



# INDUSTRIALIZED WOODEN CONSTRUCTION

CHALLENGES AND CASES OF NEW BIG-  
SCALE OFFICEBUILDINGS WITH WOODEN  
STRUCTURES

C.F. MØLLER ARCHITECTS

LONE WIGGERS  
PARTNER, ARCHITECT MAA.

NORDISK TRÆ- OG BINDINGSVÆRKBY - Conference

THE. 11.th NOVEMBER 2021, MARIENLYST

*“Make cities and human settlements inclusive, safe, resilient and sustainable.*

*The world’s population is constantly increasing.*

*To accommodate everyone, we need to build modern, sustainable cities. For all of us to survive and prosper, we need new, intelligent urban planning that creates safe, affordable and resilient cities with green and culturally inspiring living conditions.”*

*UN sustainability goals*

# 11 SUSTAINABLE CITIES AND COMMUNITIES



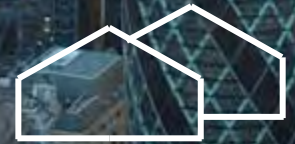


# OUR FUTURE CITIES

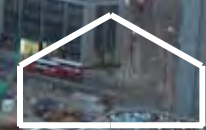
TRANSFORMATION  
URBAN METABOLISM, FROM CO2 PRODUCTION TO CO2 CONSERVATION



CONCRETE  
+ 200 KG CO2/M3



HYBRID  
+/- 0 KG CO2/M3



WOOD  
-1000 KG CO2/M3

\*Svenskträ

CF MØLLER  
ARCHITECTS

# WHY IS WOOD USED IN BUILDING CONSTRUCTIONS SO INTERESTING ?

- Part of biobased future society
- A carbon negative material
- A renewable material
- Indoor-climatic advantages: Hygrothermic advantages with wood
- Replace all constructions, where you can...

# TIMBER

CRADLE TO CRADLE - MULTIPLE PRODUCTS AND APPLICATIONS



FORESTRY  
SCANDINAVIA

RAW MATERIAL  
HIGH COST

PROCESSING  
DISSASSEMBLY

PRODUCTS  
COUNTLESS

USE/REUSE  
DURABILITY

ENERGY  
BIOMASS



# TRANSFORMATION IN MATERIAL APPROACH

**Embedded energy**  
Lifecycle approach



Out of the 100% of the worlds CO<sub>2</sub>-consumption, the production of cement takes up a staggering 7% !

- so every time we can reduce the amount of cement/concrete used, -
- the climate wins.

Wood is a smarter way to go forward in the conservation of CO<sub>2</sub>

But the value chain is only just getting ready, - and we need to move fast forward



# ENGINEERED WOOD – CLT/LVL

FIRE RESISTANT  
RENEWABLE SOURCE  
LOCALLY PRODUCED  
CO2 NEUTRAL  
HIGH-TECH INDUSTRIAL PROCESS  
LOW WEIGHT  
OPTIMIZED TRANSPORTATION  
LESS FOUNDATION AND PILING  
FEW PEOPLE, EFFECTIVE AND SILENT BUILDING SITE  
POSITIVE INDOOR CLIMATE AND HEALTH



## WOOD IN THE CITY

**BUILDING TALL  
WOODEN  
BUILDINGS IN  
DENSE CITY  
ENVIRONMENTS IS  
ALSO A PRAGMATIC  
CHOICE :**

**LIGHT WEIGHT,  
SILENT, FAST - AND  
PRACTICAL ON  
POROUS GROUND  
OF THE MODERN  
CITY**

C.F. Møller

**CF MØLLER  
ARCHITECTS**





# NEW POSSIBILITIES

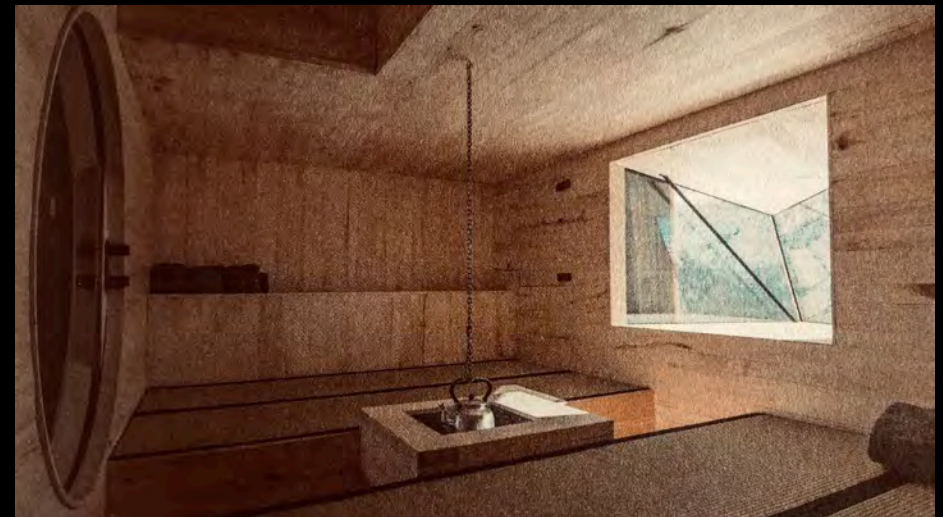
ENGINEERED WOOD - NEW DESIGN POSSIBILITIES  
CUSTOMIZE – HIGH PRECISION CNC CUTTING  
DENSIFY – BUILDING ON “INACCESSIBLE” SITES  
ONFILL & INFILL – LIGHTWEIGHT STRUCTURES

# Bio-longing and Eco-idealism



"Bosco Verticale", Milano, Stefano Boeri Architetti

Foto: Boeri Studio



According to 2019-report \* there are 5 trends in the field of wooden constructions in the Nordic countries, defining more clearly what good practice within wood in construction looks like.:

