

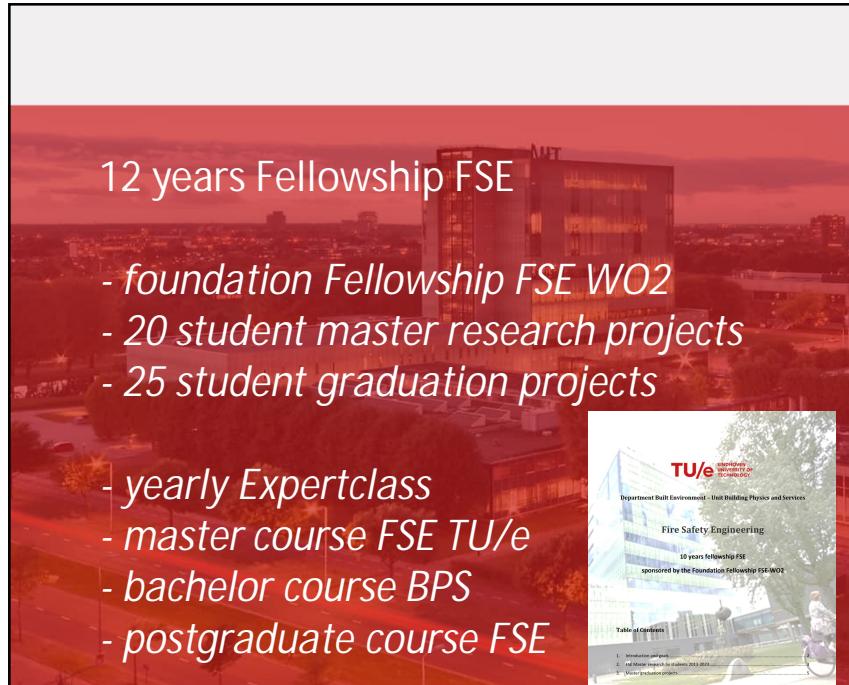


TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

Expertclass FSE – Next Generation 2025

Eindhoven University of Technology, 2025

1



TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

12 years Fellowship FSE

- foundation Fellowship FSE WO2
- 20 student master research projects
- 25 student graduation projects
- yearly Expertclass
- master course FSE TU/e
- bachelor course BPS
- postgraduate course FSE



Eindhoven University of Technology, 2025

2

1

Expertclass FSE – Next Generation 2025

14:00	WELCOME
	Introduction – <i>Ruud van Herpen, TU Eindhoven</i>
	Fire safety of mass timber buildings – <i>Pascal Steenbakkers, Arup</i>
	Clay protection of biobased constructions – <i>Johanna Liblik, Tallin UT</i>
15:15	BREAK
15:40	From student to engineer – <i>Robert Grootaarts, Nieman</i>
16:00	Pitches: <i>NIPV-VVBA Thesis Contest</i>
	Nominations Thesis Contest – <i>Patries Robijn, VVBA</i>
17:00	DRINKS

Eindhoven University of Technology, 2025

3

Expertclass FSE – NIPV VVBA Thesis Contest

- *Traveling localized fires in large compartments – Laura Dohmen*
- *Fire safety of vertical greenery systems – Carmen Guchelaar*
- *Social distancing voor PV panelen – Amani Maniran*
- *Fire behavior of vertical green systems vegetation – Merel Schouten*
- *Reliability of the traveling car fire concept in open car parks – Samira Safi*
- *Gravity feed sprinkler systems in highrise buildings – Max Verbruggen*

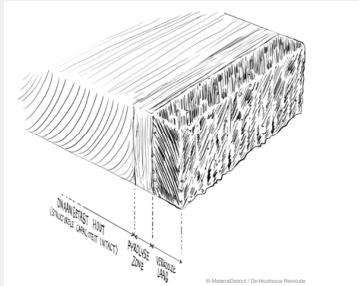
Eindhoven University of Technology, 2025

4

2

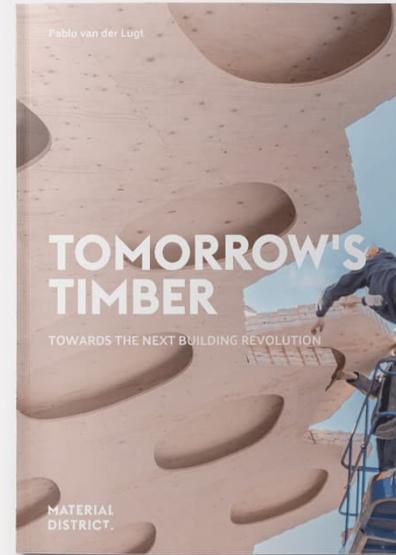
Tomorrow's Timber

Towards the next building revolution
(NL: De Houtbouw Revolutie)



When timber burns, it will form a char layer at the surface, behind which the timber will retain significant structural capacity (01).

