

Building Concepts and Digitalization

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Stora Enso - a leading provider of renewable solutions



Leading
provider of
renewable
solutions



26 000
employees
in 30 countries



Sales in
2020 EUR
8.6 billion



Packaging
Biomaterials
Wood
Products
Paper
Forest

Everything
that's made
from fossil-based
materials today
can be made from a
tree tomorrow.

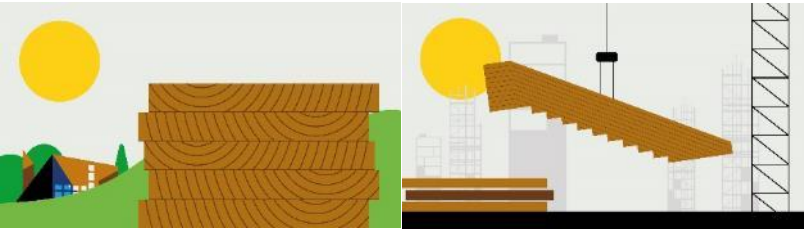


Stora Enso Wood Products:

The leading provider of sustainable building solutions



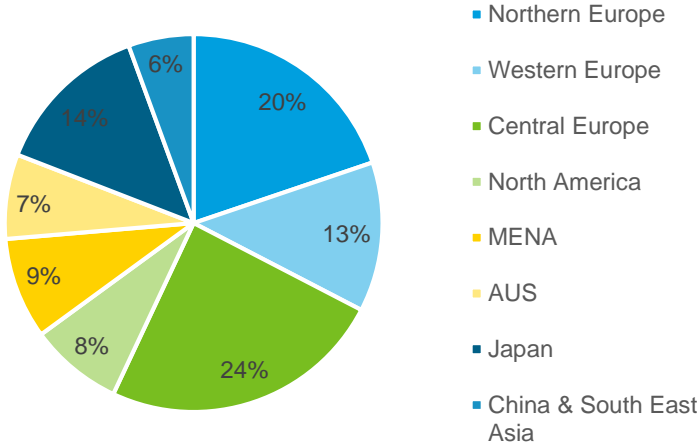
Two focus areas:



Traditional wood products

Building Solutions

Global customer base



100%

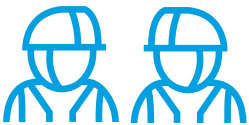
of wood is traceable and from sustainable sources

EUR 1.4 billion
sales 2020

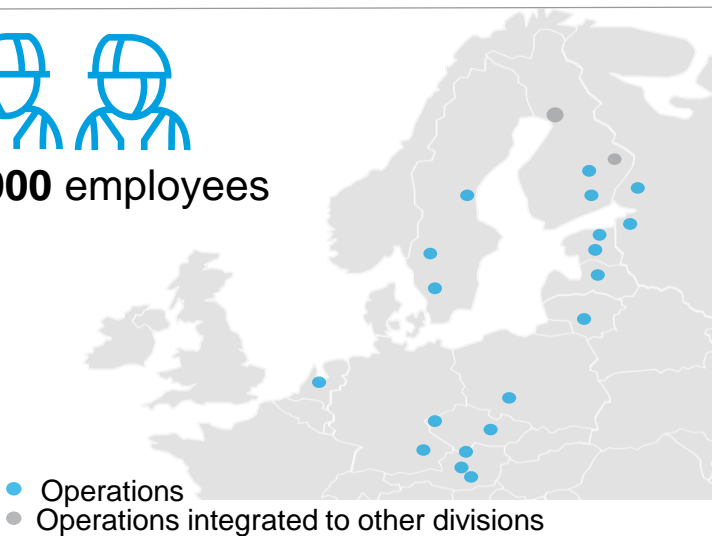
-12%
2020 vs. 2019



17 European units:	Production capacity
17 saw mills	5 720 000 m ³
3 CLT mills	270 000 m ³
1 LVL mill	75 000 m ³
7 pellet mills	520 000 tonnes



4 000 employees



9 % Operational EBIT 2020 vs. 2019

ROOC 19.1% in 2020 (target > 20%)

Building Concepts

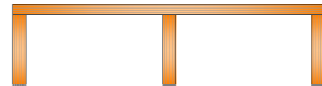


from material supplier to concepts adding value to wood



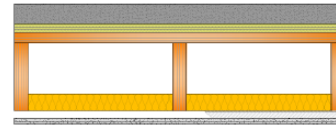
Commodity products

CLT, LVL, Construction beams,
Industrial components, classic planned,
classic sawn, pellets.



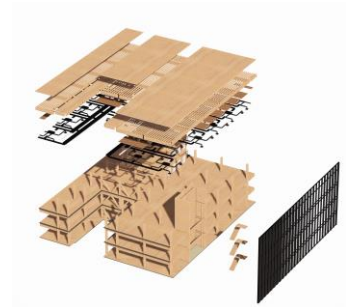
Engineered Products

Further processed as a unique
prefabricated part of a building or
structure.
+one-off manufacturing
+JIT delivery



Application

Assure the fitness-for-purpose of the
components in its function in the
building.
+ verified build ups for acoustic and fire
performance
+ Design advise and guidelines



Building Concepts

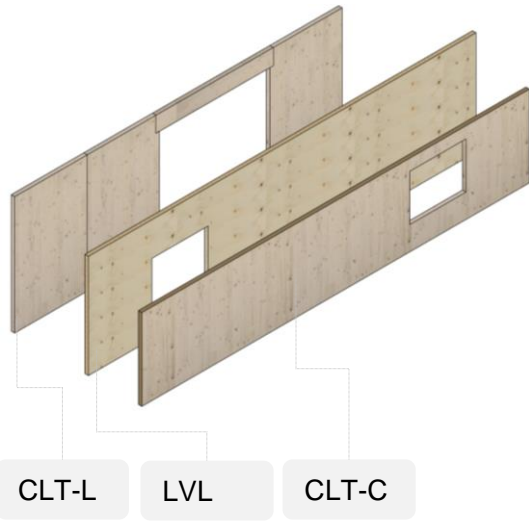
Best Performing combinations of
products and their applications for
market relevant building typologies.