1. *Multifunctionality* – flexibility in structures for future change
2. *Saving time and cost* – timber's major benefits + local supply chains
3. *Investing in scalability* – start small and scale up..building skills and expertise
4. *Pushing the boundaries* – diversity in constructions, tall buildings
5. *Circular Design* – end of life concerns

\* "Wood in construction 25 cases of Nordic good practice", 2019, Nordic council of ministres

TALL TIMBER STRUCTURES  
KAJSTADEN VÄSTERÅS, SVERIGE  
C.F. MØLLER / BJERKING / MARTINSON  
8,5 STOREYS  
SWEDEN'S TALLEST TIMBER BUILDING (2019)





**XL FRESKS**  
Västerås  
Levande byggnat

**CF MØLLER  
ARCHITECTS**



CF MØLLER  
ARCHITECTS





LIFT SHAFT



INSTALLATIONS



TELESCOPE  
BRACKETS



WALL TO DECK

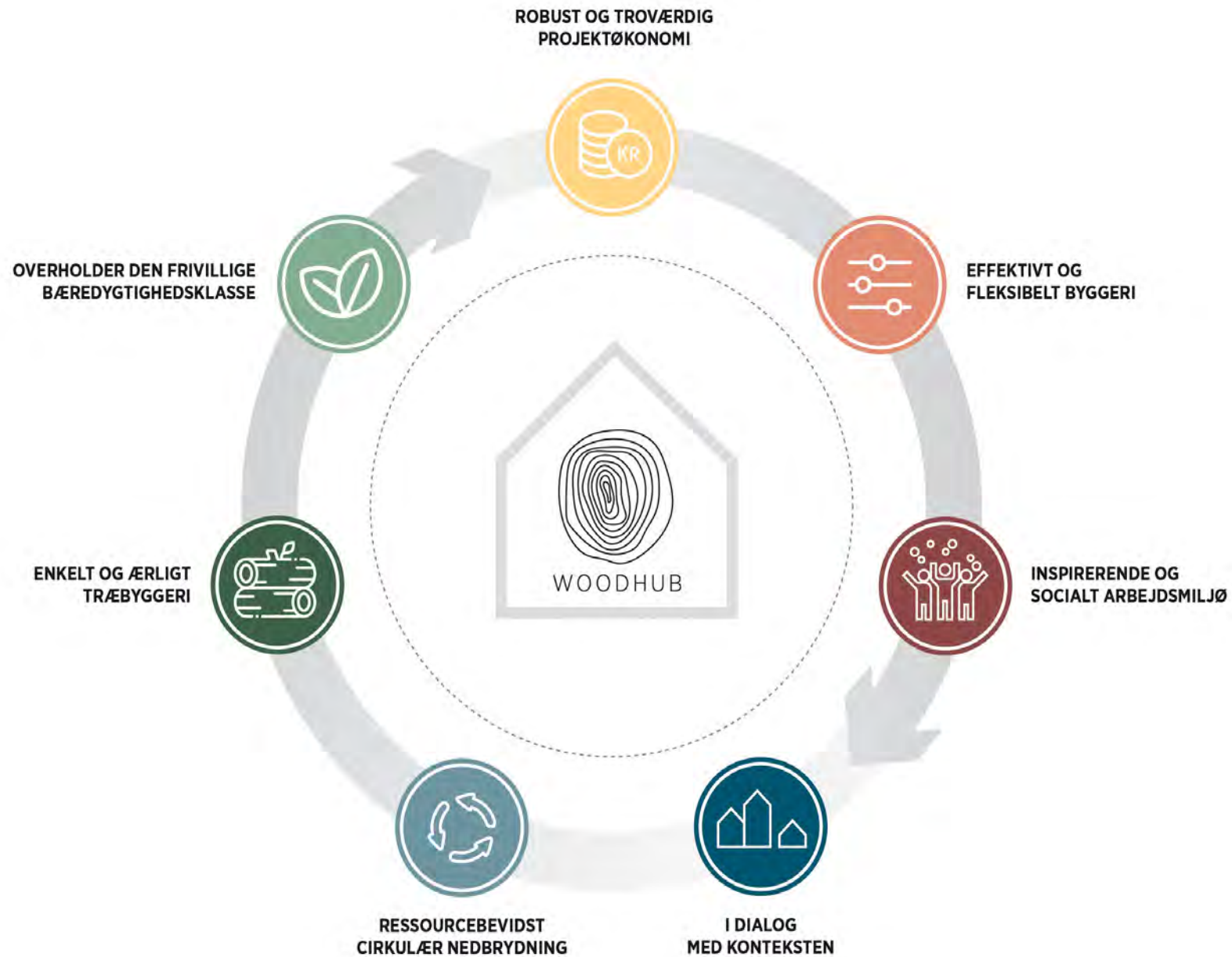




# C.F. MØLLER AND WOOD CONSTRUCTION – case 1

Offices for the Danish Property Agency

31.000 m<sup>2</sup> massive timber building in Odense for BYGST



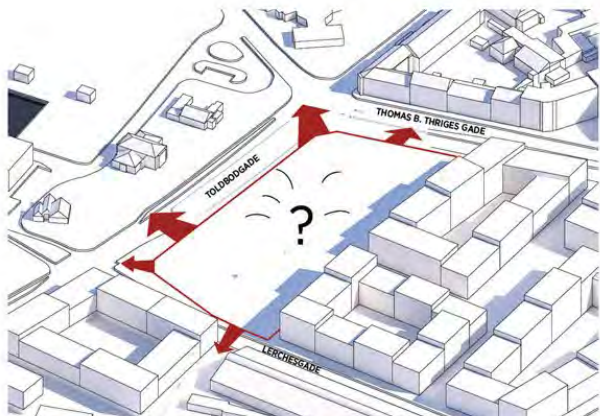


BORGERSERVICE

