
Timber-based hybrid structures

Pros, cons, doubts?

Stockholm 2018-01-19

Daniel Asp

Architect and structural engineer, Studio Oslo

white

Who are we?

White was founded 1951 in Gothenburg by Sidney White

We are a collective of 900 designers, which include architects, landscape architects, urbanists and engineers

We are located in 15 offices in Sweden, Oslo and London

Our goal: to create inclusive, resilient architecture that inspires sustainable ways of life

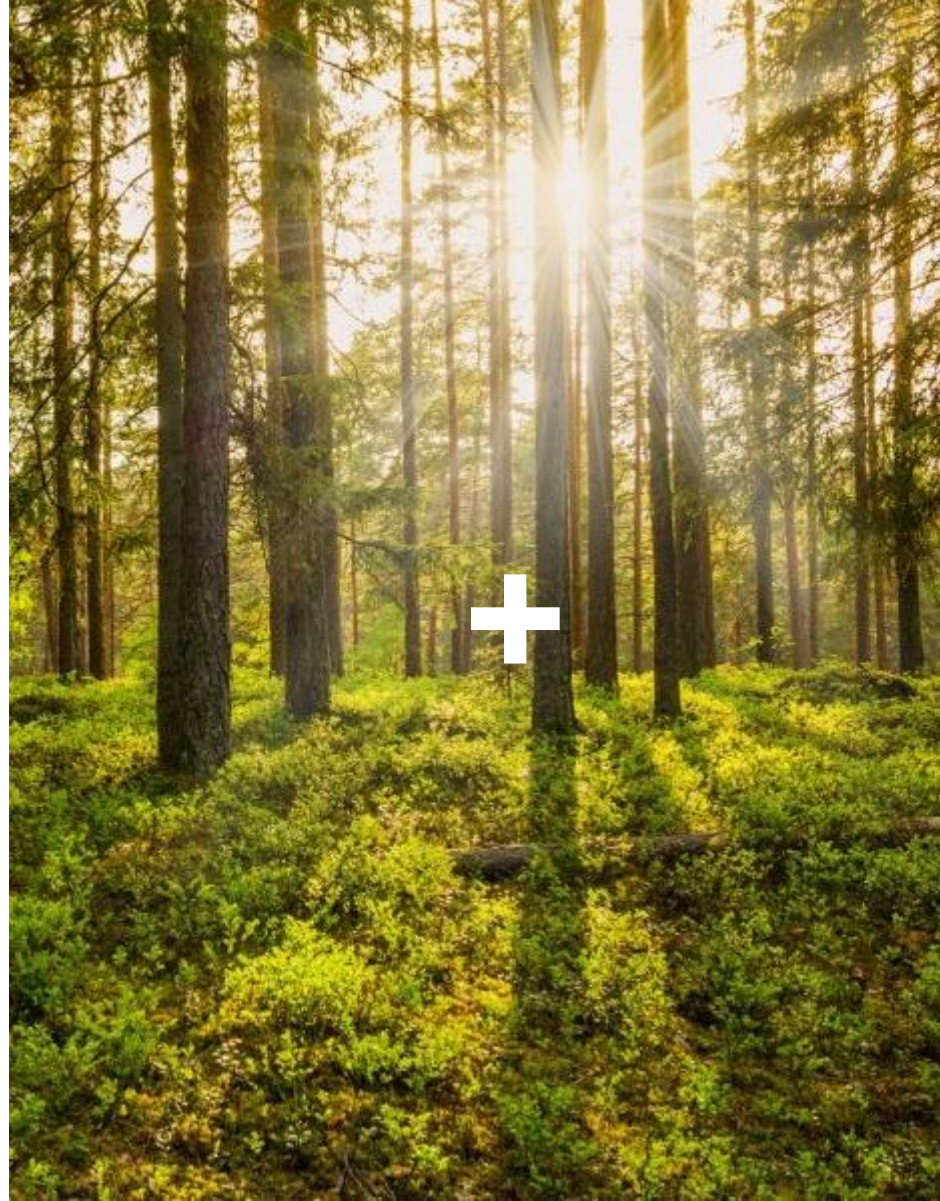
White is an employee owned company

white

white



70%



WHITE WOOD / White Research Lab

- **White invest around 10 % of our annual profits into research**
- **Evolve our knowledge and expertise together with academic and industry partners**
- **Project based research feeding back to our projects**
- **Share our knowledge**