+Benchmarked to standard
construction methods
+Optimized
+ Considering the overall building
+ value proposition for all relevant
stakeholders

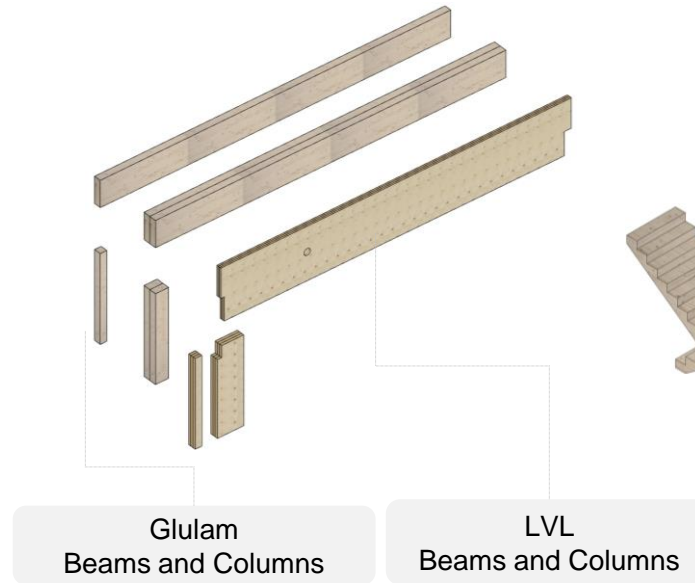
Prefab engineered wood products building toolkit principle