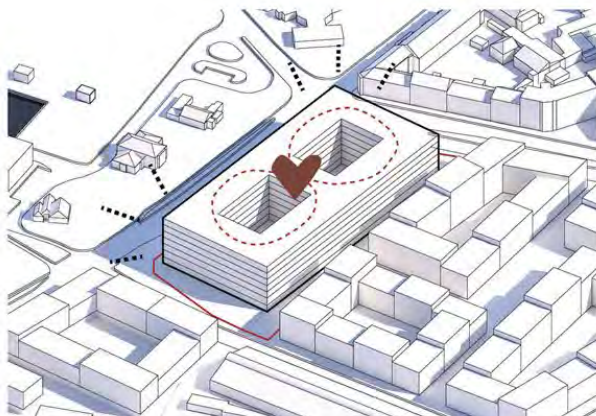
INDGANG

CF MØLLER  
ARCHITECTS

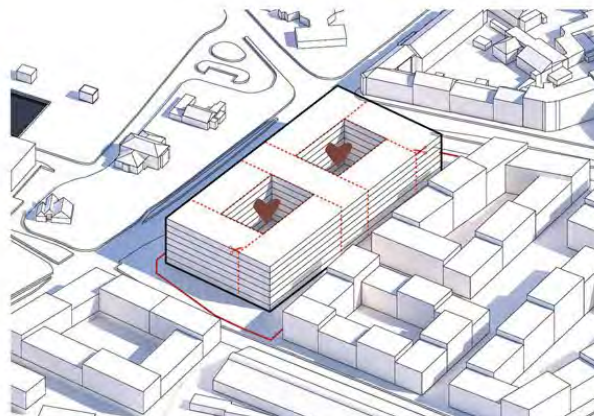
# CONCEPT - CONTEXT



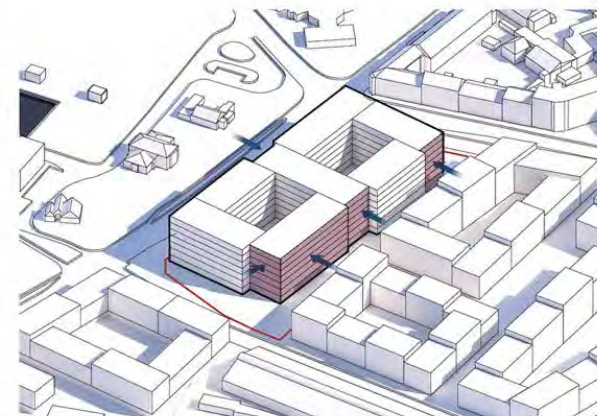
1. EN VIGTIG BRIK



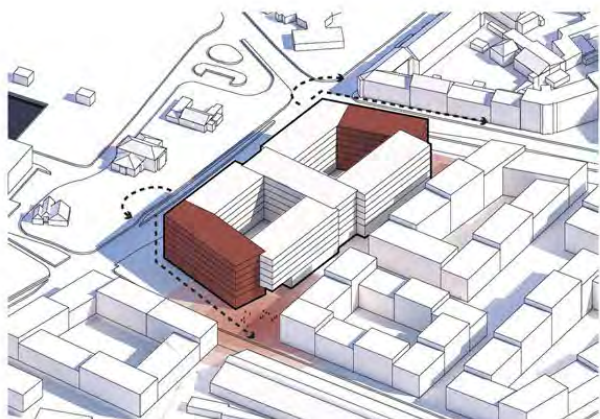
2. ET ENKELT OG RATIONELT GREB



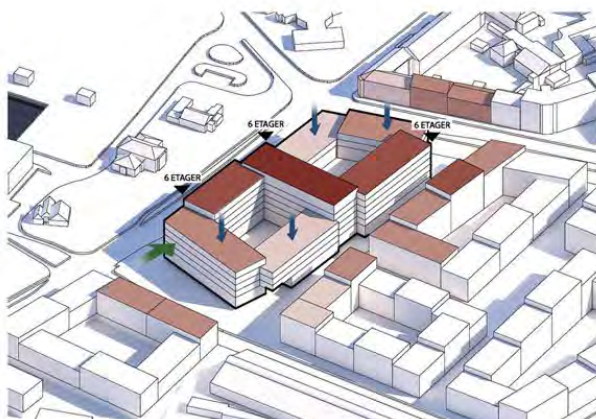
3. OPDELING AF VOLUMENET



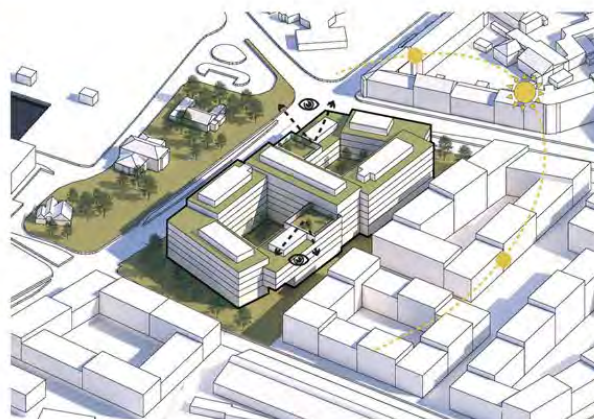
4. FORSKYDNINGER I FACADEN



5. I DIALOG MED BYENS RUM



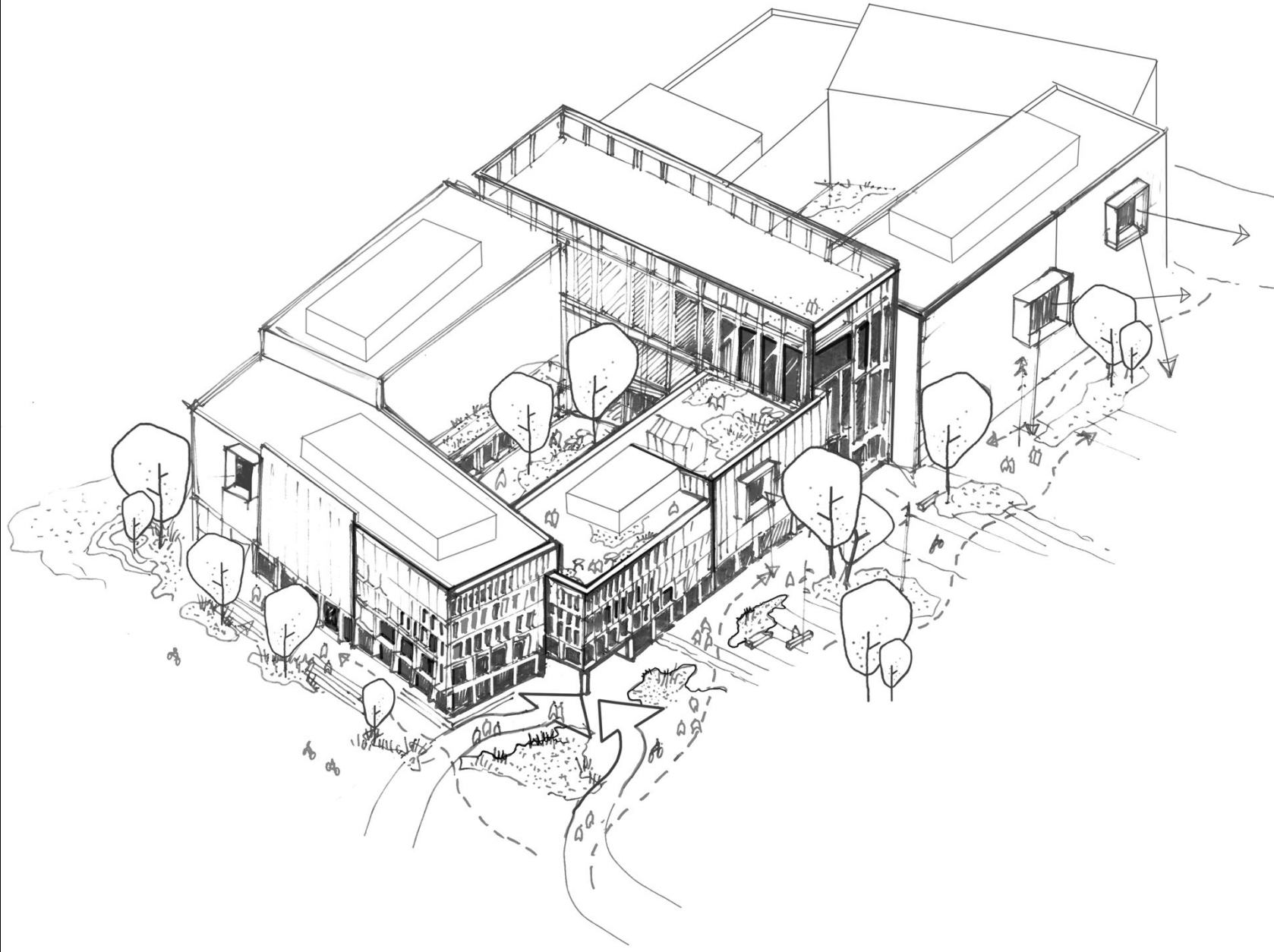
6. NEDTRAPNING ÅBNER Huset MOD OMGIVELSERNE



