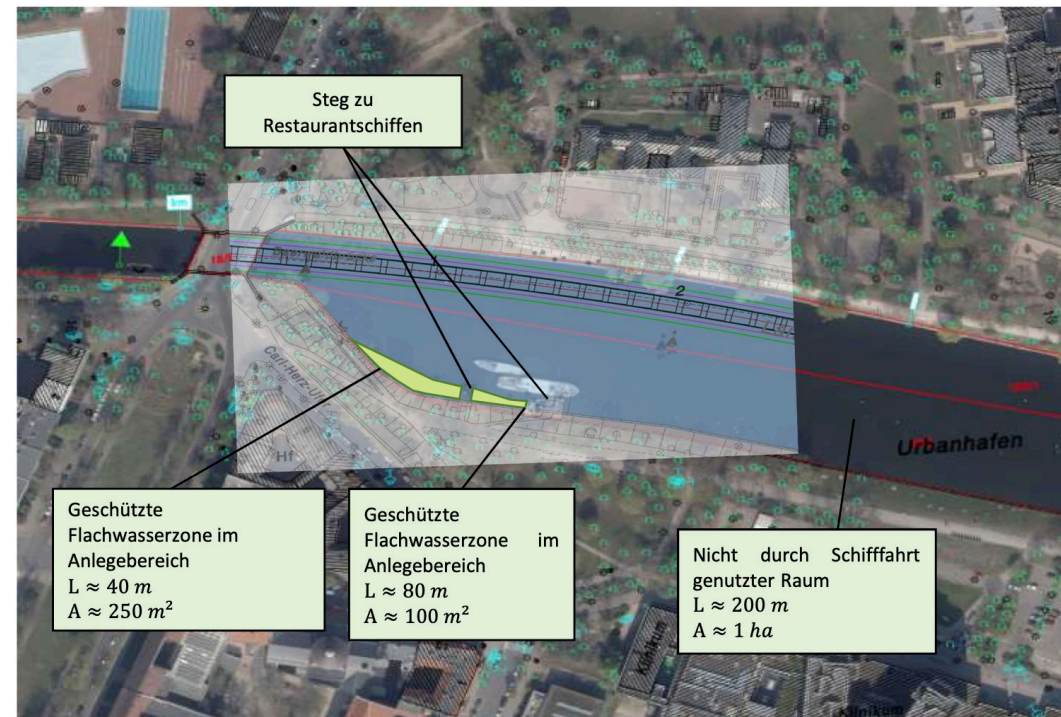


### Beschreibung

- Keine Konflikte mit dem Denkmalschutz
- Flache Böschungsneigung
- Information durch Restaurantbetreiber zu ökologischen Maßnahmen
- Sensibilisierung der Anwohner, Gäste, Touristen

### Konflikte

- Zerstörung des Bewuchses durch Freizeitnutzung
- Vereinbarkeit von Bootsanleger und FWZ?
- Abstimmung mit Reederei Van Loon

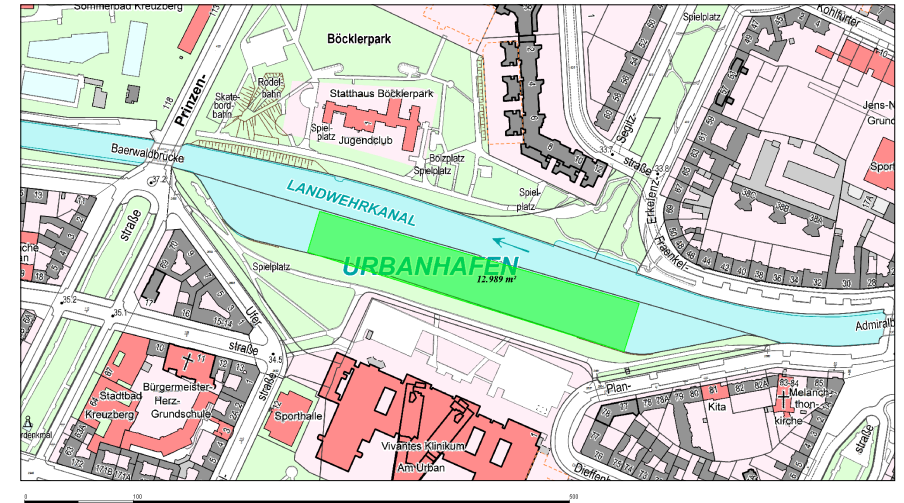




Include them into the city, without disturbing existing infrastructure

Location of the project

Karte von Berlin 1:5000 (K5 - Farbausgabe)





Urban surfaces

unused or empty space, for a simple installation

WHERE PEOPLE COME TOGETHER



# Glowing medium

**Phosphorescence:** „Erdalkalisilicat“

> after glow effect until 8h, lasting over 15 years

> needs only UV-light or artificial light to load

> sustainable company, non toxic

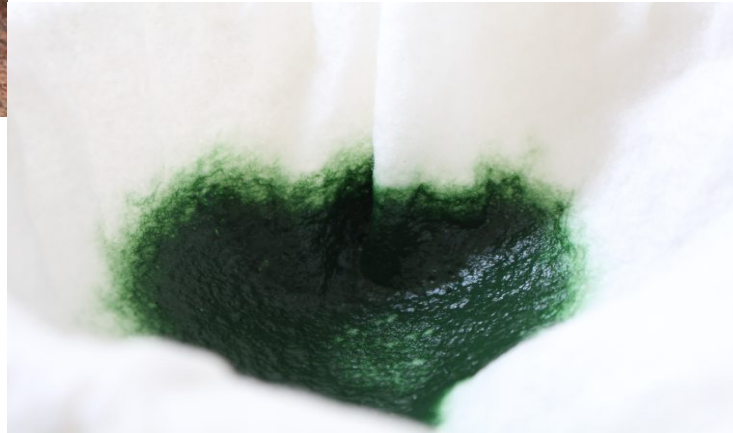


 LUMENTICS

# Food-usage



harvested algae through a very fine sieve



Who could you them?



for food production, you have to dry them...  
find a restaurant, who wants them

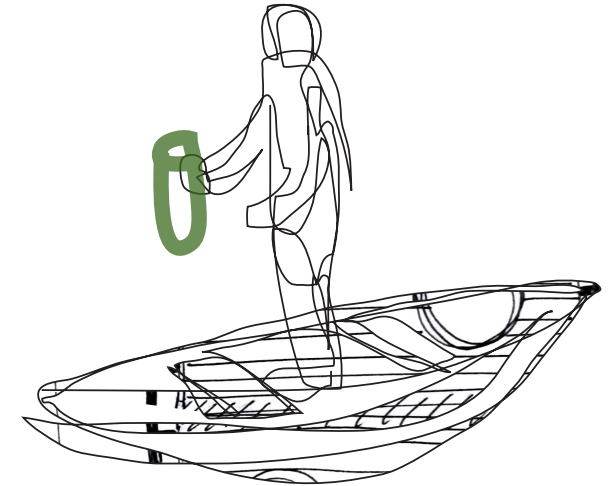
**asian food**





# Who can harvest?

## prinzessinnengartenbau



could use the water as a new surface  
to grow food

new workshops would be possible

more space to grow things

What to do for servicing?

Check the pH-scale

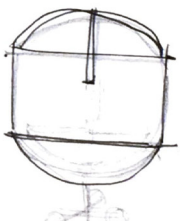
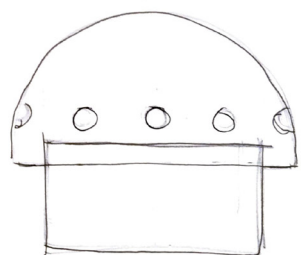
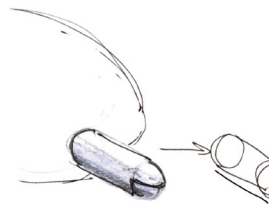
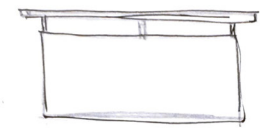
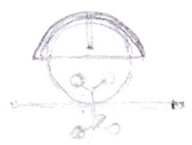
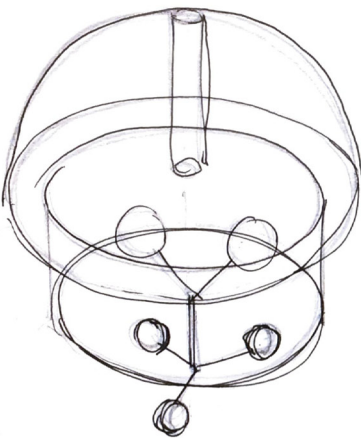
to harvest them

fill up the water

maybe clean the surface of the shape



# How could it look like and how it works?

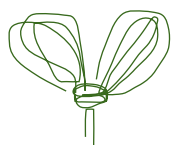


## Moving parts\_ALGAES



*catching the granulate*

*↳ bigger mixture*



it should not crush the granulate!



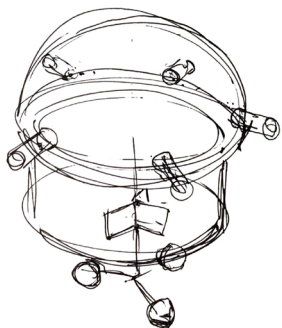
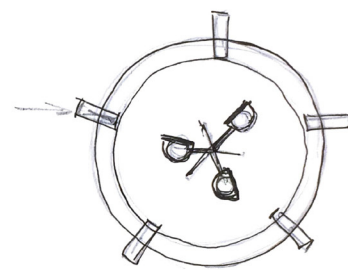
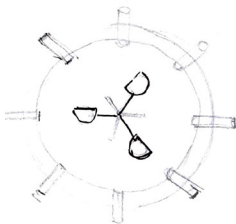
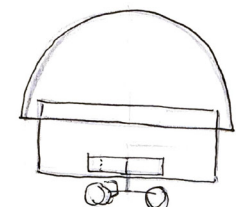
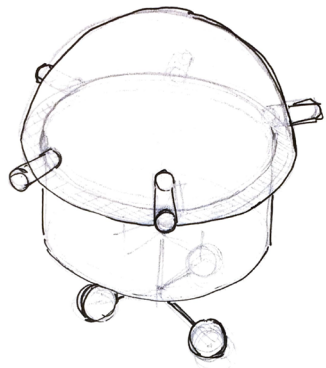
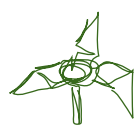
*more than one*