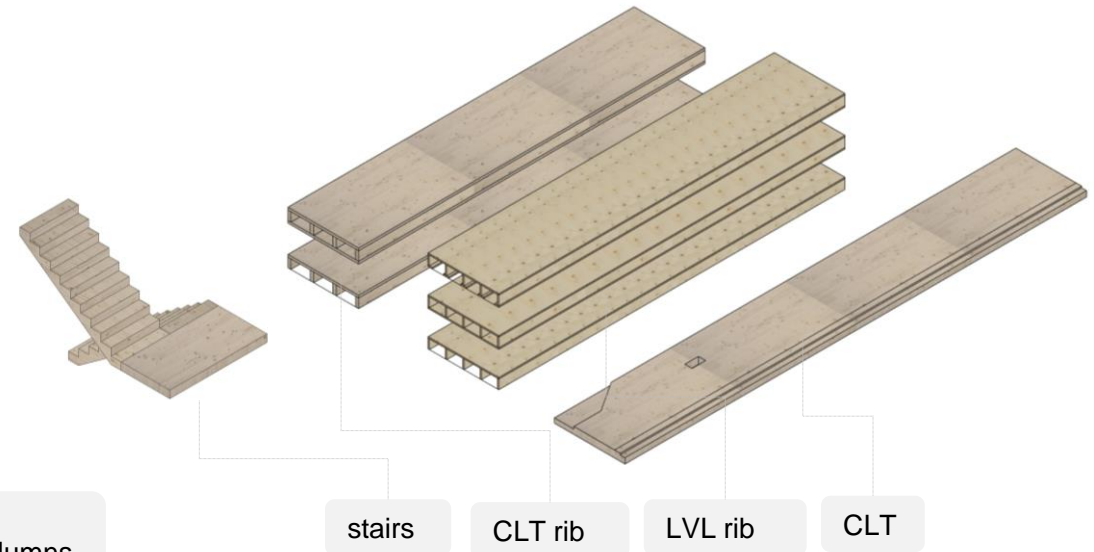
Walls



Beams and Columns

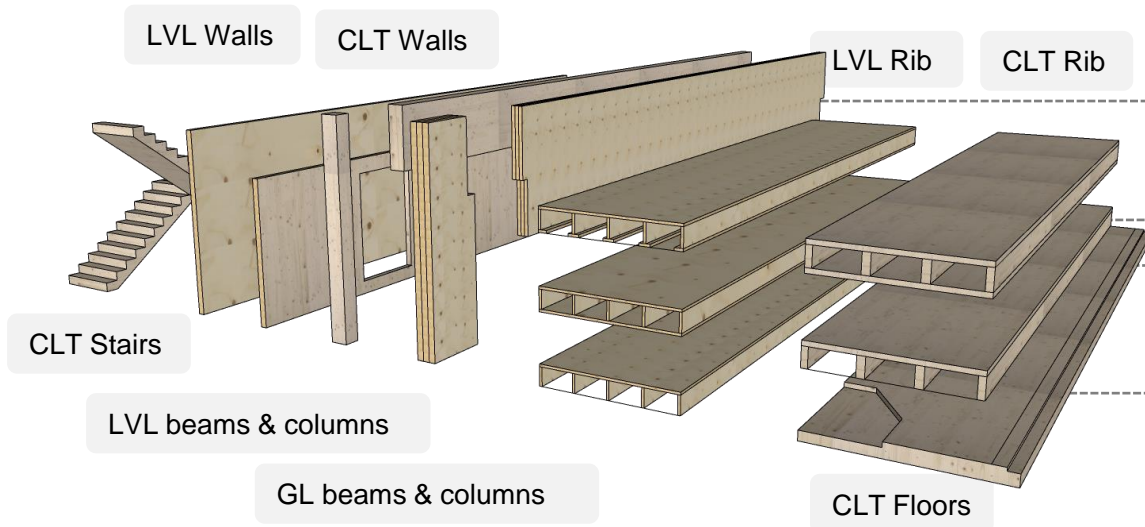


Floor, roofs and stairs



Building Concepts

purpose and definition



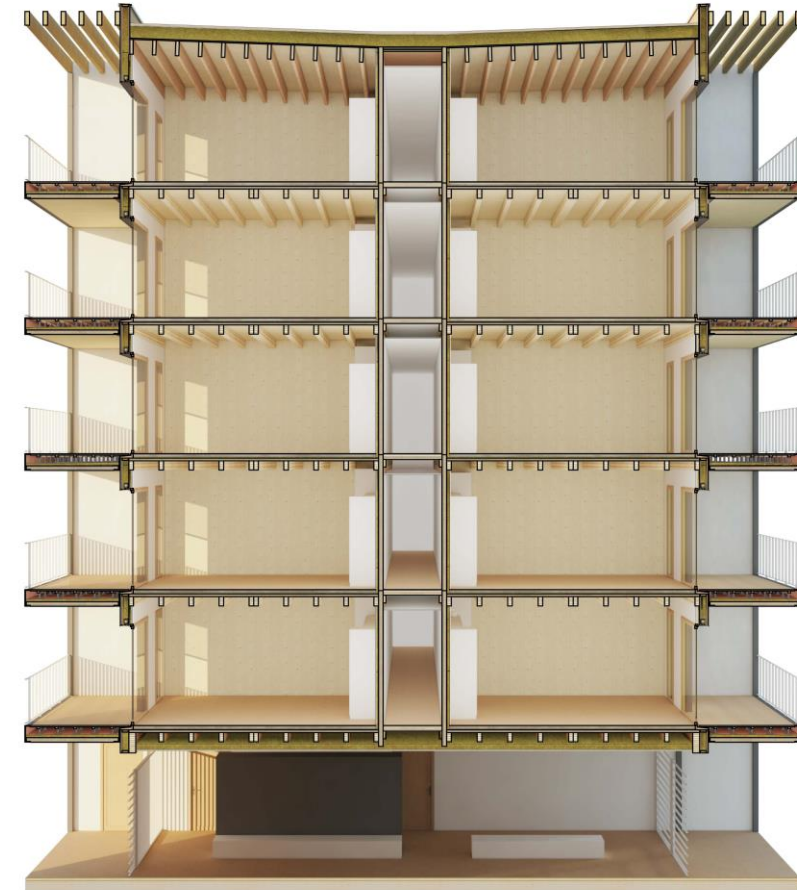
Building Concepts
Best performing
combinations of
prefab components
and their
applications



Building Concepts

value proposition

- **Systematical approach**_ to plan complex projects with a predictable outcome
- **Flexible and adaptable**_ principles that can be used for various projects scales, locations or shapes.
- **Set of standard building products**_ manufactured off-site and delivered JIT from one hand.