7. REKREATIVE GRØNNE ÅNDEHULLER

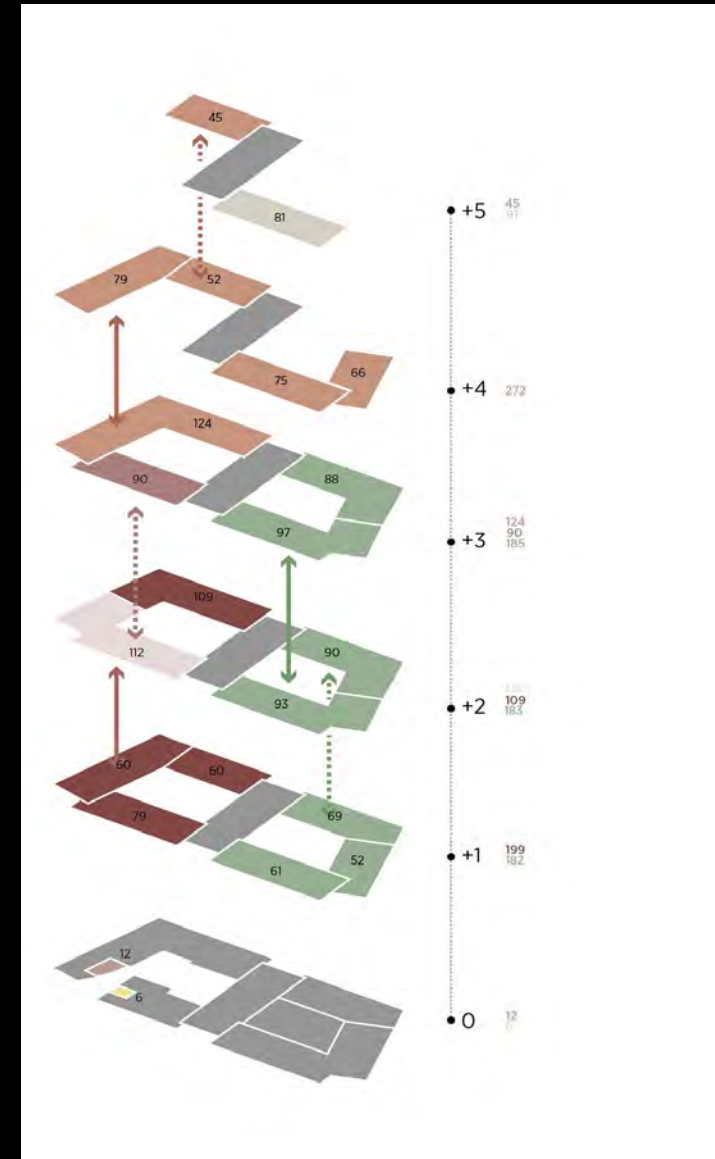


8. ET DYNAMISK OG LEVENDE UDTRYK





# 80/20 – PRINCIPLES A BALANCE BETWEEN REPETITIVE STANDARDS AND EXTRAVAGANT INNOVATION





# 80/20 - PRINCIPLES





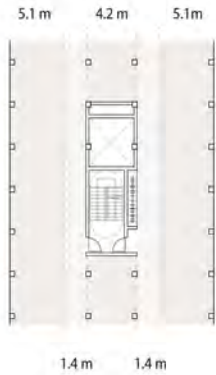


CF MØLLER  
ARCHITECTS

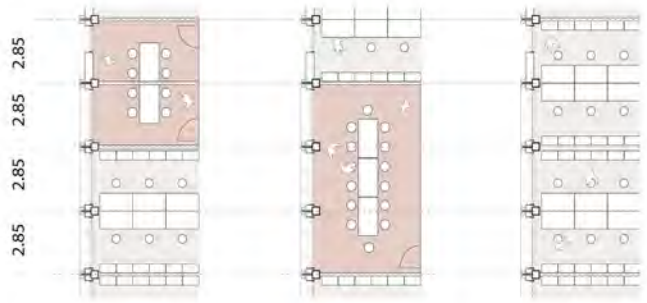


# 80/20 - PRINCIPLES

## DIMENSIONER



## INDBYGGET MODULARITET OG TILPASNINGSEVNE



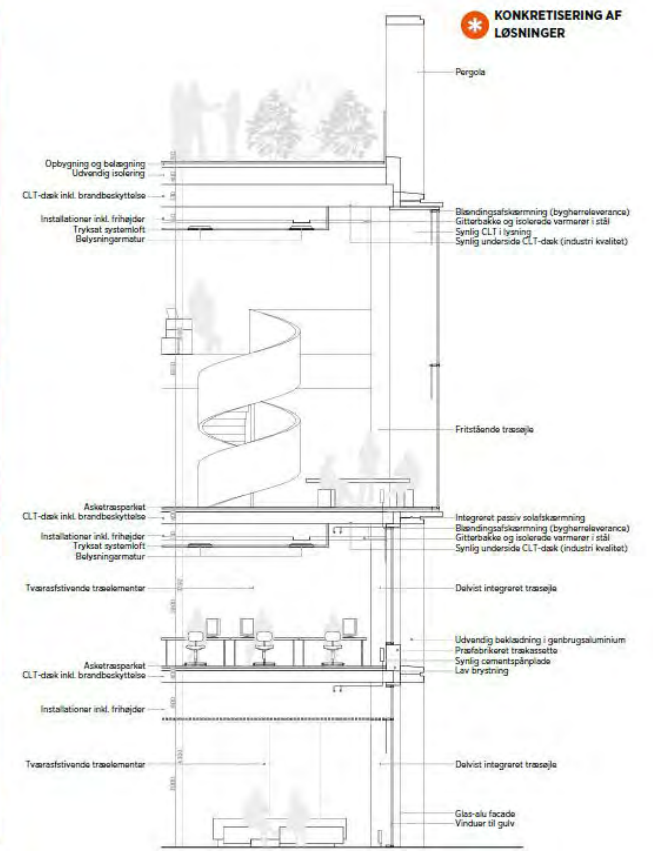
FLEKSRUM OG SEMIÅBENT KONTORMILJØ

STØRRE MØDERUM

ÅBENT KONTORMILJØ



FACADEUDSNIT // 1:100



PRINCIPIELT SNIT // 1:100



CF MØLLER  
ARCHITECTS



CF MØLLER  
ARCHITECTS



CF MØLLER  
ARCHITECTS



## C.F. MØLLER AND WOOD CONSTRUCTION – case 2

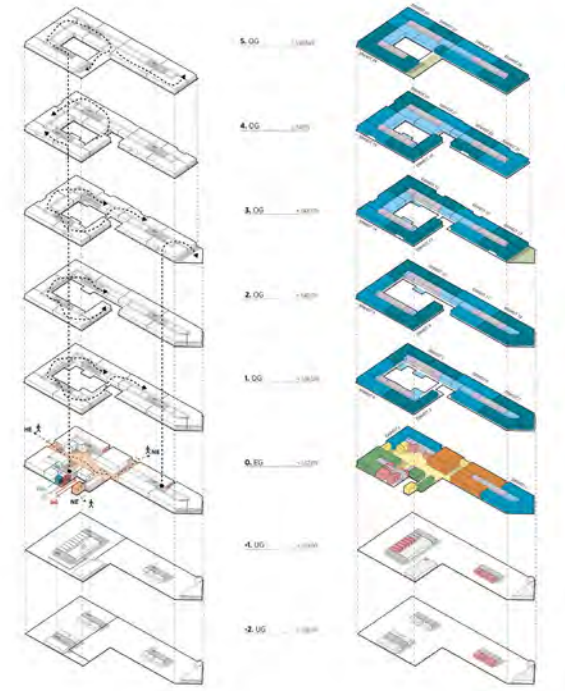