Inre hamnen, Sundsvall

Martinsson + NCC + White Architects
Completed 2006



Skellefteå Cultural Centre

Project planing document, 2018



Skellefteå Cultural Centre

Projekt planing document, 2018



Växjö City Hall & Central Station

Concept design, 2017



Växjö City Hall & Central Station

Concept design, 2017



Årstafältet

Stockholm, Competition won 2017
White + Lindbäcks



Frostaliden

Under construction, Skövde, 2018



Kv Fallskärmen

Under construction, Örebro, 2018

white



Väsjö Torg

Competition, Stockholm, 2017



Do we feel better in timber buildings?





Research about the effect of wood in health care

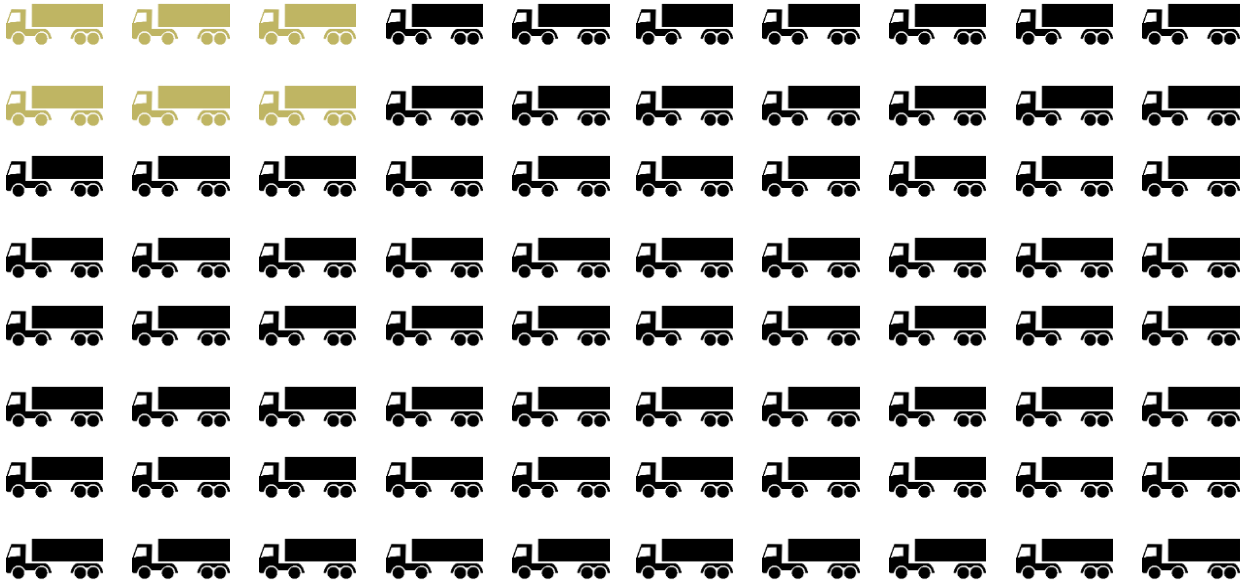
- Better patient wellbeing
- Quicker recovery
- Less medicine needed
- Less perceived pain
- Lower heart rate and stress level

li.u LINKÖPINGS
UNIVERSITET

www.wood2new.org



Efficient!