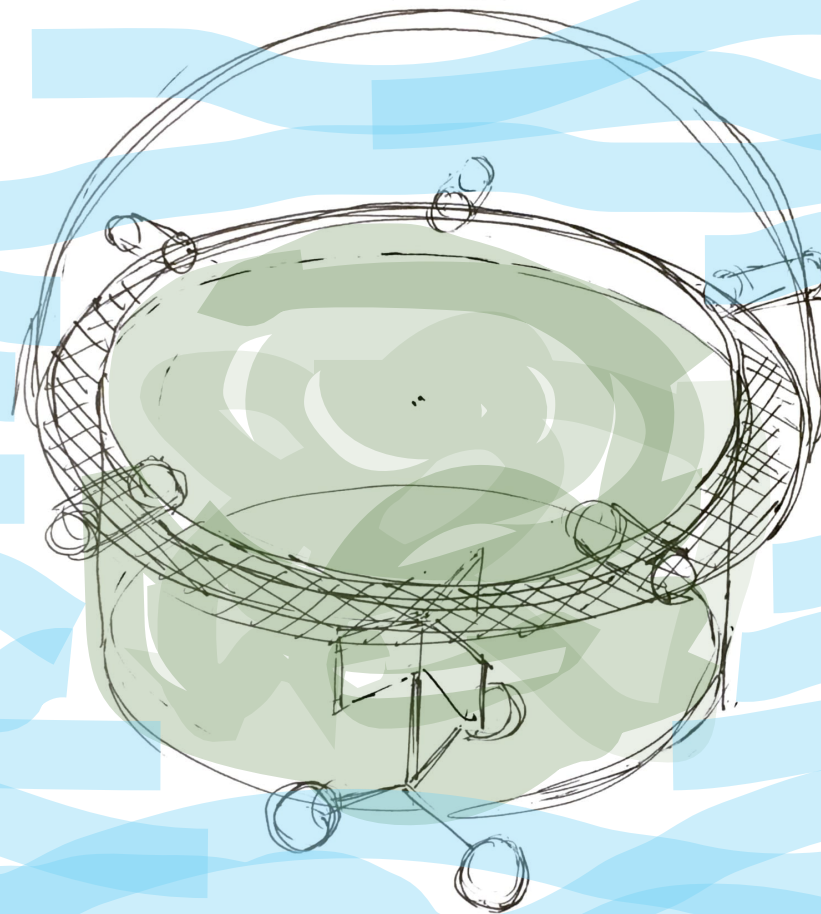
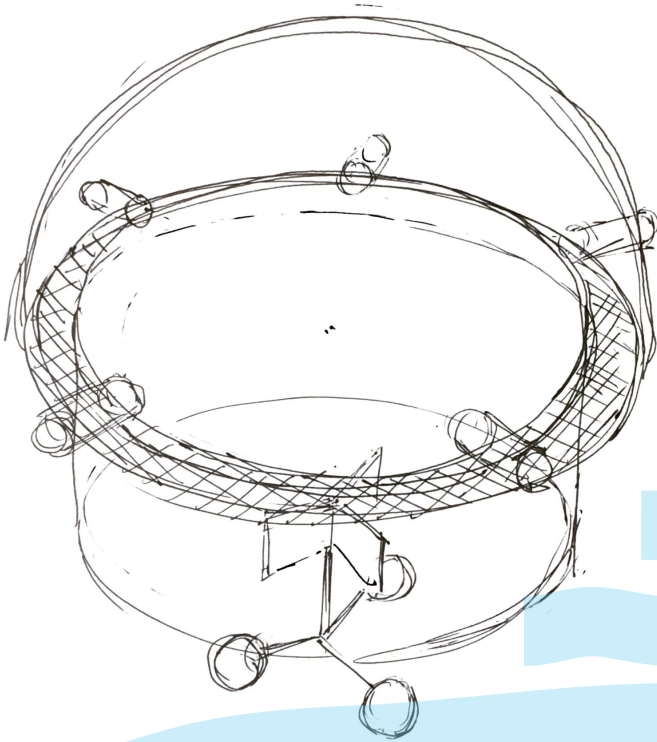
get most of the little stones up



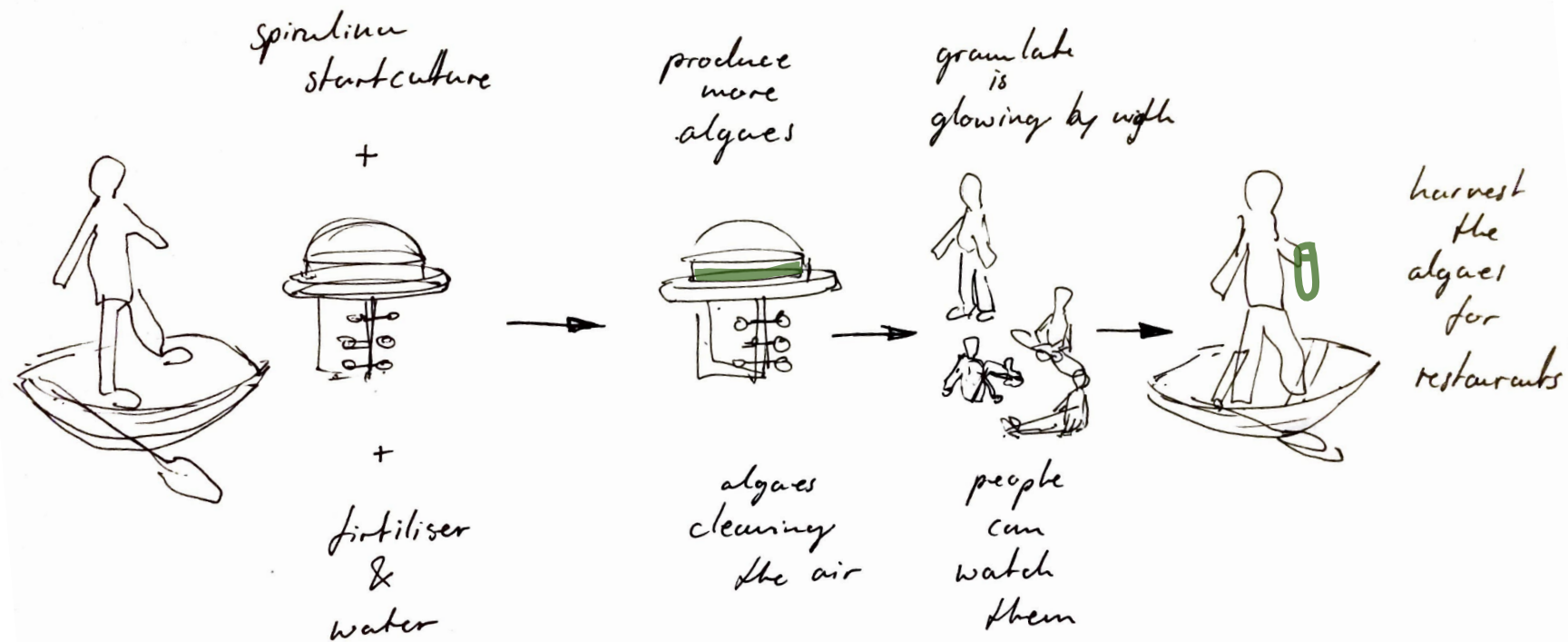
*↳ more power!*



# first final proposal

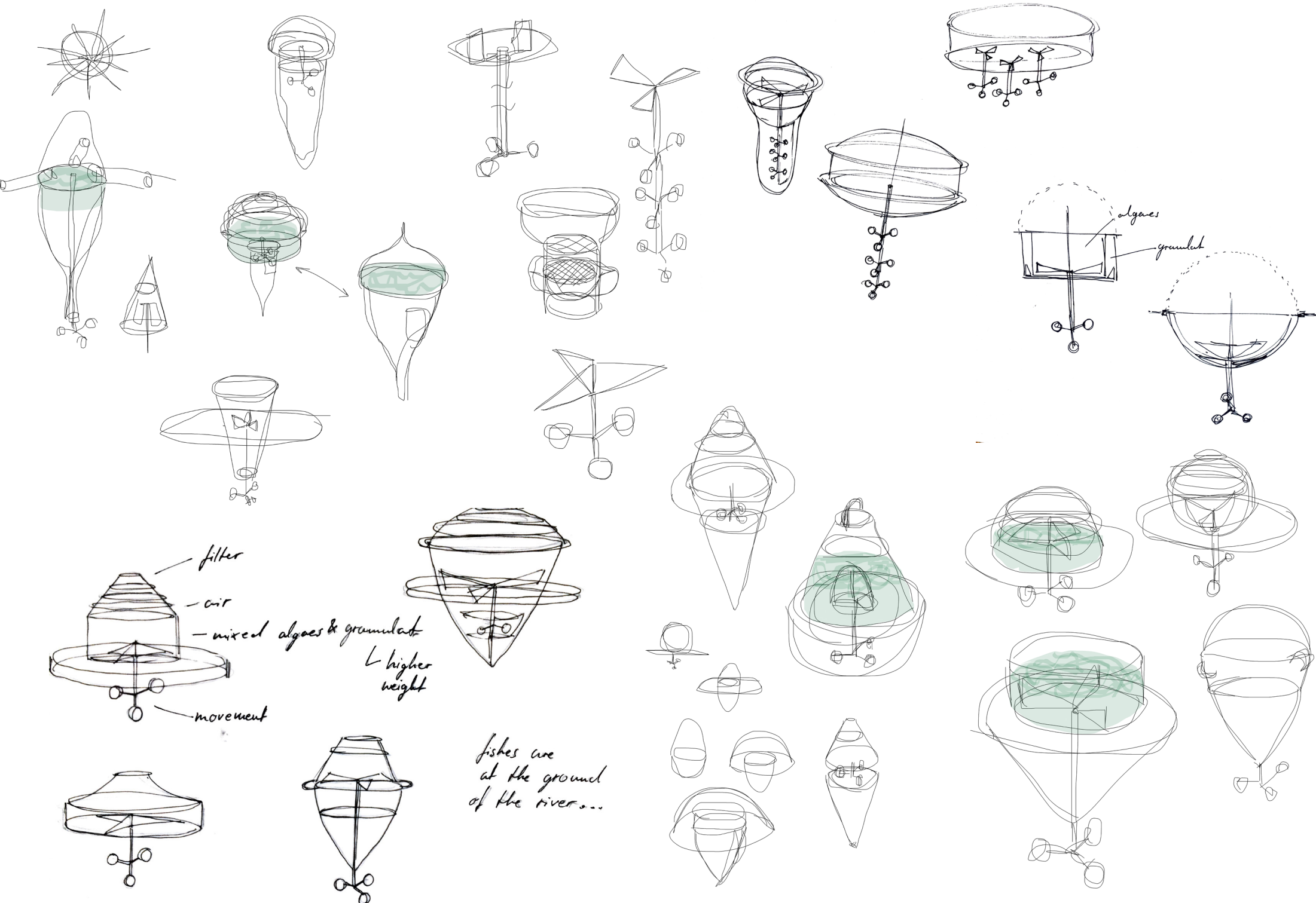


# How does it work in reality?



With my algae-container higher living conditions for the people in urban space can be achieved. The algae clean the air and work against global warming. Additionally they can be used for food production. The people can realise the positive impact on nature while sitting next to them. They can also watch and feel the coming movement of the glowing object through the river-flow. In this cycle they can be an aesthetic symbol for nature in the city.