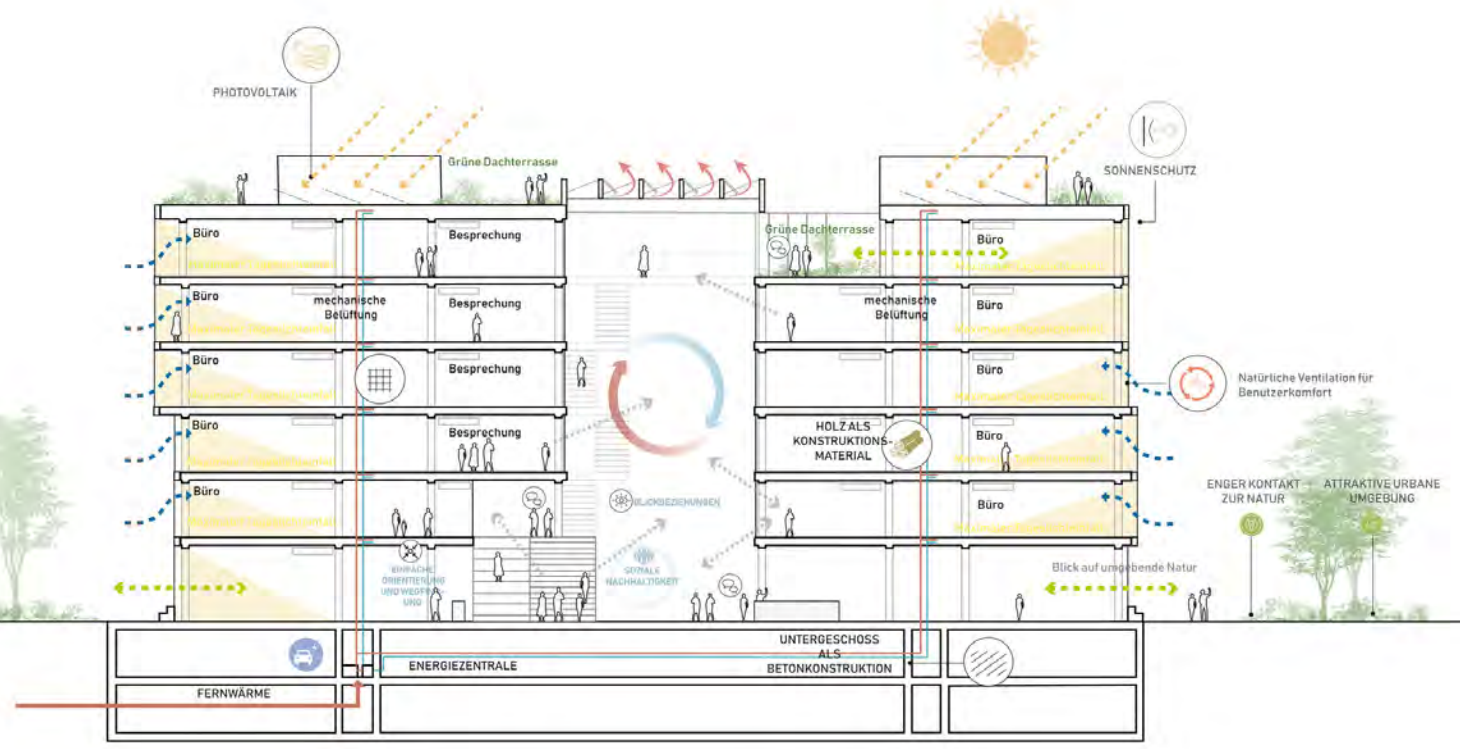
“i8”- Offices in the “Werksviertel”, Germany

20.000 m<sup>2</sup> massive timber building in Munich for private client



CF MØLLER  
ARCHITECTS







CF MØLLER  
ARCHITECTS



CF MØLLER  
ARCHITECTS



CF MØLLER  
ARCHITECTS



## C.F. MØLLER AND WOOD CONSTRUCTION – Case 3

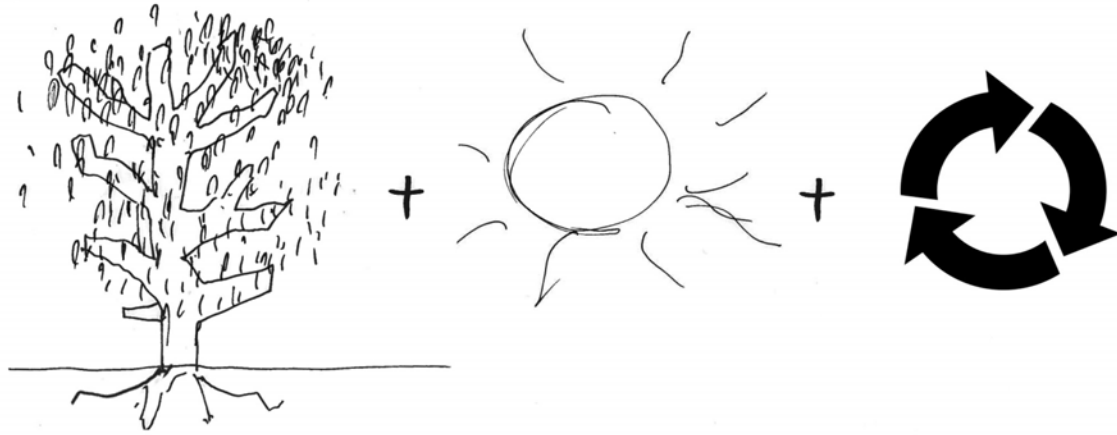
Offices for the *German Ministry of Environment,  
Nuclear Safety and Nature Conservation*

51.000 m<sup>2</sup> hybrid timber building in Berlin, German.



CF MØLLER  
ARCHITECTS

# NATUREBASED CONCEPT



In order to achieve a low-tech building for the future, the sustainability concept is based on nature's inspiration.