- **Pre-optimized**_ for cost effectiveness and reduction of the carbon footprint.
- **open concept**_ designed with market available parts and pieces to assure competitiveness in procurement.



PKA_ construction section of the Multistory Residential Concept

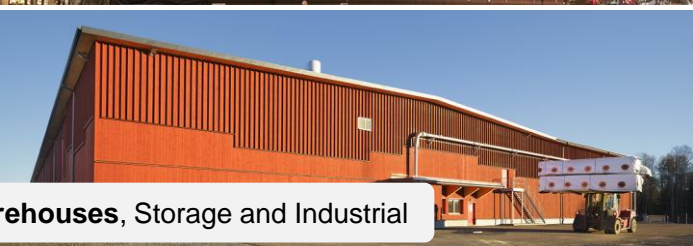
Building Typologies



Multistory Residential (including Elderly Care)



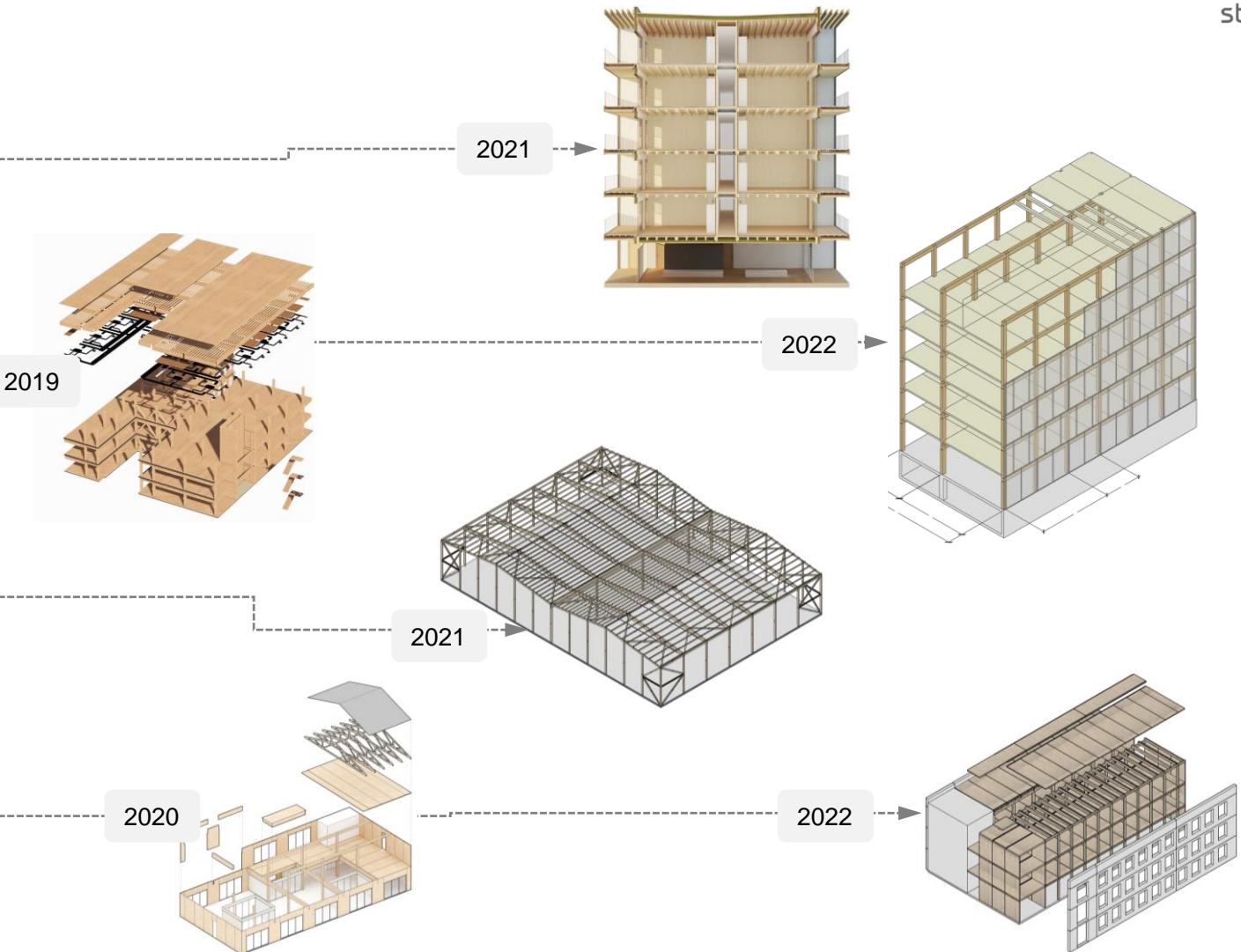
Offices



Warehouses, Storage and Industrial



Schools and Education



Archetypes

Concept hypothesis



Multistory Residential overview



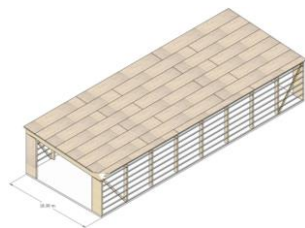
Business case Paris_ Representative project by Pablo Katz Architecture