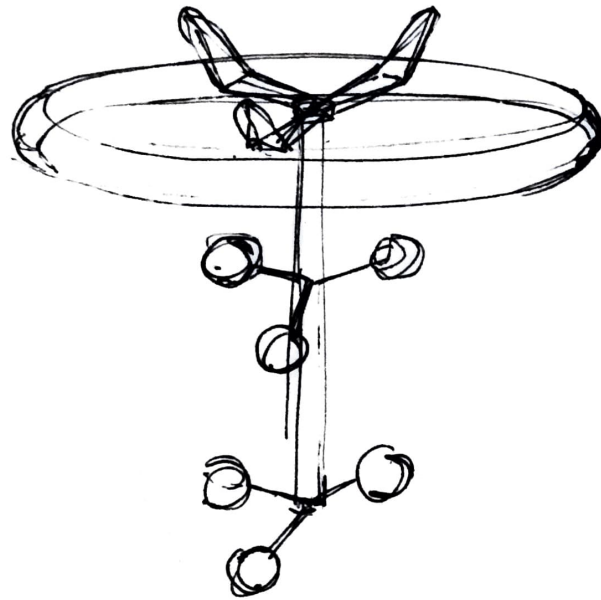
filter  
- air  
- mixed algae & granules  
↳ higher weight

fishes are at the ground of the river...

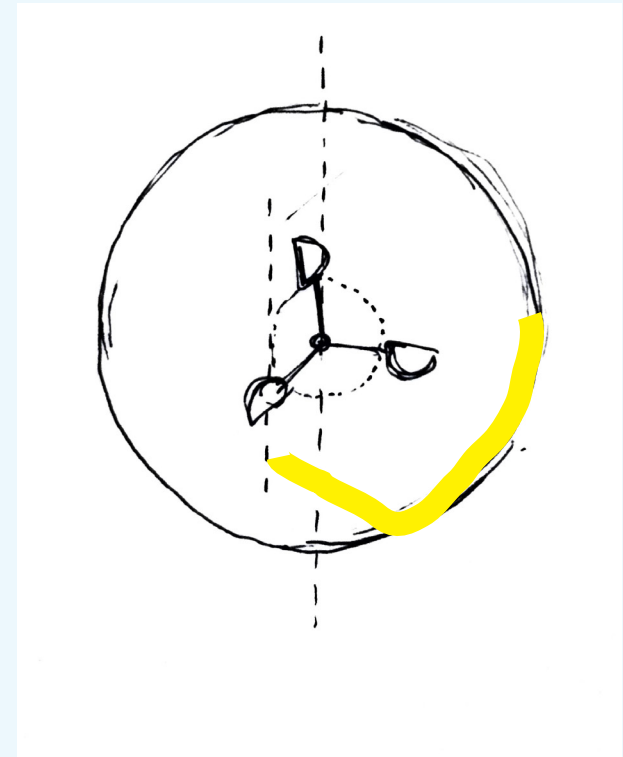
algae  
granules

movement

# Moving parts\_WATER

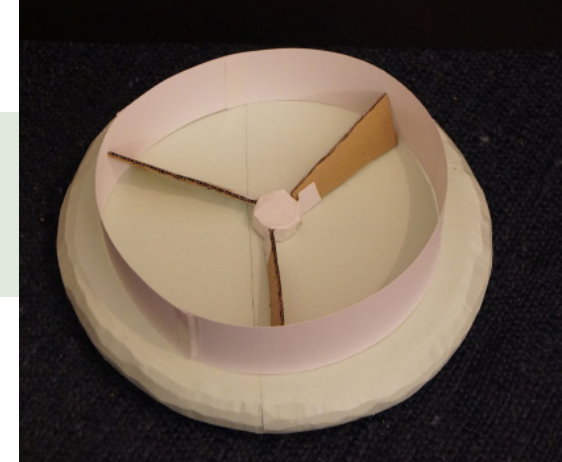
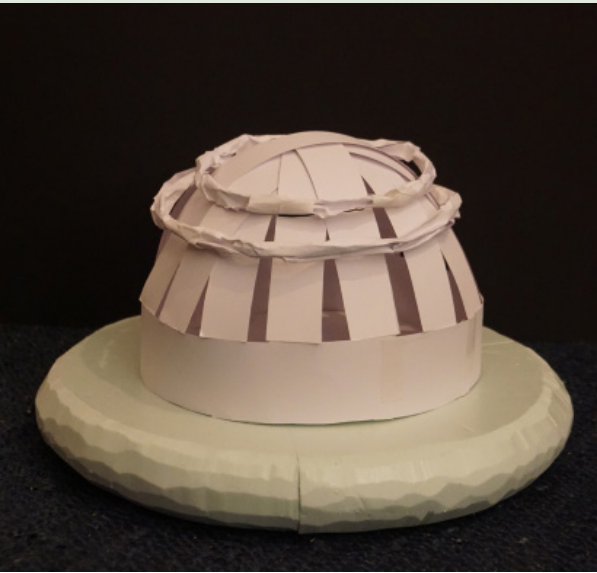


VIDEO



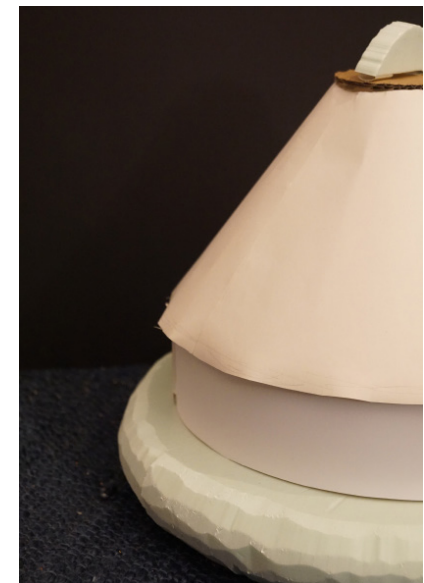
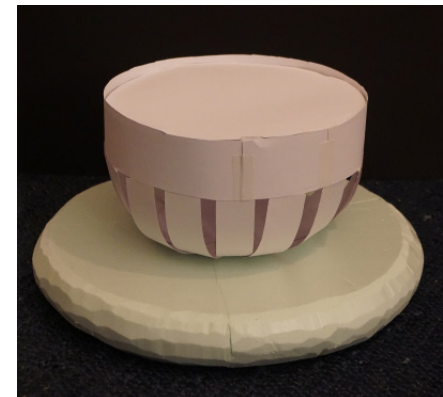
*river flow*

# Modells



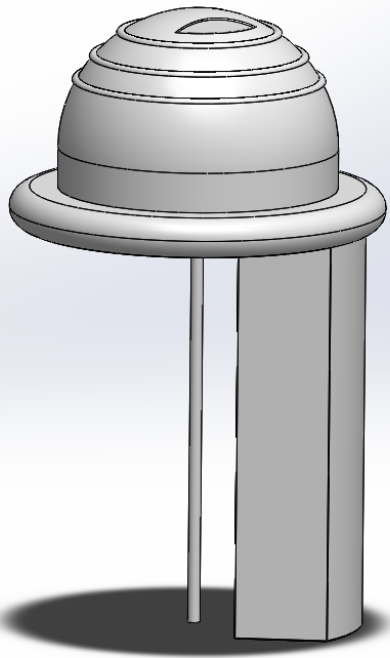
O swimming panel  
470 mm

O containers about  
300-370 mm

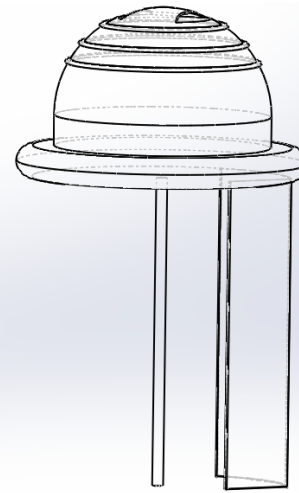
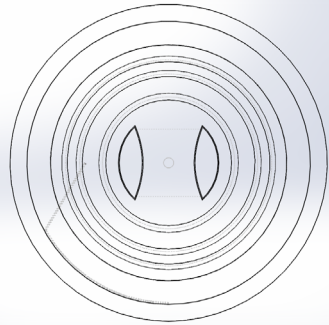




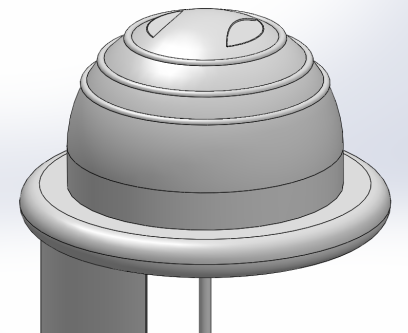
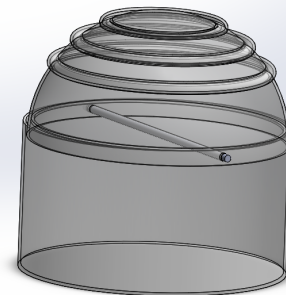
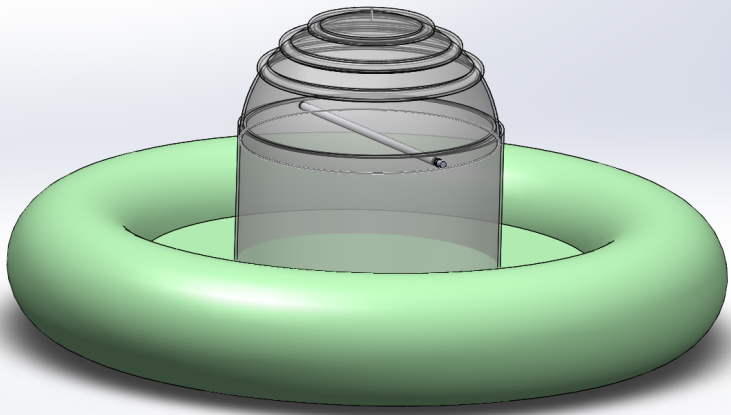
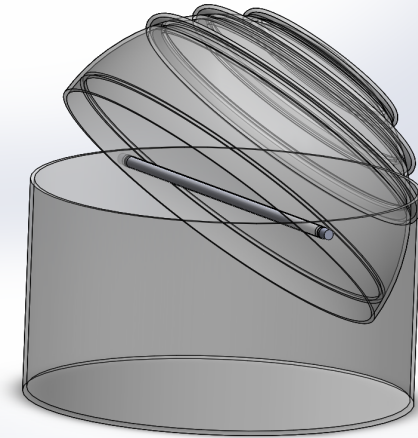
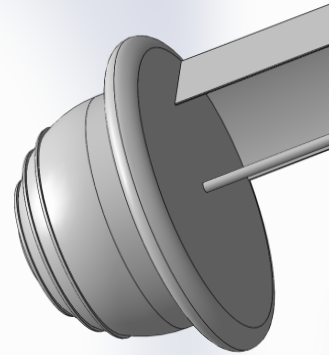
# Modells-SolidWorks