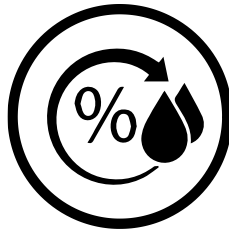




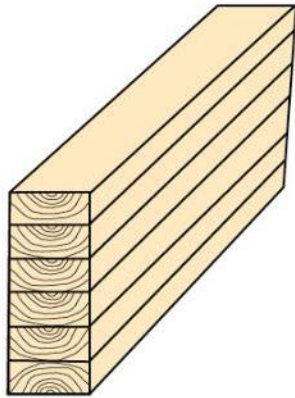


**Wild Reindeer Centre Pavilion
Snøhetta**

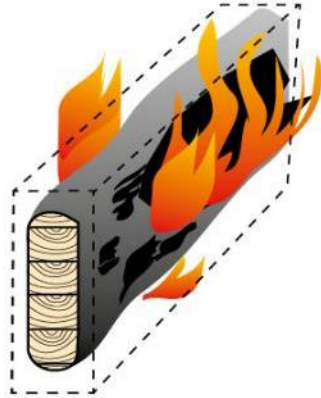
What are the challenges?



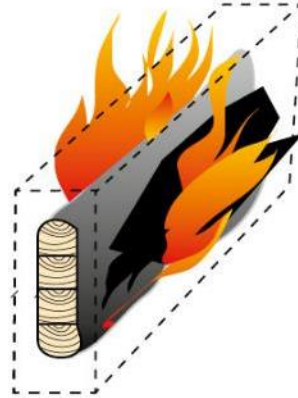
Fire stability



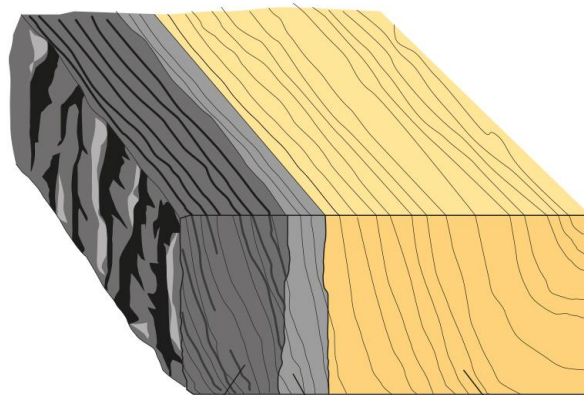
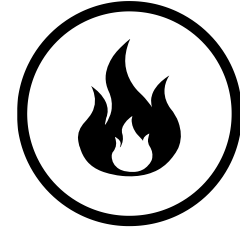
Före brand



Efter 30 min



Efter 60 min

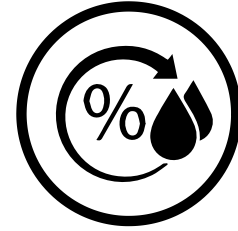


Kolskikt

Pyrolyszon

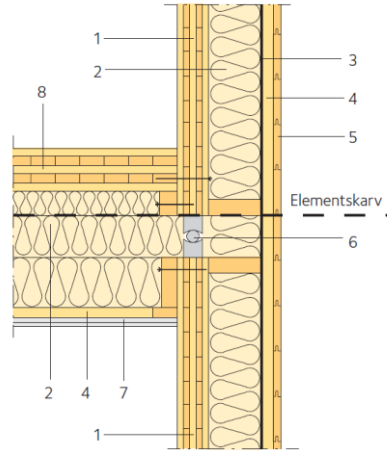
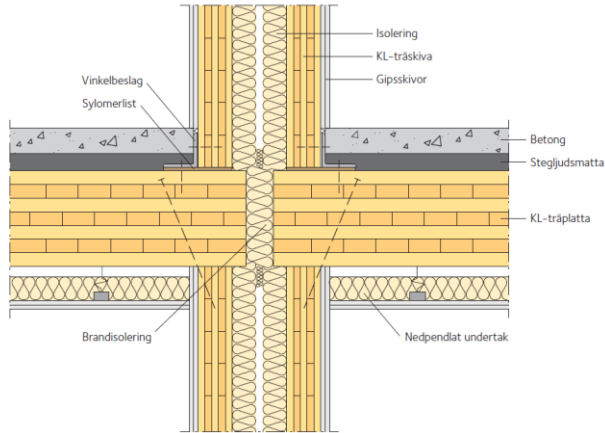
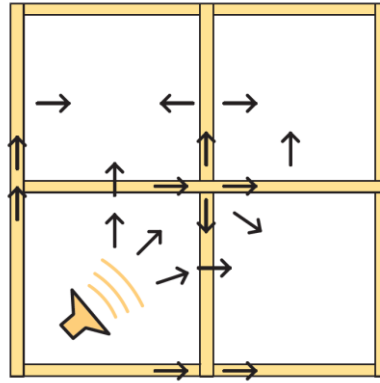
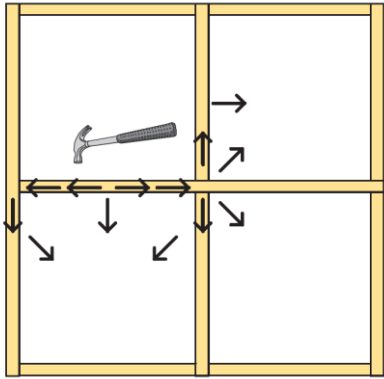
Normalt trä