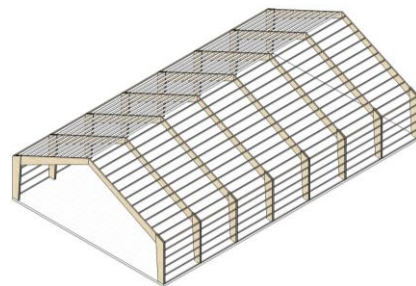
Warehouses and Industrial overview



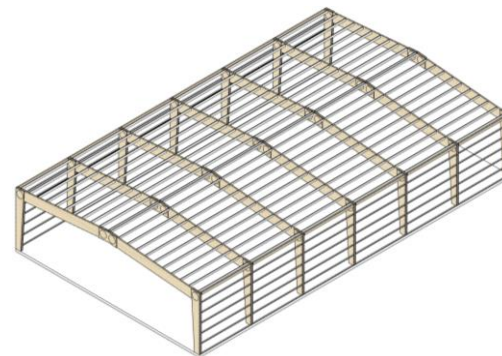
CLT box
~ 16m spans



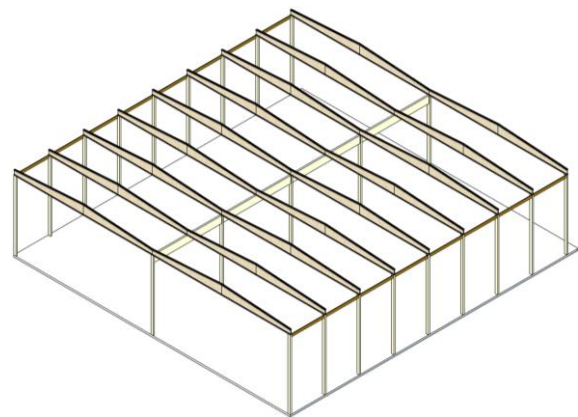
Columns and beams
12 to 19m spans



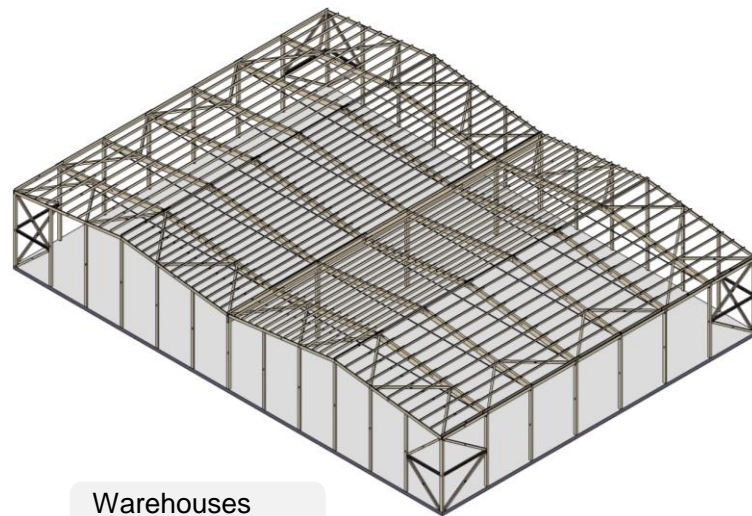
Portal frame / 3 pin
16 to 25m spans



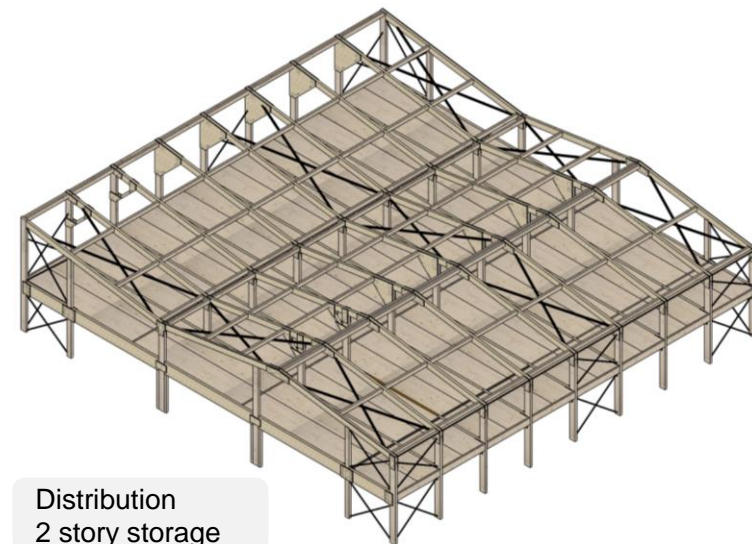
Portal frame / 2 pin
18 to 28m spans



Warehouses
~ 24m spans

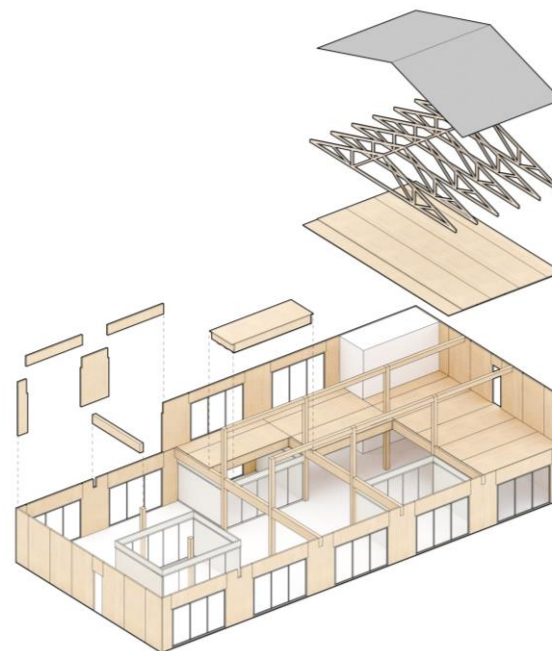
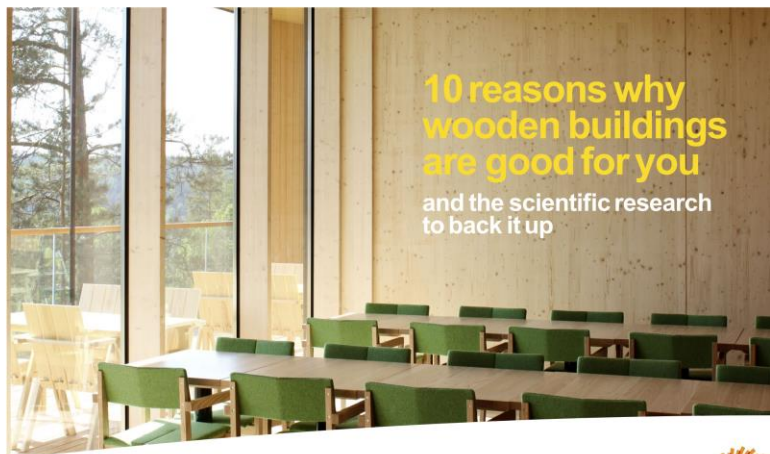