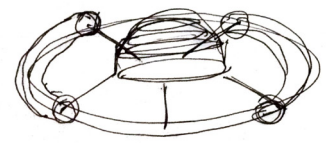
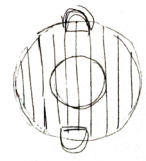
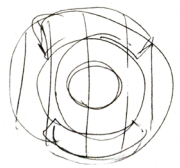
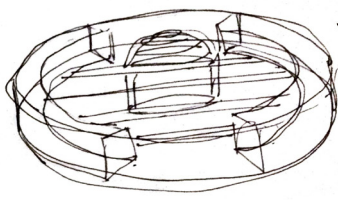
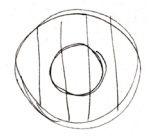
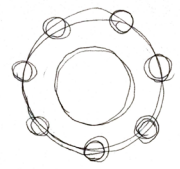
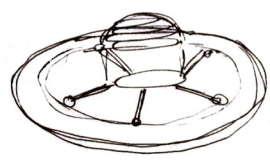
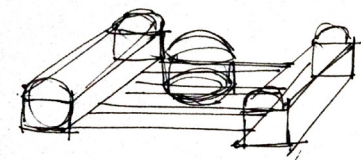
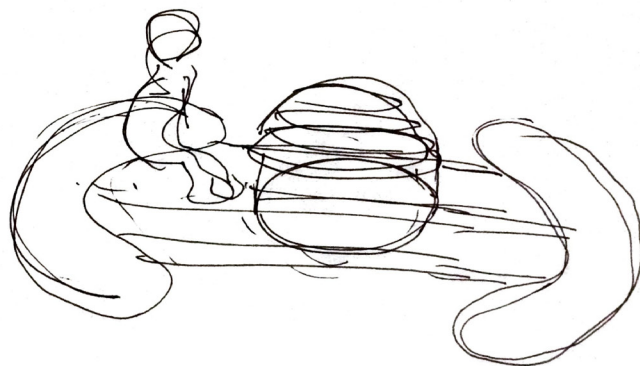
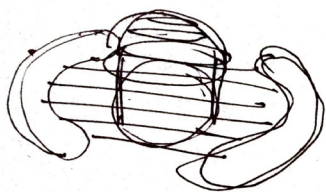


outmost circle  
470mm

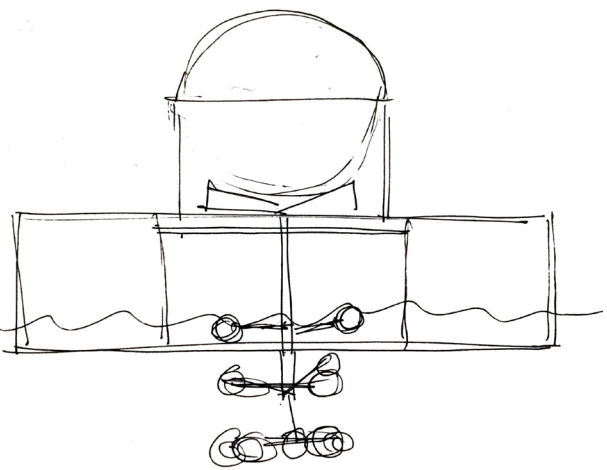
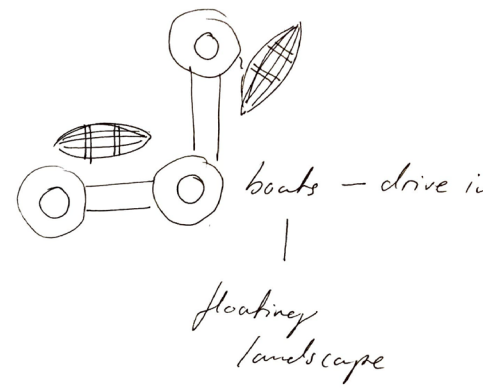


- glas acrylglas
- truck cover material
- stainless steel





the hole thing



450kg  
 $A = 13393 \text{ cm}^2$   
 Air's  
 $A_{\text{Bundrab}} = 40000 \text{ cm}^2$

$V = 4,62 \text{ m}^3 - 1,08 \text{ m}^3$   
 $= 3,54 \text{ m}^3$  Luft

$3540 \text{ dm}^3$   
 $F_G = 35400 \text{ N}$   
 Verdrängte Flüssigkeit

$F_G = 4500 \text{ N}$   
 $450 \text{ kg} \stackrel{!}{=} \text{dm}^3$

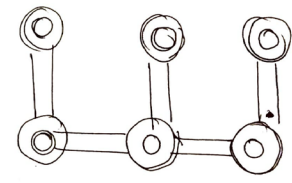
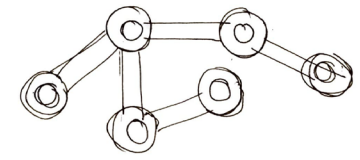
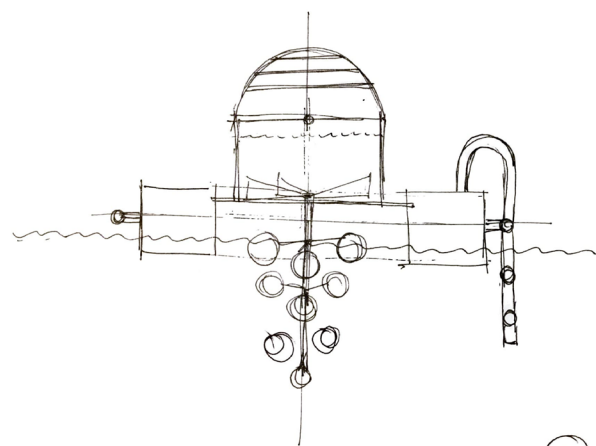
Einsinken

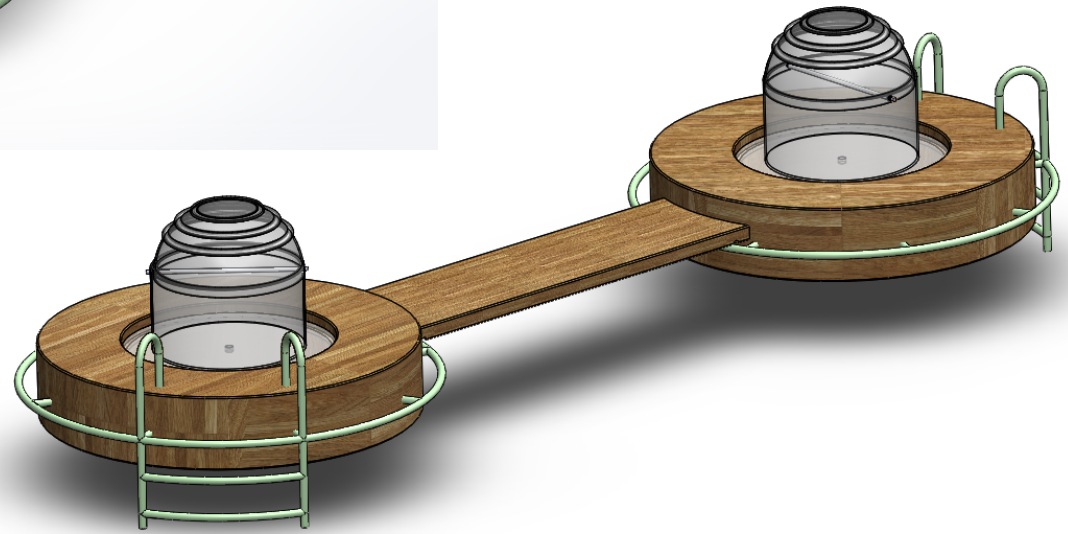
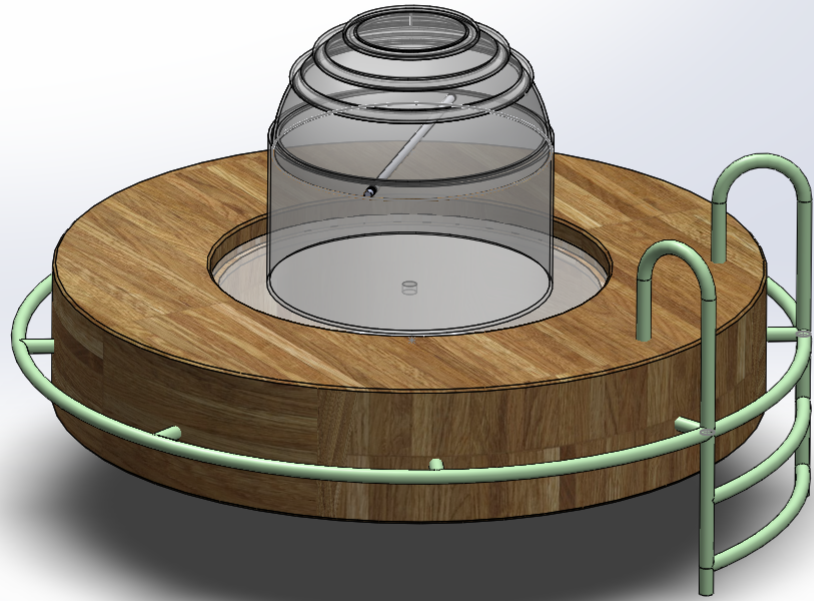
$V = \text{nur für Luftwissen } 1,25 \text{ dm} \approx 20 \text{ cm}$

Holzdielen  $0,5 \text{ dm}$   $50 \text{ cm}$  stark  
 $\hookrightarrow 0,5 \text{ dm} : 3 \text{ Seiten} \cdot 20 \text{ dm} + 0,5 \cdot (7 \cdot 106)$   
 $= 700 \text{ dm}^3 \cdot 0,7$