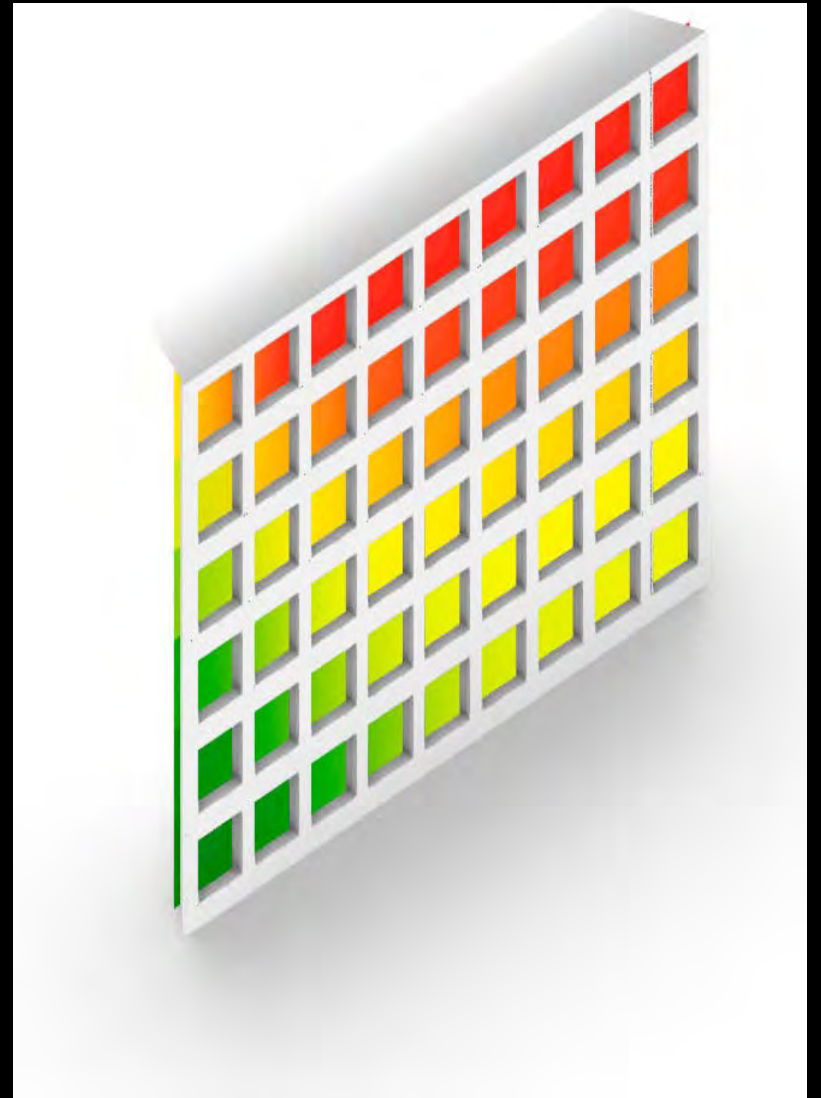
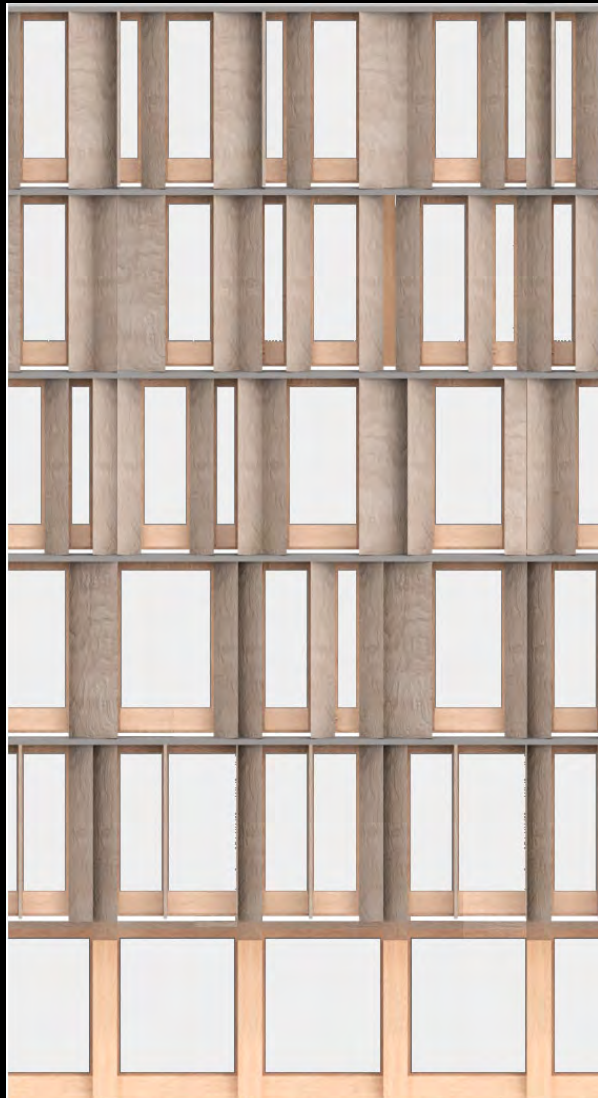
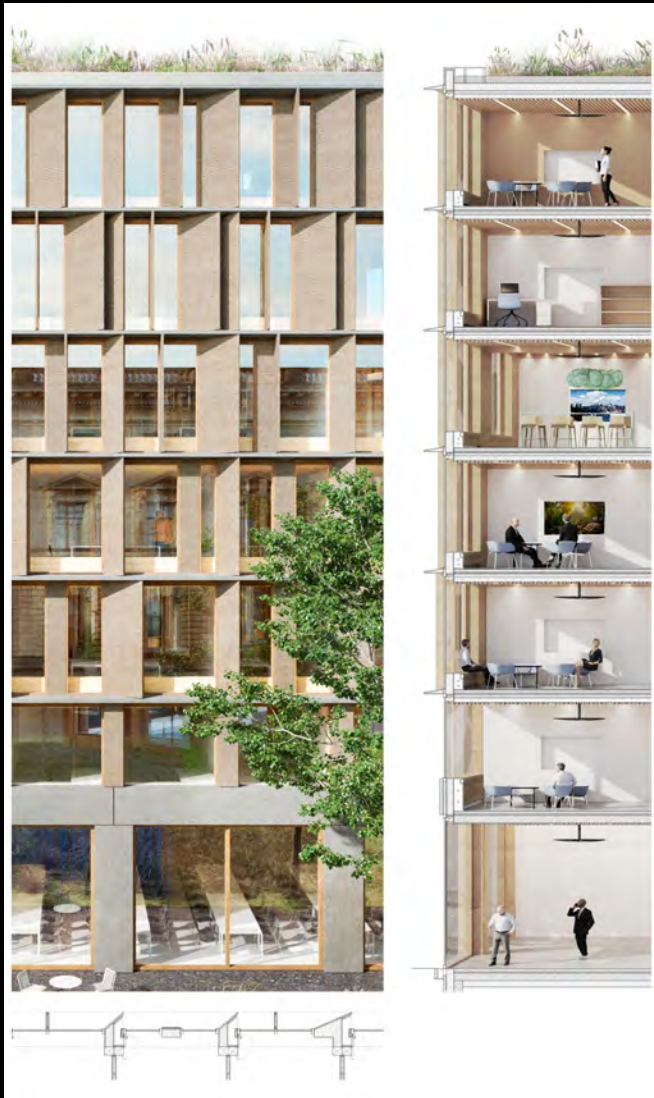
In accordance with the solar exposure and other climatic conditions, the facades echo a tree-like structure with an increased density of timber sun-shades protecting against overheating towards the top of the building.