Source: SVENSKT TRÄ



Keep wood dry
And when it gets wet, let it dry

Detail from the project Frostaliden



Source: KL-trähandbok, SVENSKT TRÄ



How do we treat and maintain the outside of the facade?



Timber-based hybrid structures

Almost all buildings are hybrid structures



Timber-based hybrid structures

Almost all buildings are hybrid structures

Timber-Steel



Timber-based hybrid structures

Almost all buildings are hybrid structures

Timber-Glas



Timber-based hybrid structures

Almost all buildings are hybrid structures

Timber-concrete



Timber-based hybrid structures

Almost all buildings are hybrid structures

Timber-brick



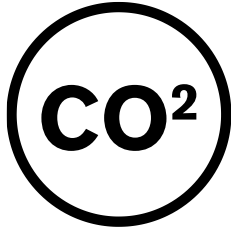
Timber-based hybrid structures

Almost all buildings are hybrid structures

Timber-Timber

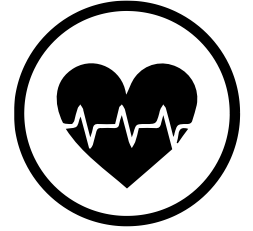
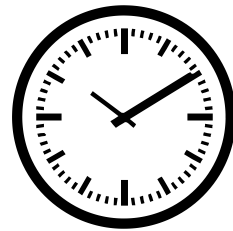
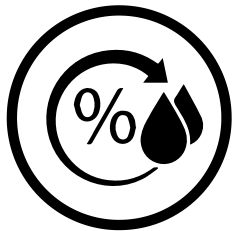
Tamedia office building, Zurich
Shigeru Ban Architects