Warehouses
~ 36m spans

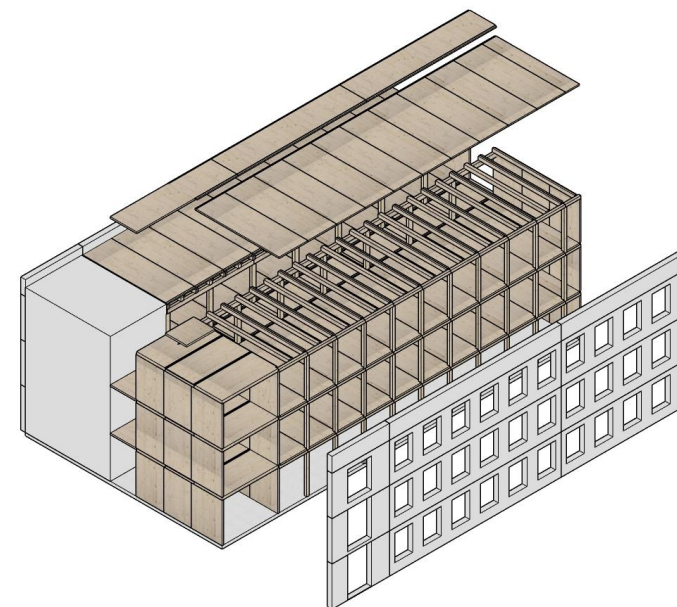


Distribution
2 story storage

Schools overview

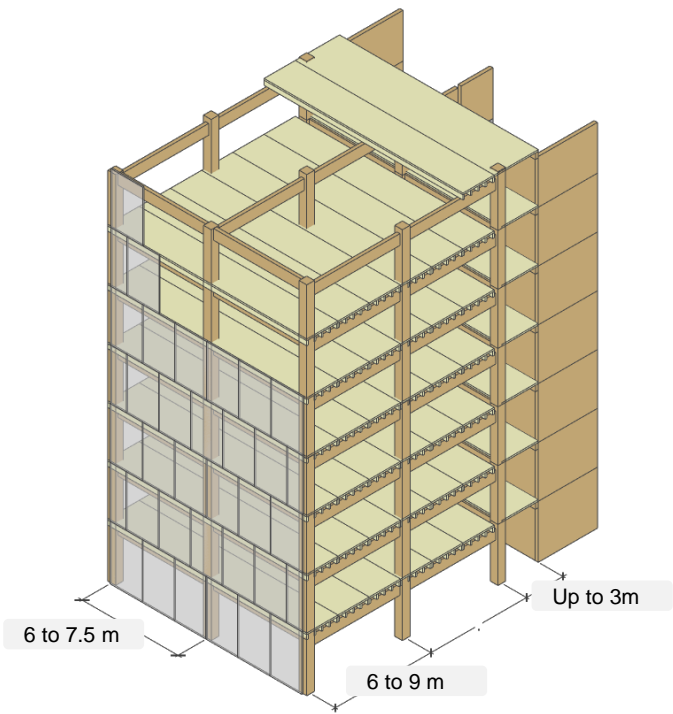


School unit
Box principle

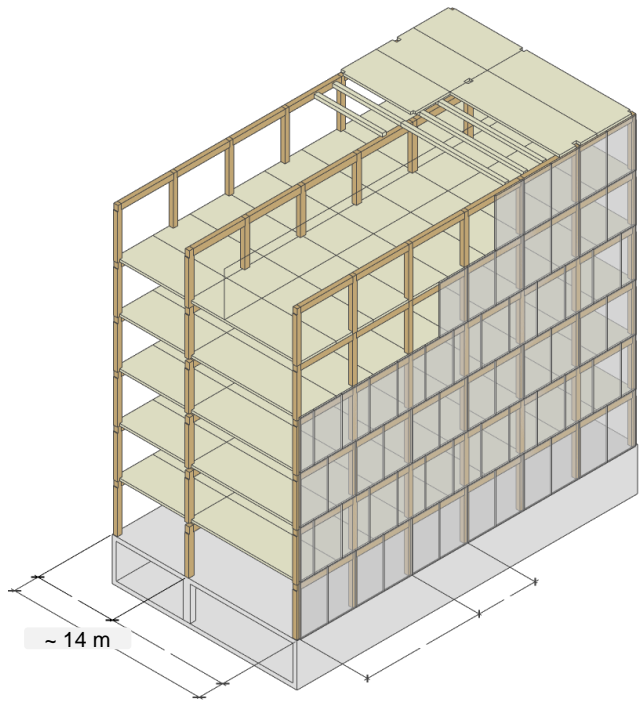


Beam and column system
Linear configuration

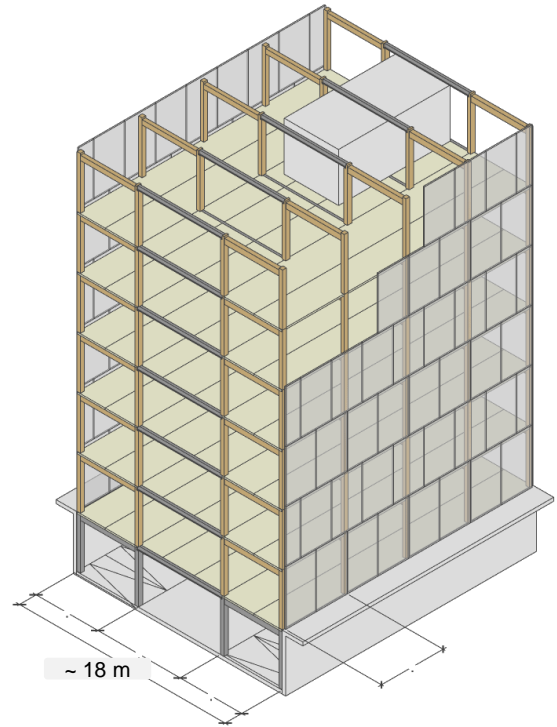
Offices overview



Central core buildings

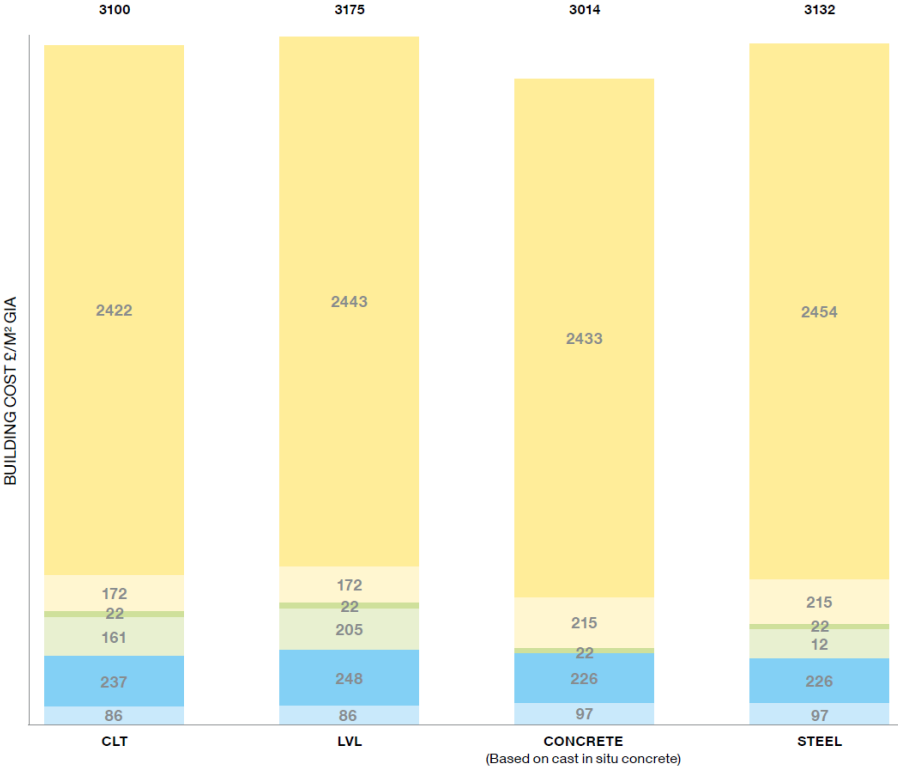


Linear buildings
Cell- Office

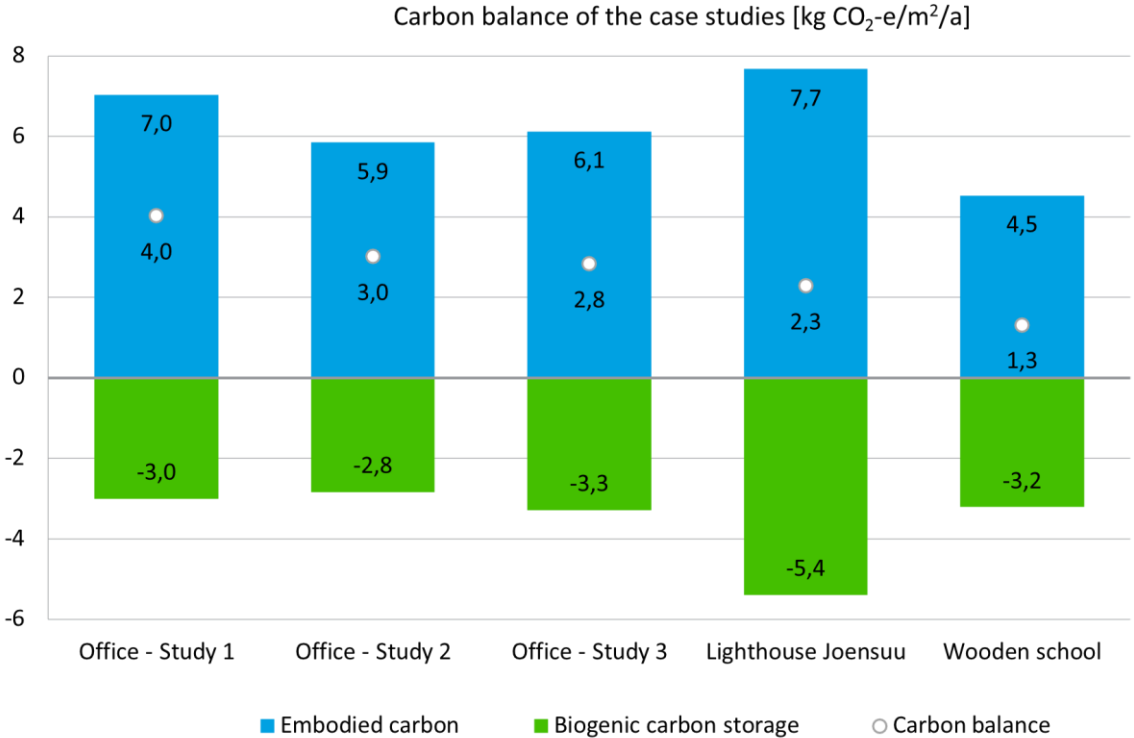


Linear buildings
Combi- Office

Benchmarking costs and sustainability



Stora Enso Design Manual | Cost Study (based in London, UK) | Gardiner & Theobald