# VOLUMETRICS DENSITY AND DAYLIGHT











# C.F. MØLLER AND WOOD CONSTRUCTION

– housing and tall timber cases

Housing in Örebro, Sweden

Research and innovation projects - tall residential timber towers



TALL TIMBER STRUCTURES - HOUSING  
ÖRNSRO TRÄSTAD, ÖREBRO, SVERIGE  
C.F. MØLLER ARCHITECTS  
11,5 STOREYS



ÖRNSRO TRÄSTAD

CF MØLLER  
ARCHITECTS



CF MØLLER  
ARCHITECTS



INNOVATION



UDTRYK



FORSKNING/UDVIKLING



KONSTRUKTION



HYBRID





# FOREIGN PROJECTS – TALL TIMBER CONSTRUCTION – CASES

CANADA :

UBC BROOKS COMMONS – 18 STOREYS

NORGE :

TREET, BERGEN – 14 STOREYS

MJØSTÅRNET – 18 STOREYS



**TALL TIMBER STRUCTURES**  
**UBC BROCK COMMONS, CANADA**  
**ACTON OSTRY**  
**18 STOREYS**  
**CONCRETE CORES**  
**CLT AND LVL**  
**FACADE ELEMENTS**

**CF MØLLER**  
**ARCHITECTS**





**TALL TIMBER STRUCTURES**  
**UBC BROCK COMMONS,**  
**CANADA**  
**ACTON OSTRY**  
**18 STOREYS**

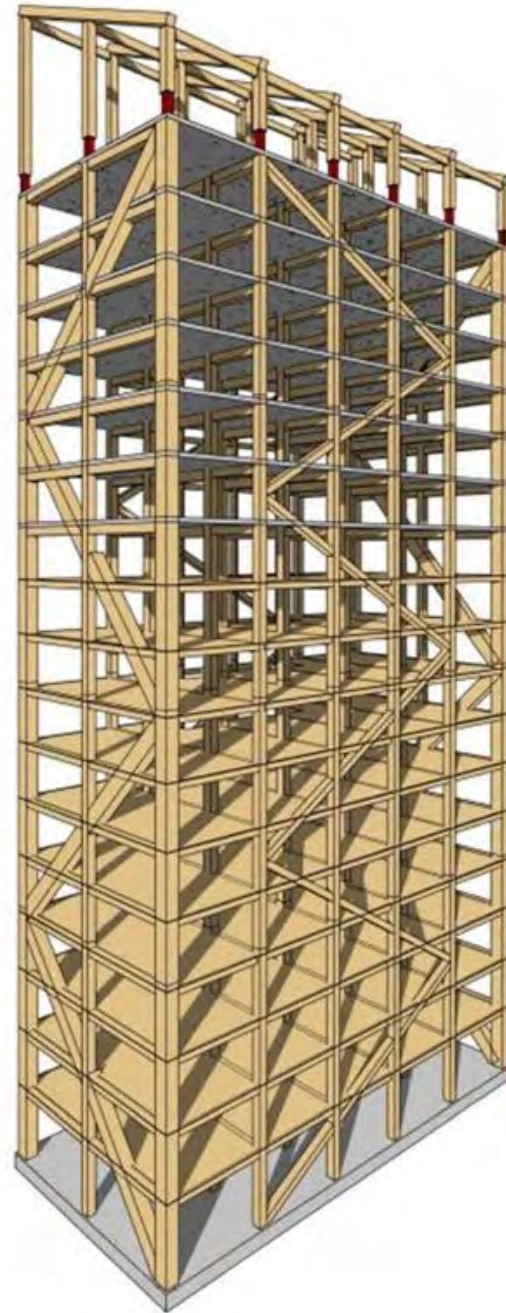
**CF MØLLER**  
**ARCHITECTS**





**TALL TIMBER STRUCTURES  
TREET, BERGEN  
ARTEC / SWECO  
14 STOREYS**

**CF MØLLER  
ARCHITECTS**



**TALL TIMBER  
STRUCTURES  
MJØSTÅRNET,  
NORGE  
VOLL ARKITEKTER /  
SWECO  
18 STOREYS  
85 m TALL  
HOTEL,  
RESTAURANTS,  
FLATS, SWIMMING  
POOL  
THE WORLDS  
TALLEST TIMBER  
TOWER (2019)**

**CF MØLLER  
ARCHITECTS**

An architectural rendering of a modern residential complex at dusk. The scene features several multi-story buildings with dark, textured facades and large, irregularly shaped windows. The buildings are illuminated from within, casting a warm glow. In the foreground, there is a body of water with a wooden dock and a small boat. People are seen sitting on the dock, and a few ducks are swimming in the water. The sky is dark with a few birds flying in the distance. The overall atmosphere is serene and modern.

# THANK YOU

[WWW.CFMOLLER.COM](http://WWW.CFMOLLER.COM)

Lone Wiggers

CF MØLLER  
ARCHITECTS