INDUSTRIALIZED WOODEN CONSTRUCTION

CHALLENGES AND CASES OF NEW BIG-SCALE OFFICE BUILDINGS WITH WOODEN STRUCTURES

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NORDISK TRÆ- OG BINDINGSVÆRKBY - Conference
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“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
OUR FUTURE CITIES

TRANSFORMATION

URBAN METABOLISM, FROM CO2 PRODUCTION TO CO2 CONSERVATION

+ 200 KG CO2/M3

- 1000 KG CO2/M3

+- 0 KG CO2/M3

Svensktträ

CONCRETE

HYBRID

WOOD

1000 KG CO2/M3

CF MØLLER

ARCHITECTS
WHY IS WOOD USED IN BUILDINGCONSTRUCTIONS 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
Out of the 100% of the world's CO2-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 CO2

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
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
NEW POSSIBILITIES

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

“Bosco Verticale”, Milano, Stefano Boeri Architetti
Foto: Boeri Studio

Inspirat architects and design: Ulaman Eco Retret, Bali
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)
C.F. MØLLER AND WOOD CONSTRUCTION – case 1

Offices for the Danish Property Agency
31,000 m² massive timber building in Odense for BYGST
CONCEPT - CONTEXT
80/20 – PRINCIPLES
A BALANCE BETWEEN REPETITIVE STANDARDS AND EXTRAVAGANT INNOVATION
80/20 - PRINCIPLES
80/20 - PRINCIPLES
C.F. MØLLER AND WOOD CONSTRUCTION - case 2

"i8"- Offices in the "Werksviertel", Germany
20,000 m2 massive timber building in Munich for private client
C.F. MØLLER AND WOOD CONSTRUCTION – Case 3

Offices for the German Ministry of Environment, Nuclear Safety and Nature Conservation
51,000 m² hybrid timber building in Berlin, German.
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
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
TALL TIMBER STRUCTURES
UBC BROCK COMMONS,
CANADA
ACTON OSTRY
18 STOREYS
TALL TIMBER STRUCTURES
UBC BROCK COMMONS, CANADA
ACTON OSTRY
18 STOREYS
TALL TIMBER STRUCTURES
MJØSTÅRNET, NORGE
VOLL ARKITEKTER / SWECO
18 STOREYS
85 m TALL
HOTEL, RESTAURANTS, FLATS, SWIMMING POOL
THE WORLDS TALLEST TIMBER TOWER (2019)
THANK YOU

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