LCA Building Concepts| Stora Enso

Digital Tools Offering Focus on value creation & differentiation



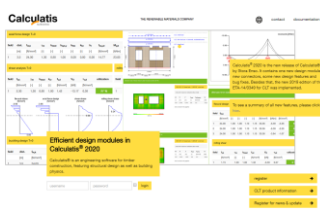
Plan 

Build 

Live 



Websites, handbooks
Information sharing



Calculatis
Timber design
software



Track & Trace Logistics
tracking delivery
information and condition
online



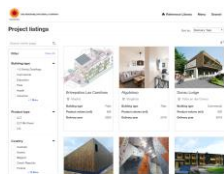
CLT360+
installation assistant



Wiiste sensor
for internal moisture of
wooden structures



RFID sensors
as leakage guards

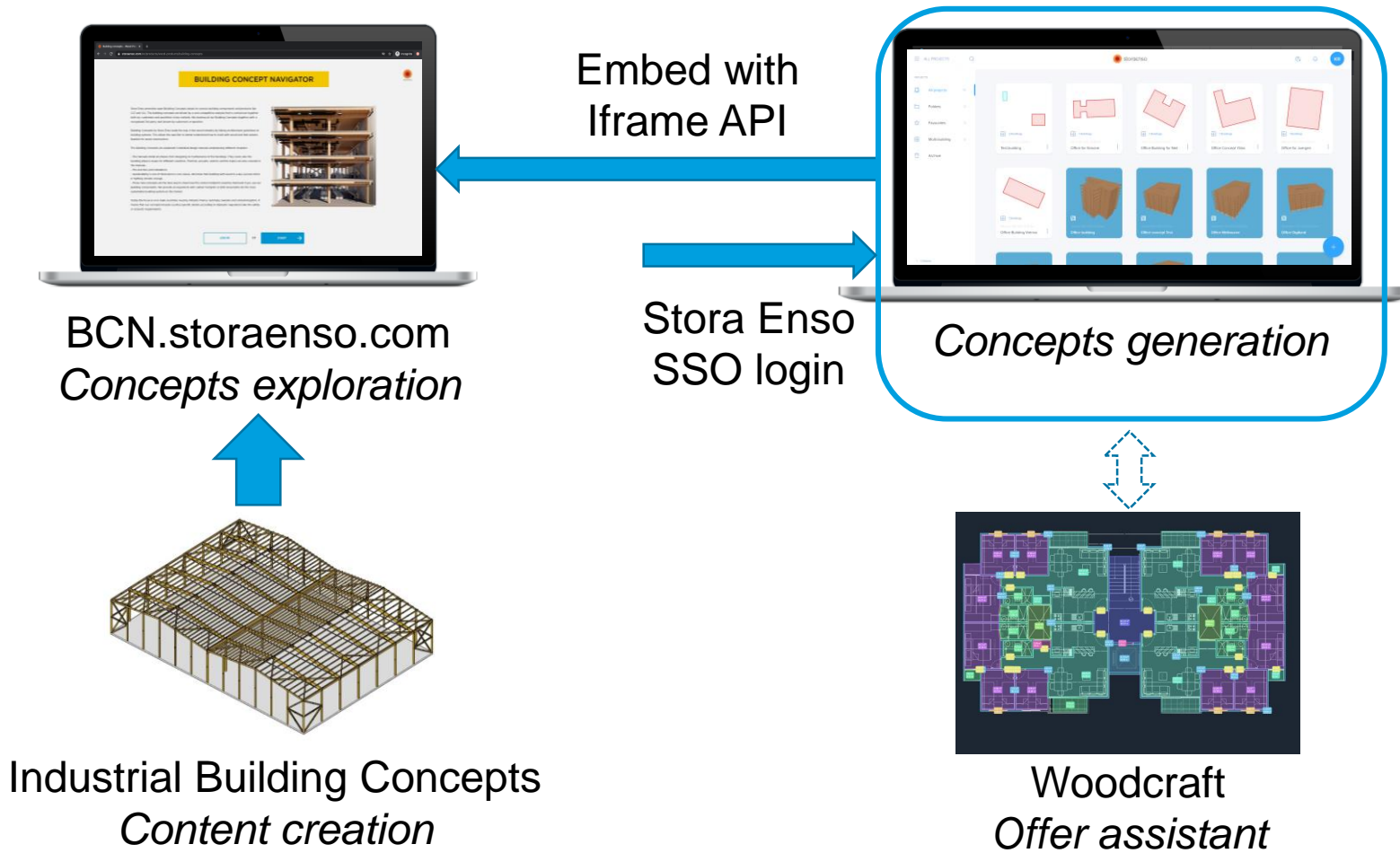


Reference Library
for Stora Enso
projects



**Imagine Sensing
Solution**
Graphene based real
time leak and strain
detection

Digital tools to support building concepts



Building Concept Navigator

pilot



🏠 → [CONCEPT FINDER](#) → 2-STOREY LOGISTICS BUILDING

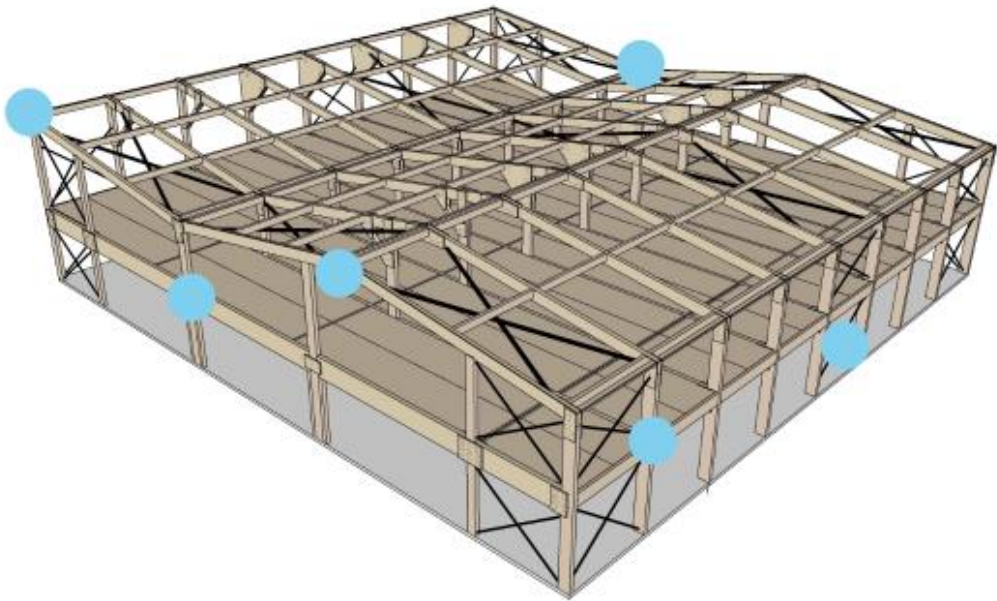
2-storey logistics building

Overview	>
Building products	>
Build-ups	>
Cost estimation	>
Life cycle assessment	>
Application engineering	>
Summary	>

Lorem ipsum dolor sit amet?

Donec ullamcorper nulla non metus