40%  $457 \text{ kg} + 450 \text{ kg} = 907 \text{ kg}$   
 Abgewicht  $\Delta$

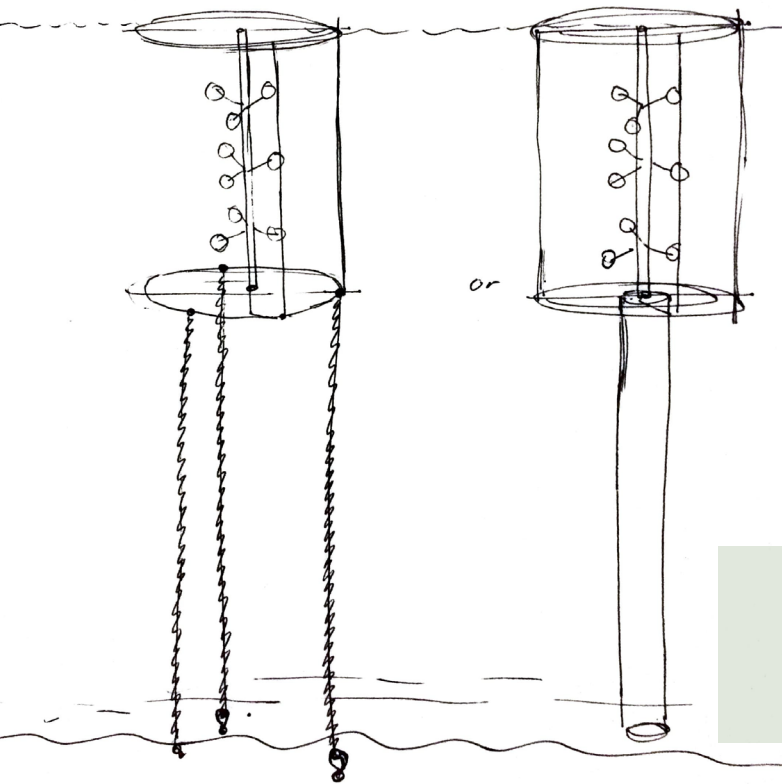
$3 \cdot 5,4 \text{ cm} \cdot \text{Einkaufsbefehle}$



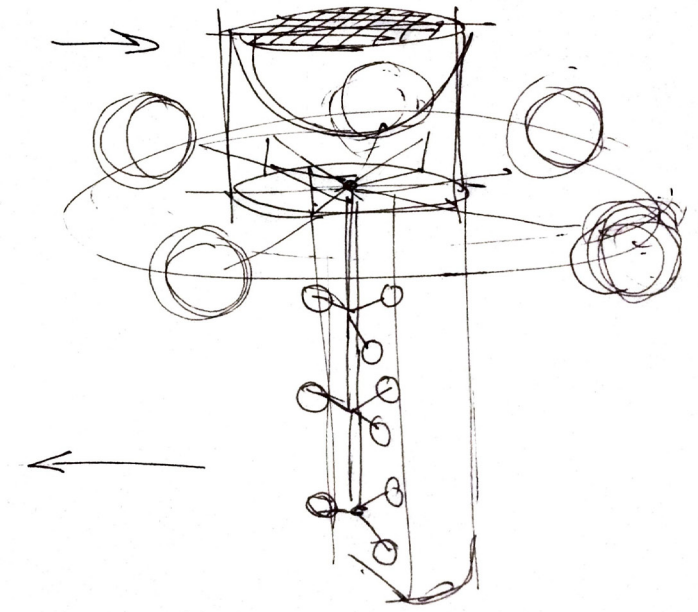
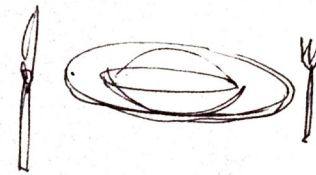
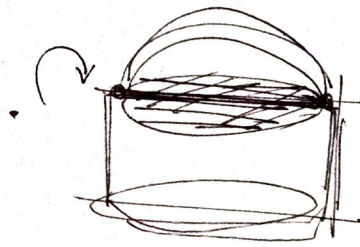




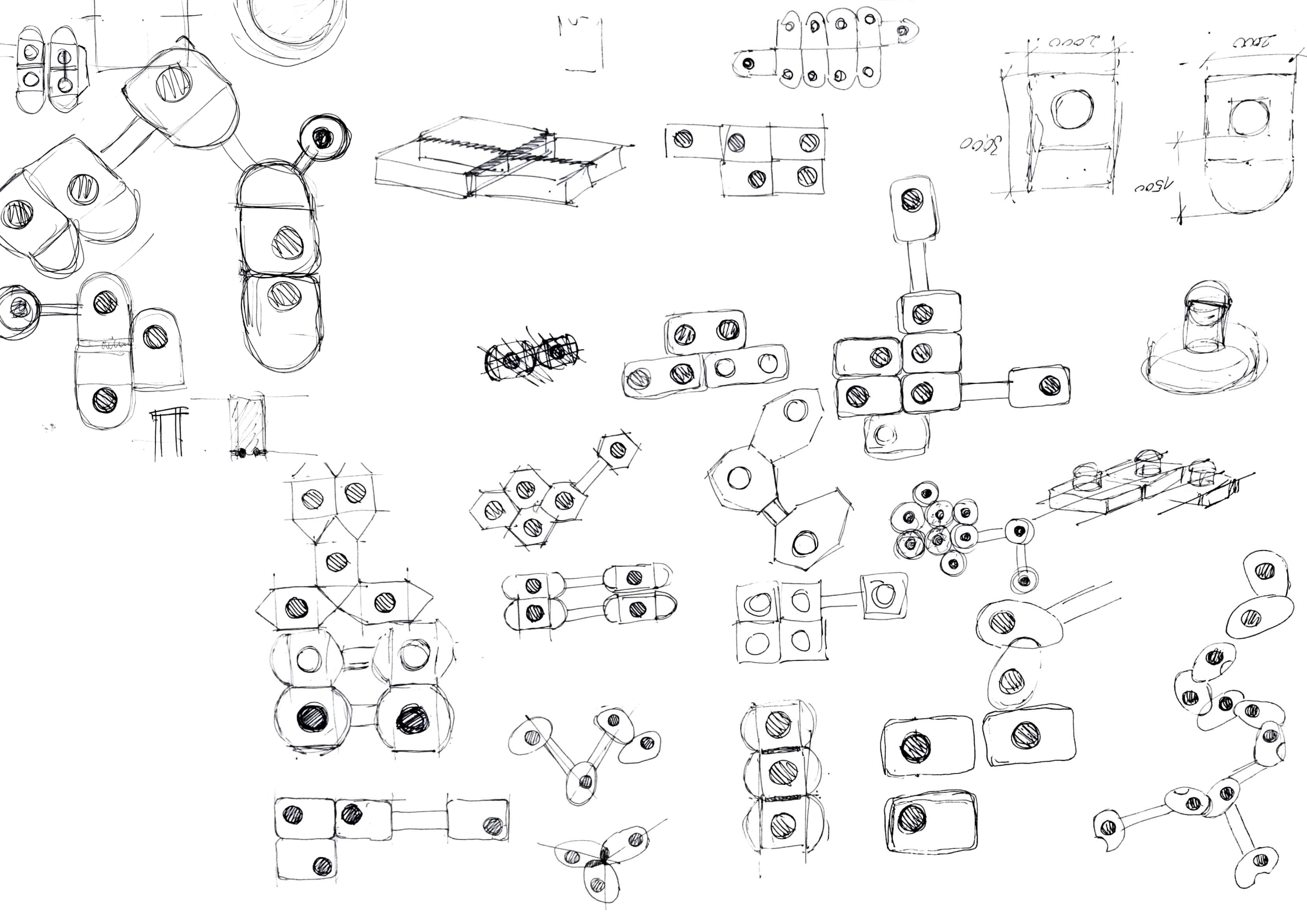
# Harvest

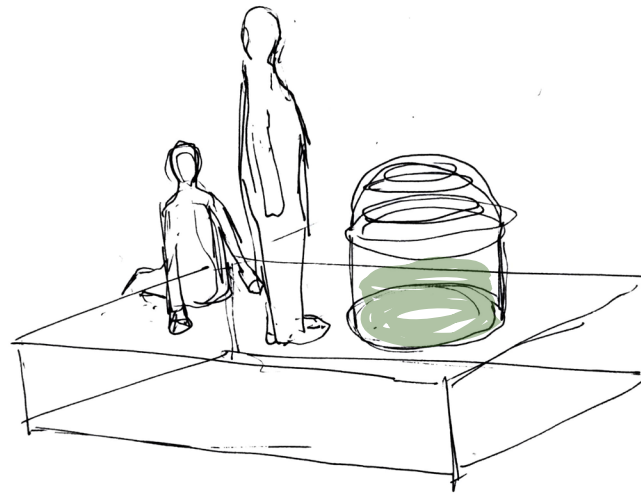
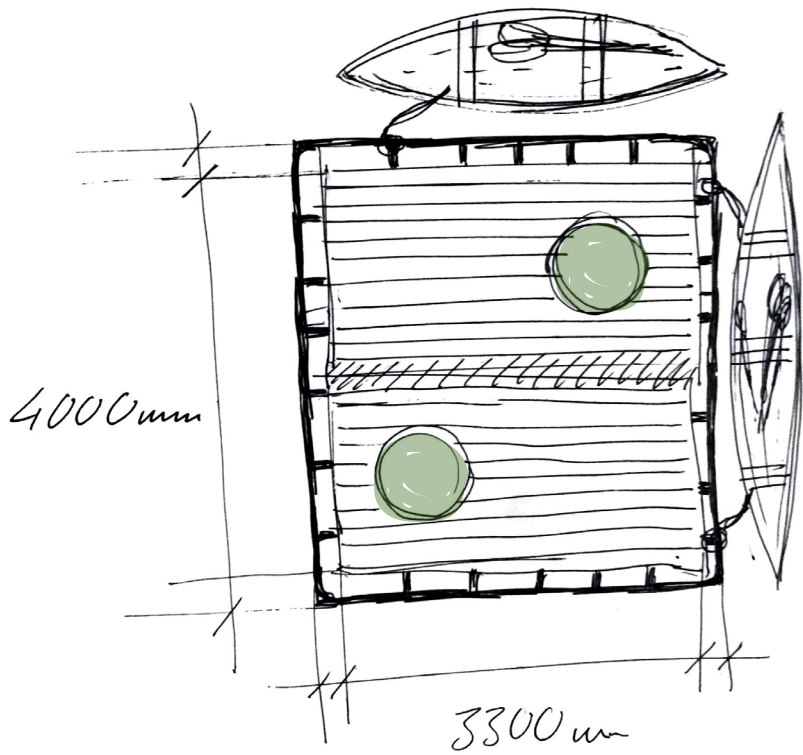


could be locked

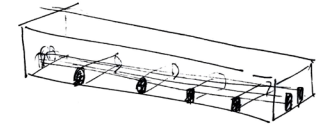


How is it anchored?