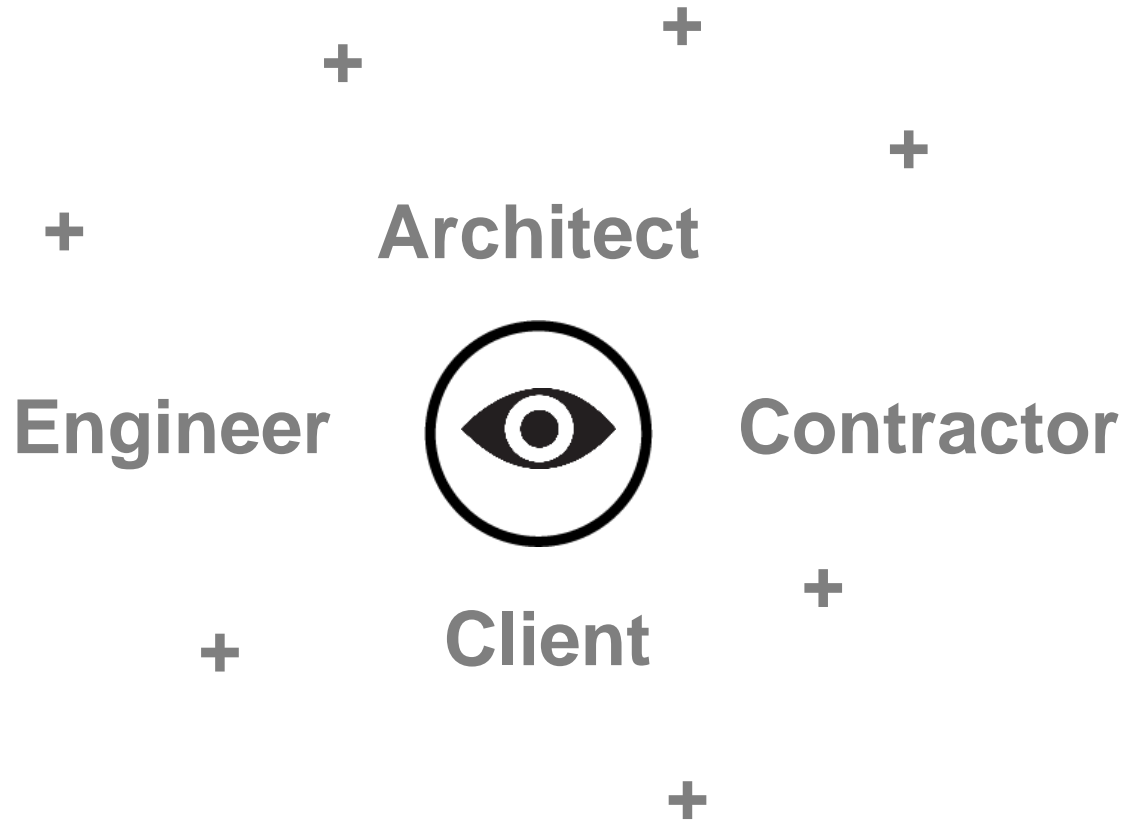


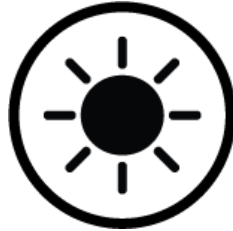
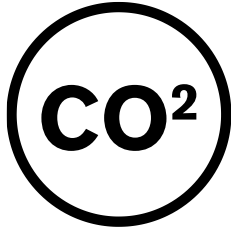


Best material at the right place

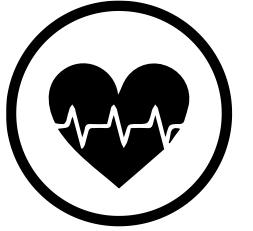
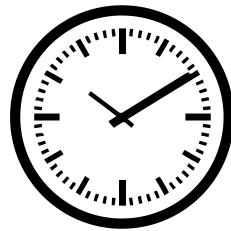
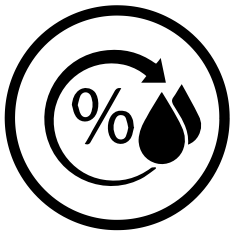
So what is the best material?







One vision!