auctor fringilla. Curabitur blandit tempus
porttitor.

Contact sales



🔄 360 view

🔍 Details

📐 Floorplans

🖼️ Image
gallery

📖 Reference
library

⌛ Reset

Building Configurator

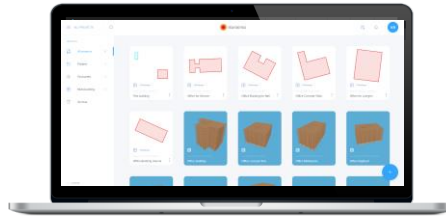


Industrial Building Configurator

- 8 industrial building concepts
- Custom request (generative design)
- Parametric design
- Report (BoQ & Sustainability reports):
- IFC file export

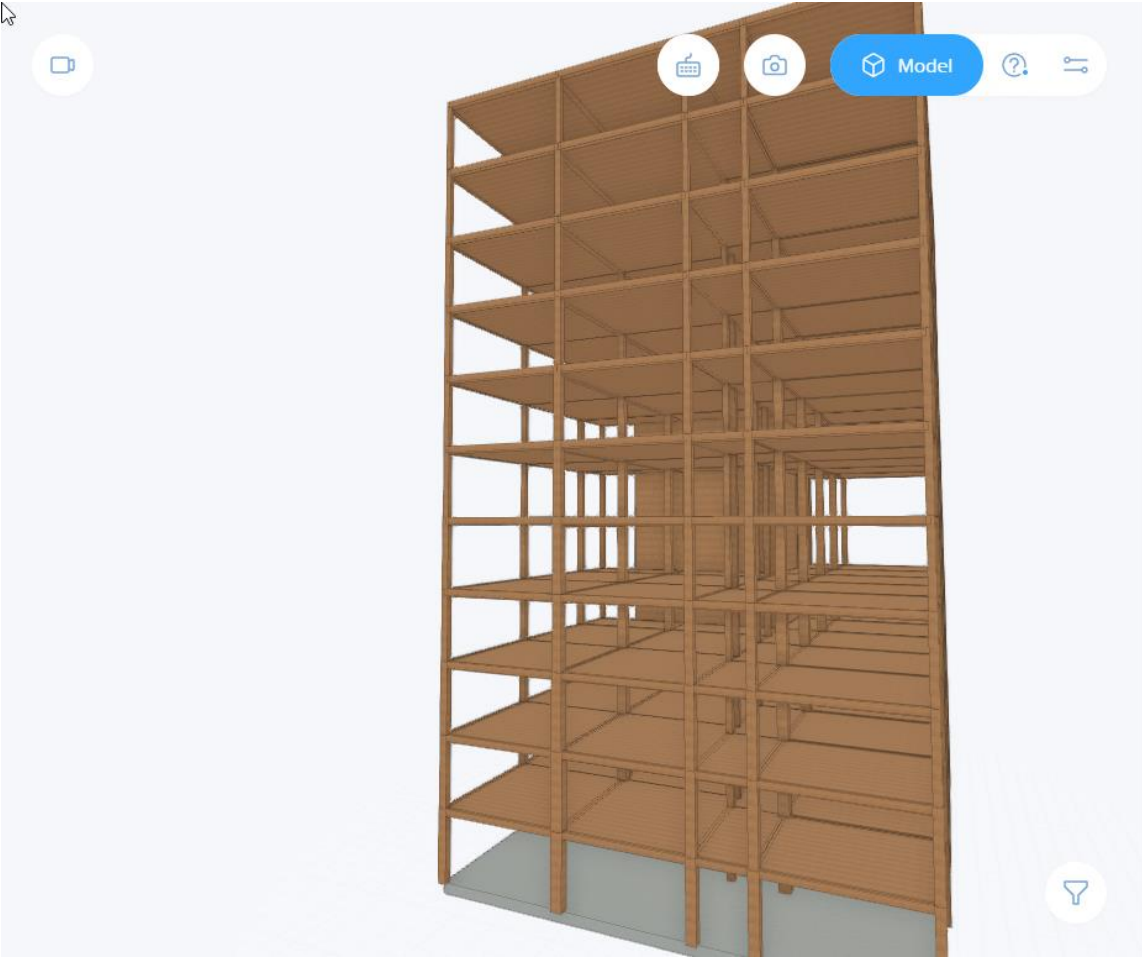
Experimental

- Concept creation tool
- Buildup configurator
- Cost model improvements
- Calculatis integration
- EPD database integration



Building Concept Configurator

proof of concept



General Beams Columns Panels Walls

General

Summary

Type	Unit	Quantity
Room Structural Height	m	3
Main Structural Height	m	3
Number of storeys	qty	11
Overall height of building	m	37.4
Building Envelope	m ²	4460
Total Building Cost	€	1699029.9
Transport Cost	€	0
Embodied Carbon	kg CO2-eq.	-262700.9
Biogenic Carbon Storage	kg CO2-eq.	1280008.6
Fire Resistance Class		R60

demo



THE RENEWABLE MATERIALS COMPANY

