# IN VITRO

## THE FUTURE OF MEAT PRODUCTION

DIPLOMA THESIS
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THESIS

When considering the growth in global population, todays methods of meat production may not be able to sustain future generations. Raising livestock and growing feed for them requires wast amounts of energy and physical space.

Luckily, we have a new alternative, one that only requires a fraction of the same land area and energy to yield the same amount of produce as traditional methods. In vitro production grows meat in bioreactors, harms no animals and has little impact on the environment. What would a facility like this look like and how can we show the public that this can be a solution to the problem?

This is where the solution of architecture enters the picture. The task of the diploma will be to employ architectural concepts and planning tools to provide an example of a facility with a production line that can also be an educational example to the consumers of the final products. The result will be a cross between laboratory, factory and gallery in an urban setting, a new typology for production and learning, that at the same time gives public park area back to the public and provides new functions that does not yet exist anywhere in the world today. A meeting between consumer and producer. An image of the future of architecture and its significance in creating connections.

The project will also try to answer questions that naturally arises, such as how much produce can actually be achieved and how much less land area will be required compared to traditional live stock breeding and feed production. As such, it can also be regarded as a research project.

SITE

The chosen site is located at Treschows gate 16 in Oslo, currently occupied by an unused warehouse building previously used to store cleaning products for the Lilleborg factories.

It is located along the Akers river and is closed off to the public with fences. Most of the site is currently occupied by the warehouse, which has a footprint of approx. 5000 m2. Removing the current building gives the potential to create a lush, green open space, with new possibilities for the intended facilities, while giving the public access to the river and giving something back to the city of Oslo. The current situation represents a disconnect in the green areas along the river and should be made available for the inhabitants of Oslo. The intention is to solve this problem by making a smaller building than the one currently occupying most the site and making it accessible to the public again.

The choice of site attempts to provide an example of the possibility of producing food in a city setting, detaching from the traditional idea that it must be located in a rural situation. It also gives the opportunity to connect the project with other food local production functions, like urban vegetable growing. This all ties in to the idea of a complete system of short travelled produce.

# USE OF MATERIALS

## Concrete

A project such as this requires the ability to keep the production line sterile and easy to clean. It would be logical to choose a material like concrete for the main body of the structure, as it would make it easier to do so, while controlling temperature at the same time.

## Glass

It is also desirable to give the public a view into the facilities, giving them the opportunity to understand the process and make it transparent and honest. Glass would as such be the material of choice for this, and also reflects on the concept of in vitro production.

## Wood

For the public area, a warmer and more human approach to the use of materials is required, as its intentions are to infer trust and comfort in its user group. Wood is a warm and living material, ideal for this purpose.

The final decision on material in the production areas will be based on research into best practice in the course of the diploma semester.

PROGRAM

Production facilities for in vitro meat (clean zone)
- Production hall 1000 m2
- Laboratories 300 m2
- Storage rooms 100 m2
- Cold storage room 100 m2
- Packing area 50 m2
- Technical rooms 100 m2
- Toilets and wardrobes 50 m2

Offices and visitor area
- Lobby/reception 100 m2
- Offices and meeting rooms 200 m2
- Kitchen and resting area 100 m2
- Toilets and wardrobes 50 m2

Outlet for selling samples of products
- Small store 50m2

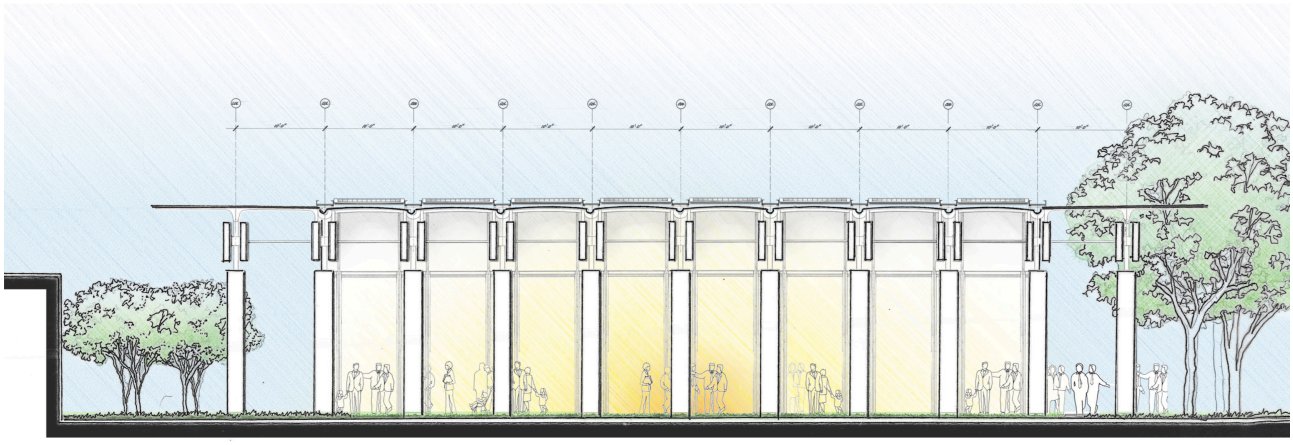
Publicly available space in the city
- Green area approx. 5000 m2