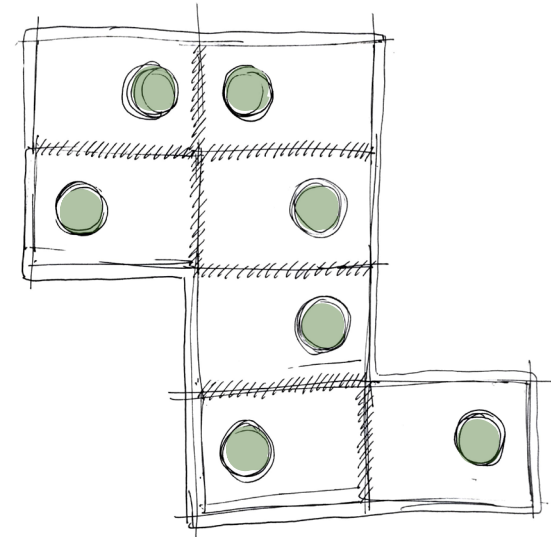
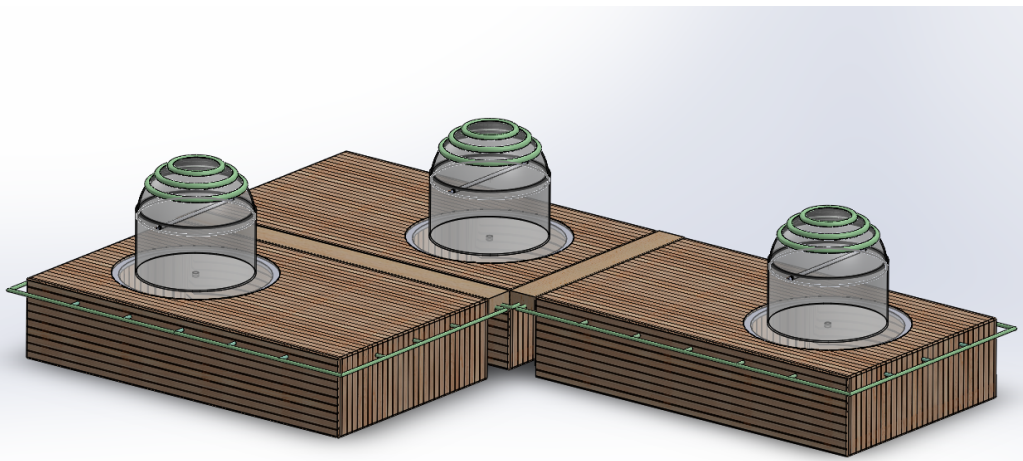
connectors



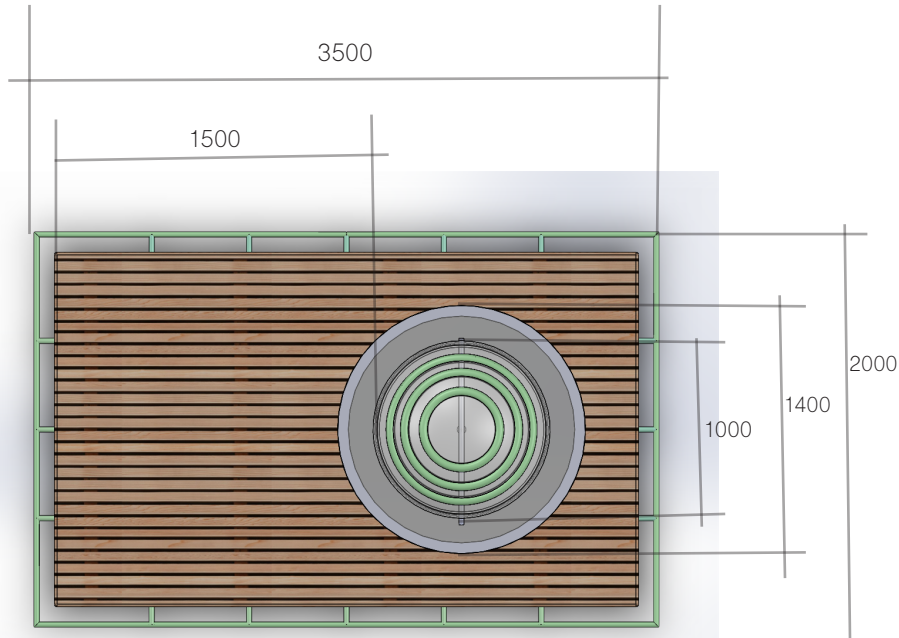
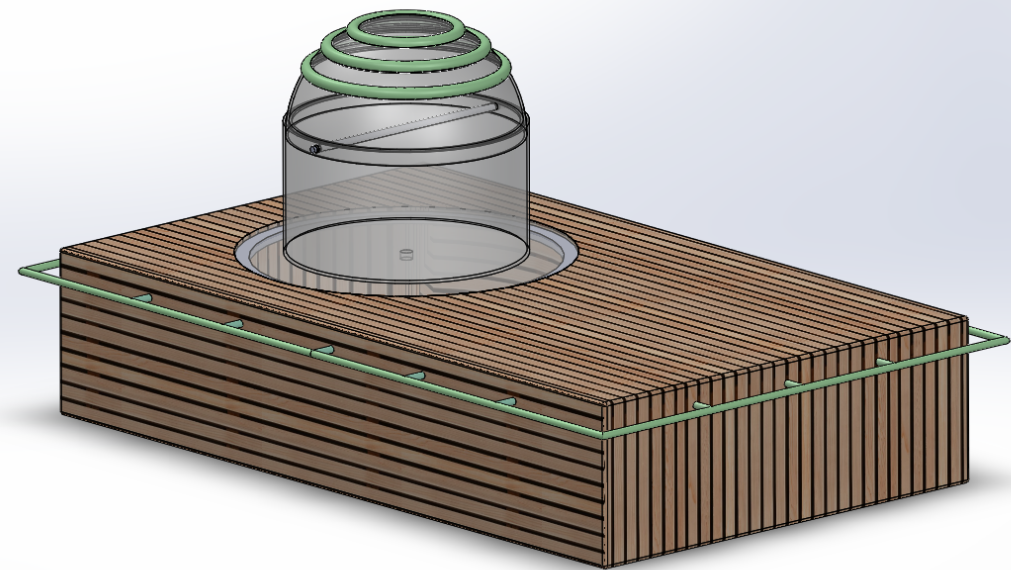
long one  
small one

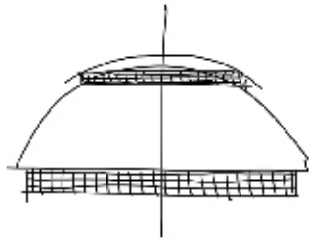
people to pots

See how they go together?

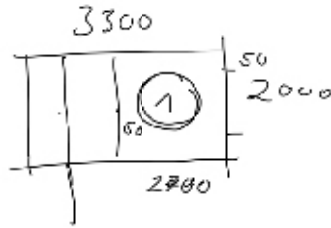








air-  
cycle

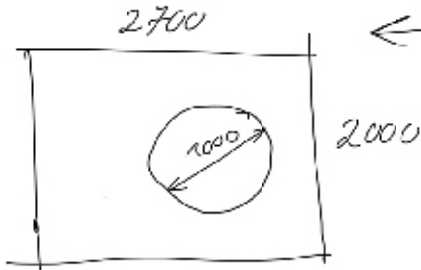


# details of the design



sieve  
is turning

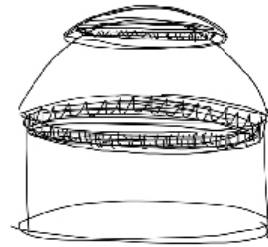
install in a  
wood frame



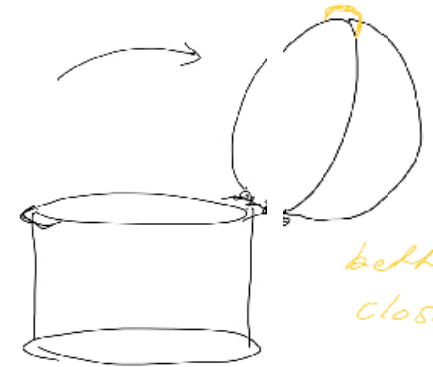
turning  
mechanism



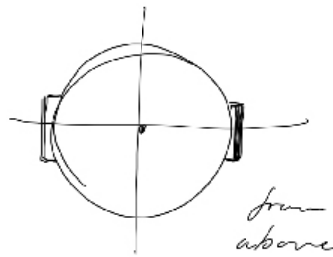
second  
handle?