Design is in the details



Timber house
KÜHNLEIN Architektur



Bildmuseet, Umeå
White Arkitekter



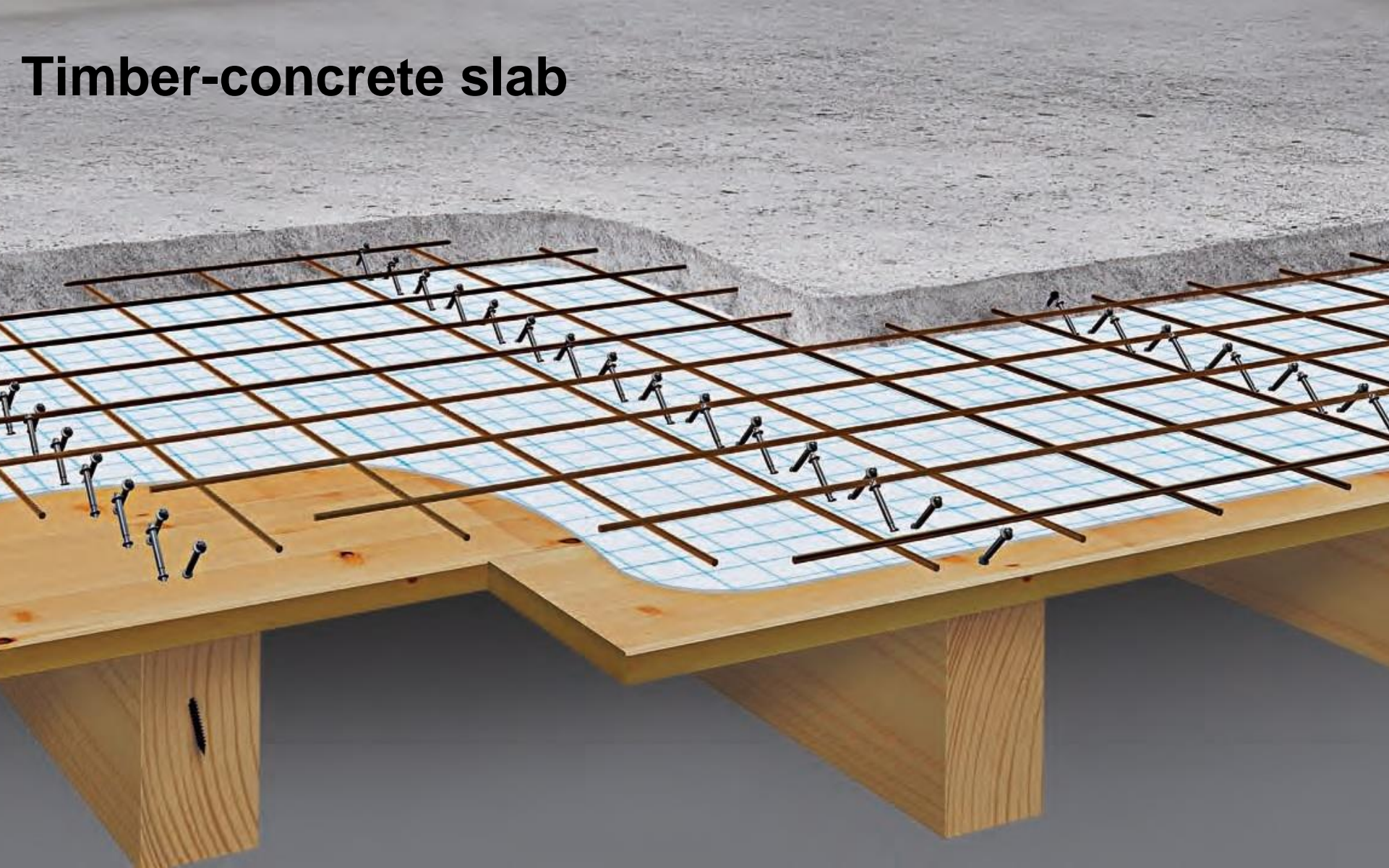
Frostaliden

Under construction, Skövde, 2017





Timber-concrete slab



Timber-based hybrid structures

Pros, cons and doubts?

Pros

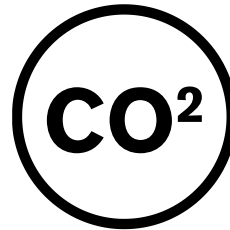
- Using the best material in the right place



- Creating better projects and new construction methods

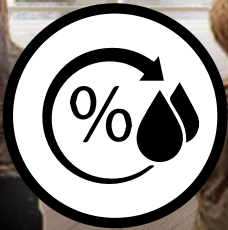
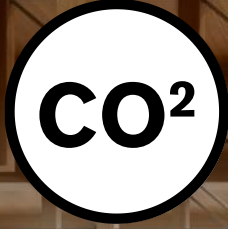


- Speeding up the shift towards a more sustainable future



Cons and doubts

- Might be a way of taking the easy choice instead of the right chose
- Uncertainties in the industry of how the materials influence each other
- Knowledge about material properties and detailing is necessary
- Difficult to achieve a good result if not the architect, engineer and contractor work together towards a common vision in a early stage



A close-up photograph of a light-colored wood surface, likely pine or spruce, showing a prominent wavy grain pattern and several circular knots. The wood has a natural, slightly aged appearance with some minor staining and a small white mark in the lower right quadrant. The text "THANK YOU FOR YOUR ATTENTION" is centered over the image in a black, serif font.

**THANK YOU FOR
YOUR ATTENTION**