m2 can be subject to change during the semester

REFERENCE PROJECTS

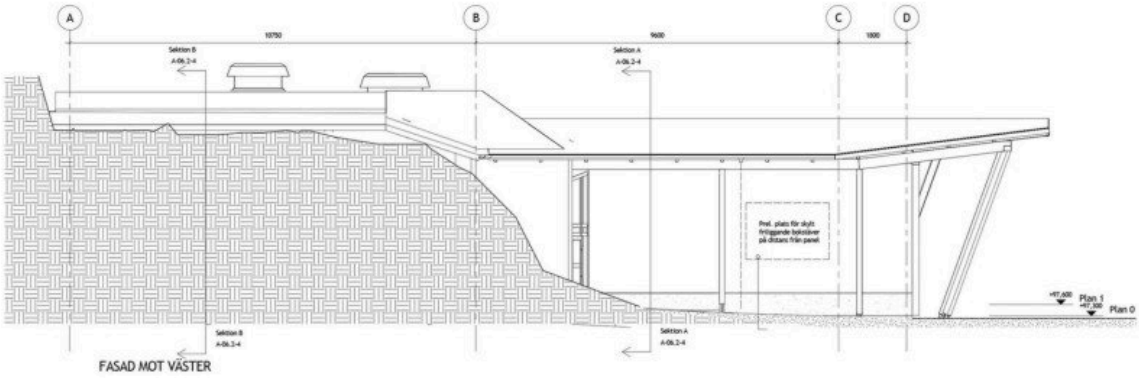
Renzo Piano Pavillion

This project gives an example of an open gallery space in a park area created with the materials chosen for the project. It also show how an open glass wall can be used for transparency and create a source of light and warmth on its own, becoming a lantern of hope.



Hemsö Restaurant

This project gives an example of a restaurant created in wood and how it adheres and blends into the green spaces and landscape around it. It shares similarities with the glass wall of the Renzo Piano Pavillion while using other materials and leaving an impression of its own that provides confidence and warmth.



DELIVERABLES

Project drawings 1:200

Models 1:200 / 1:1000

3D renderings

Diagram

Research and background booklet

Sketch booklet

SEMESTER SCHEDULE

AUGUST – Diploma start August 14th.

Week 33 – Site studies

Week 34
- Research and mapping of production line
- Specifications for lab building level 2
- Interview/research at NOFIMA, Ås
- Site mapping
- Concept sketches

Week 35
- Site model
- Concept sketches
- 3D modelling of site

SEPTEMBER

Week 36
- Continued from last week

Week 37
- Initial design stage
- 1:1000 site model and volume studies
- Plans/sections sketches 1:200

Week 38
- Continued from last week

Week 39
- Continued from last week

OCTOBER

Week 40
- Final design stage plans/sections 1:200
- 3D modelling
- Physical model planning

Week 41
- Continued from last week

Week 42
- Continued from last week

Week 43
- Continued from last week

NOVEMBER

Week 44
- 3D modelling
- Plans/sections 1:200
- Diagrams

Week 45
- Continued from last week

Week 46
- Production of models

Week 47
- Continued from last week

Deadline for withdrawing from diploma November 23rd.

DECEMBER

Week 48
- Finish drawings
- Finish illustrations
- Finish diagrams

Week 49
- Continued from last week

Week 50
- Work on final presentation

Deadline to deliver project: December 14th.

January 2nd - 4th – Mount project and test presentation

January 7th – 11th – Reviews

January 12th – 13th – Diploma exhibition