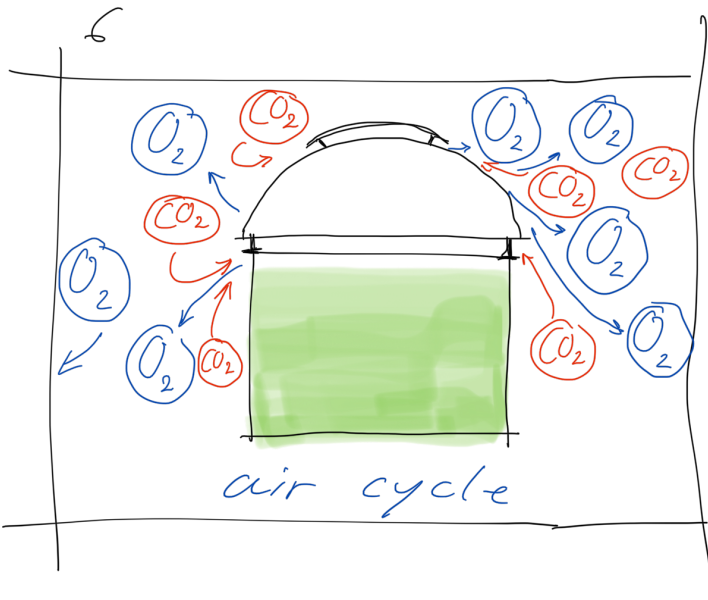
sieve



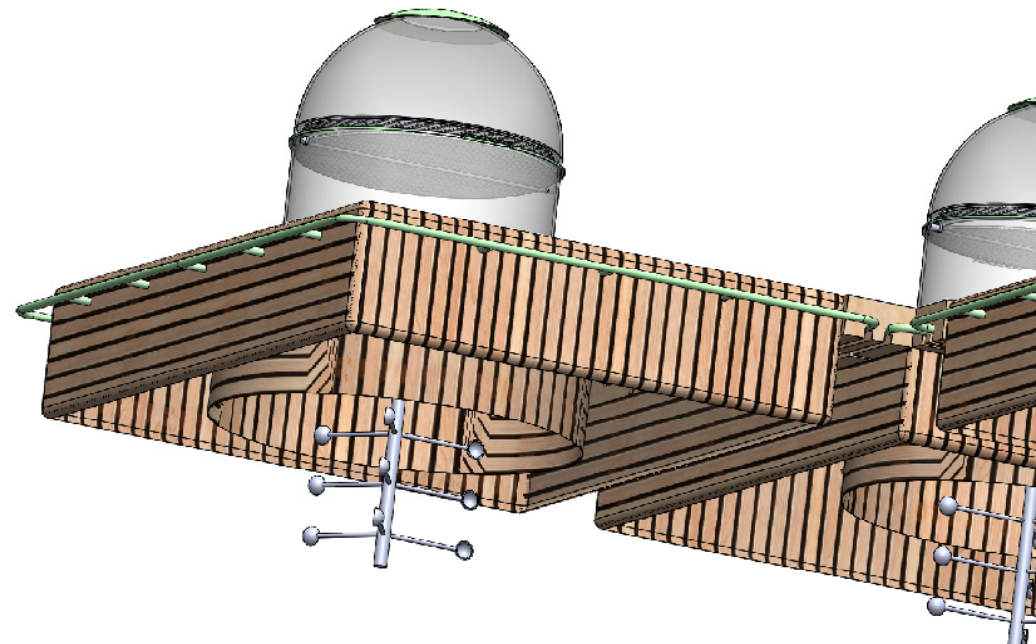
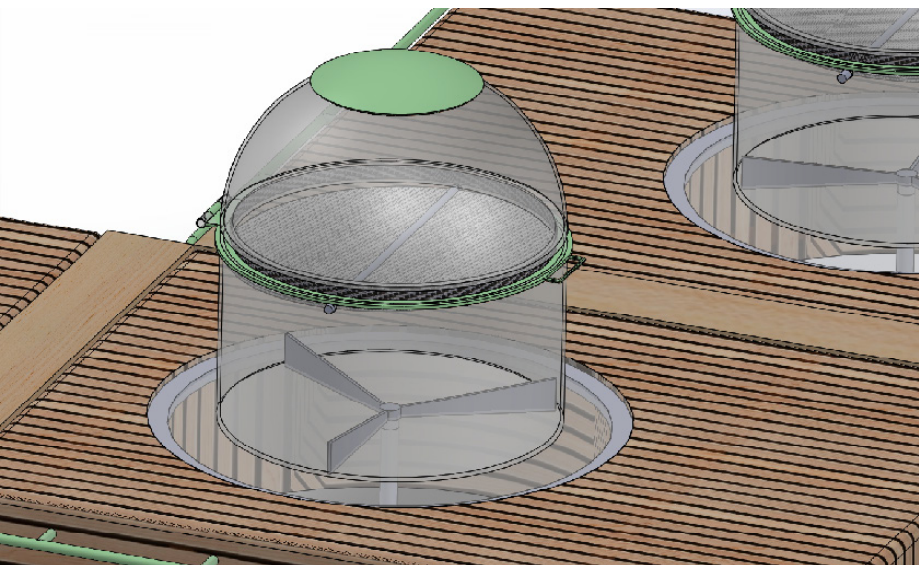
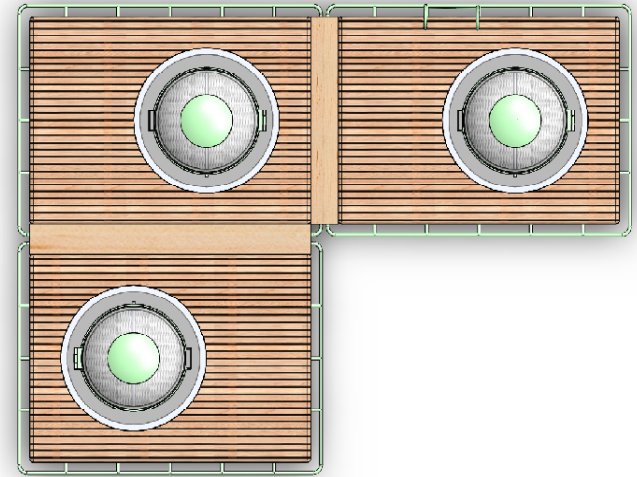
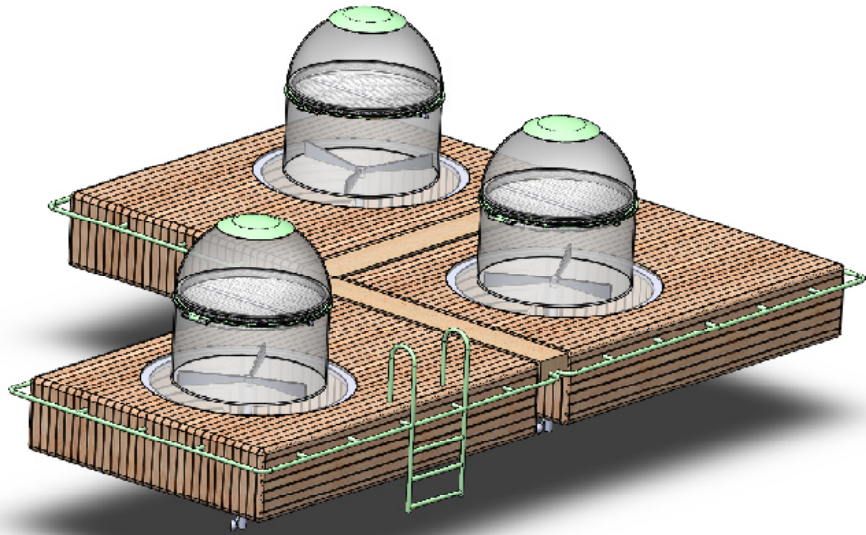
better  
closing?



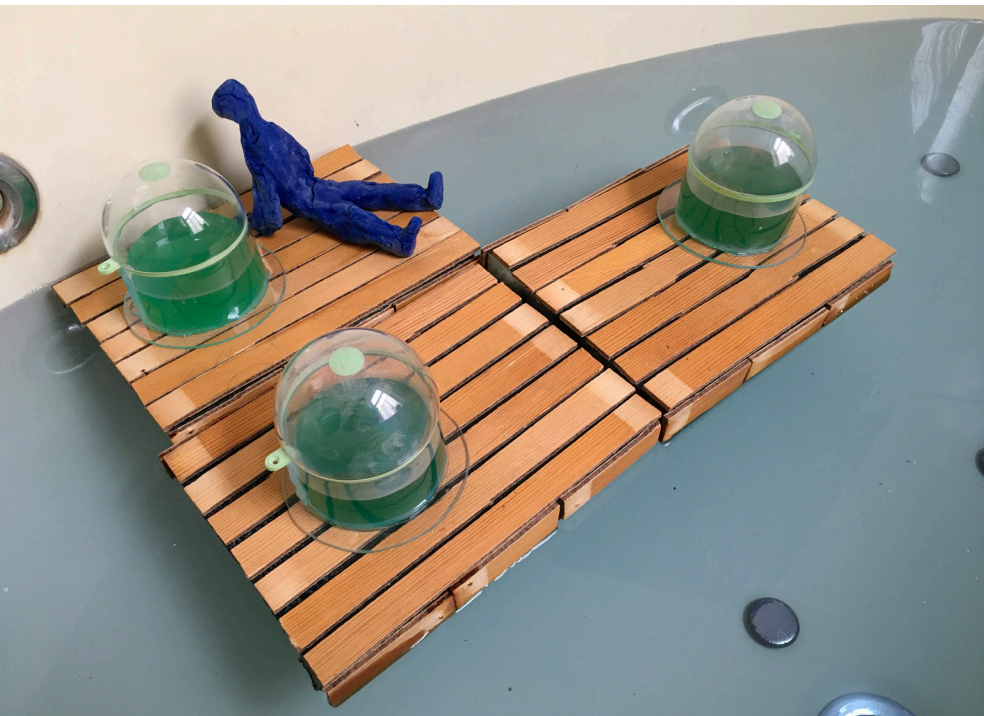
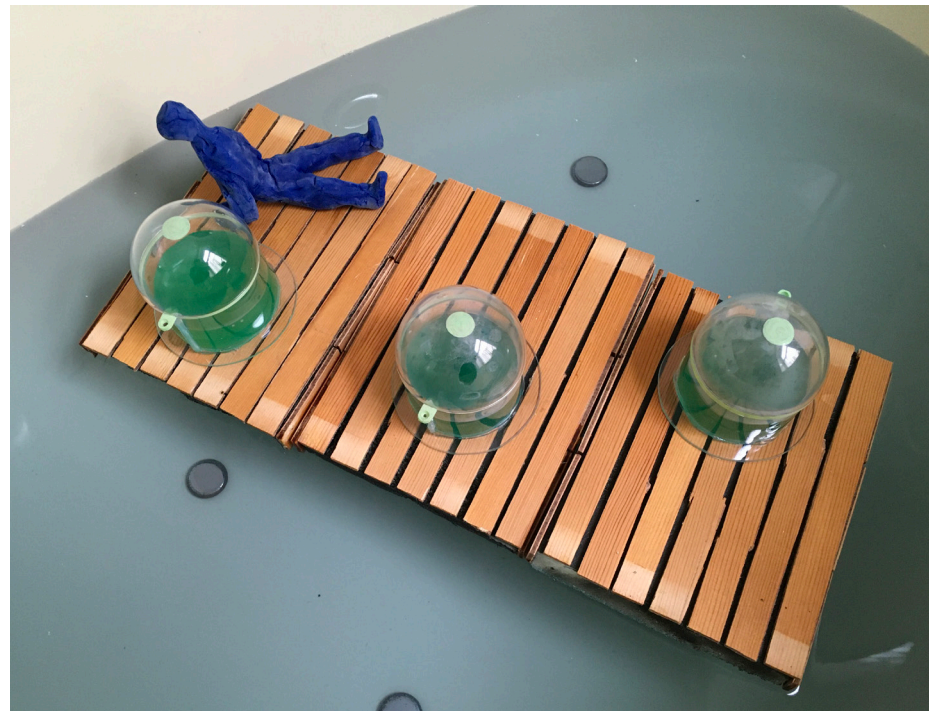
from  
above





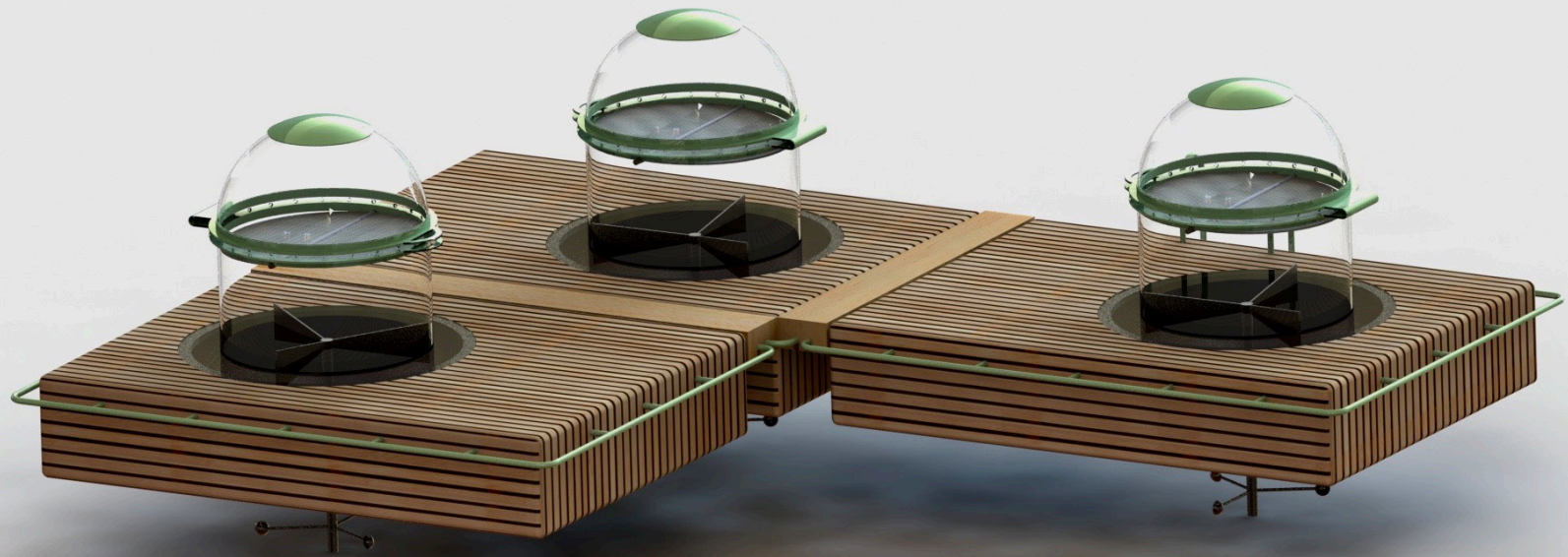
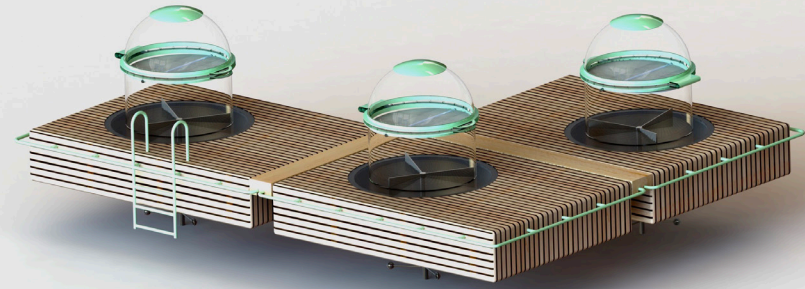


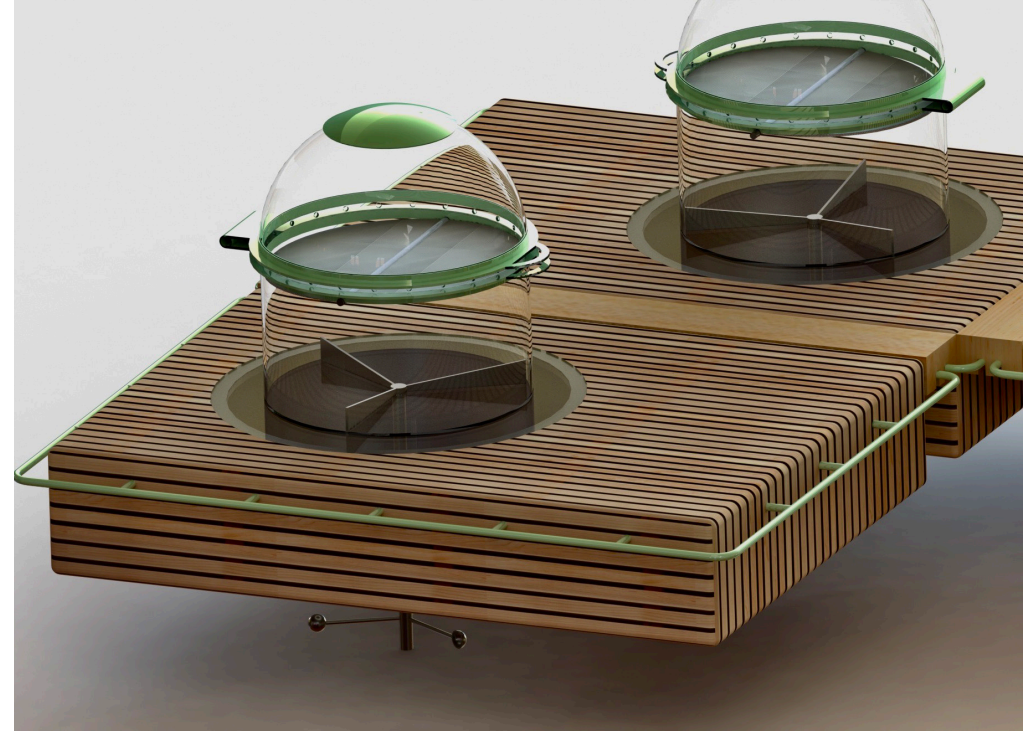
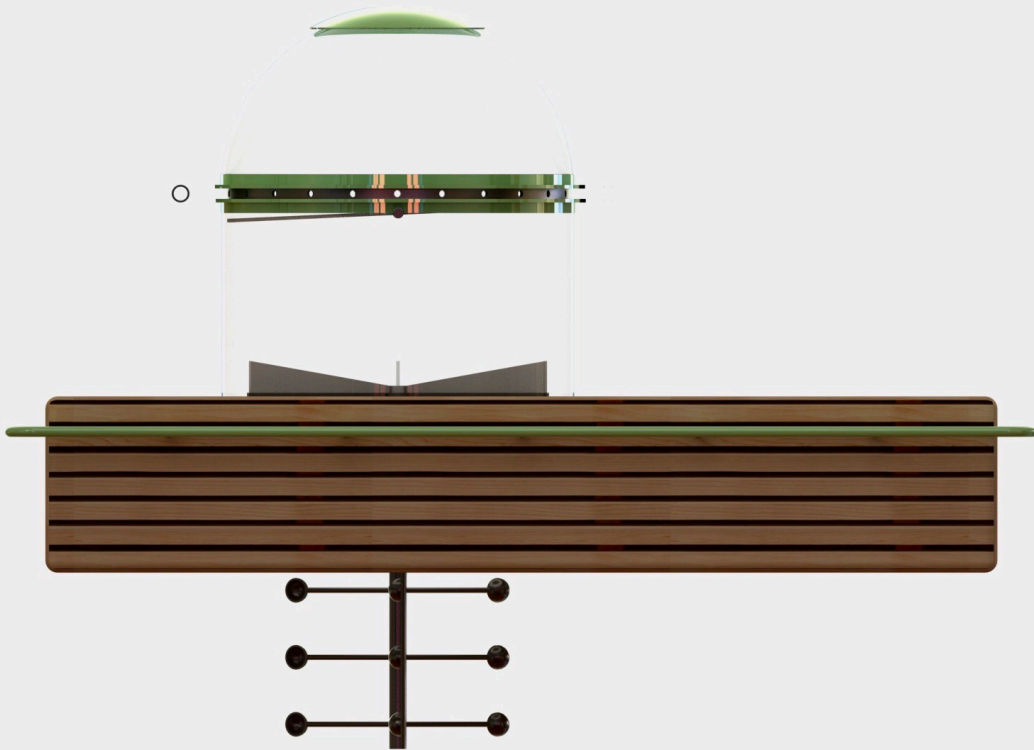




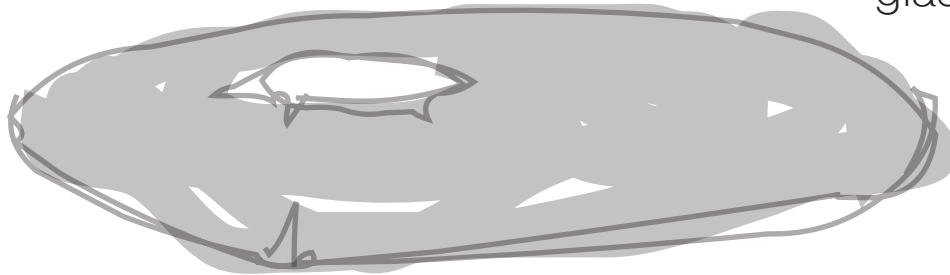


# FINAL DESIGN





pillow out of „Teichplane“  
 aut of Kautschuk to get the  
 container floating



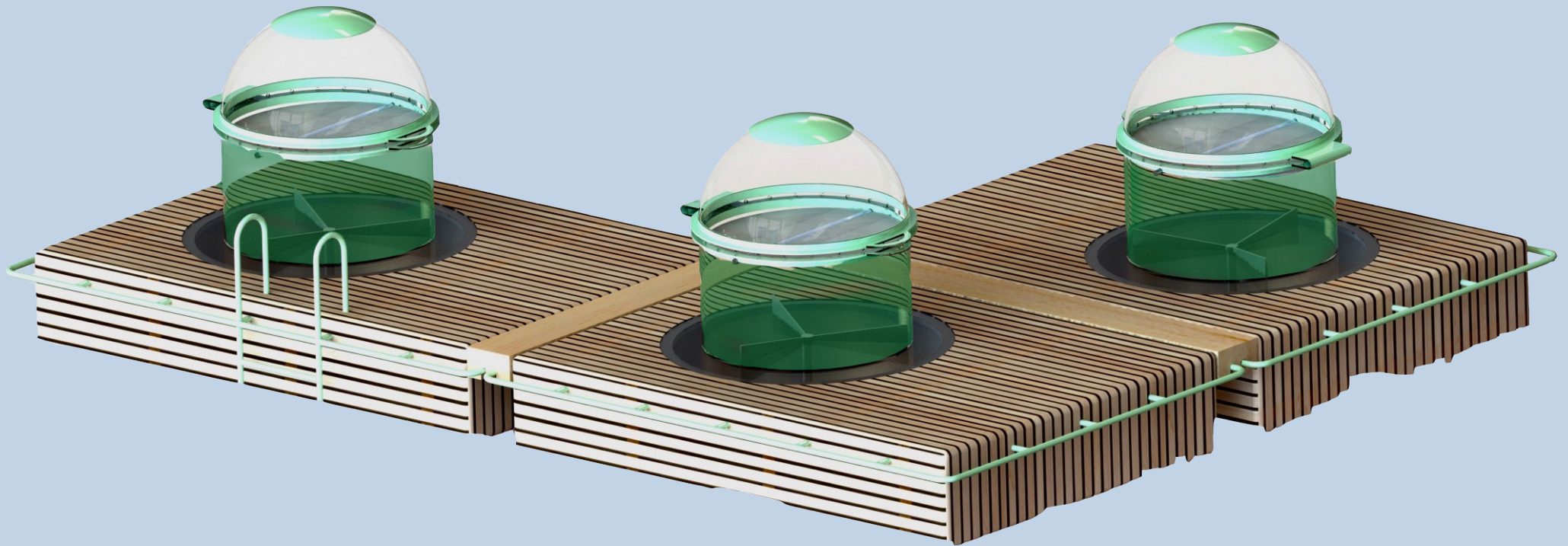
MATERIALS:

green and grey parts\_ stainless steel

wood\_ „Weißtanne“ very waterrestistent

the dome and the cylinder\_ thick acrylic  
 glas





I want to use the algae to capture  $\text{CO}_2$ , working against the air pollution in the city. The Spirulina Microalgae is one of the best materials for that. So I created a "Floating Algae Island" to have a container which makes it possible to grow the algae on water. Over the year two of my designed Islands captures as much  $\text{CO}_2$  as a fully grown tree. The air in the city can be improved in a new way.