Does the char layer isolate the timber mass from a compartment fire because of its thermal insulation?



5 Pablo van der Lugt – De Houtbouw Revolutie

TU/e

5

Exposed CLT - Small compartment test

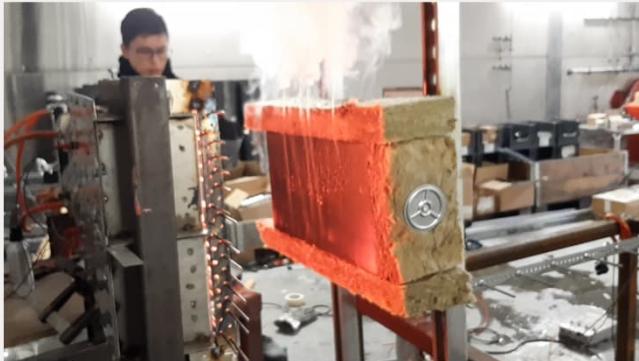


6 Sabine Huijmans (Saxion) - Small CLT Compartment Experiment, Peutz Fire Lab 2023

TU/e

6

Exposed CLT - Radiation flux experiments



Goal:

Determination of the insulating effect of the char layer

7

Andres Berdugo Calderon (PT Torino), Peutz fire lab 2021

TU/e

7

Exposed CLT - Low radiation flux experiments

CLT: 40-20-40 mm

Sample size: 450 x 300 mm

Glue: PU

Radiation panel: 750 x 630 mm

Radiation flux: 0 – 30 kW/m²



Goal:

Determination of self-extinguishing effect

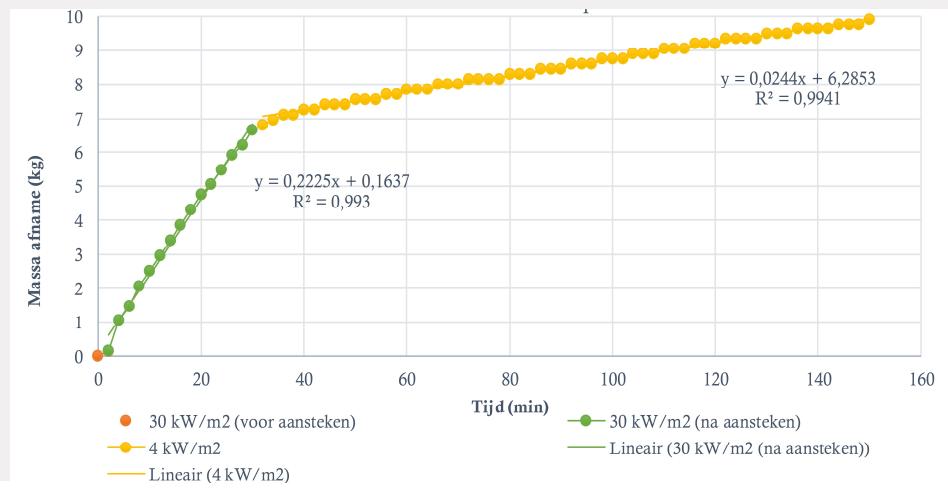
8

TU/e

8

Exposed CLT - Low radiation flux experiments

4 kW/m² radiation flux on CLT sample, mass reduction per m²



9

Sella van Poppel (Saxion), Peutz fire lab 2023

TU/e

9

Exposed CLT

Conclusions

- Char layer → smouldering combustion
the combustion layer is not an insulation layer
- The thickness of the char layer does not influence the pyrolysis speed (charring rate is constant)
- The radiation flux determines the pyrolysis speed
- Self extinguishment found at radiation flux < 3 kW/m²
- Exposed CLT can be fire resistant but can not be fire resilient

10

White paper *Brandveilige toepassing van CLT in woonzorggebouwen* (Woonzorg Nederland, 2024)

TU/e

10

Residential buildings in CLT

Recommendation

Isolate CLT constructions from the variable fire load in the compartment or apply a sprinkler protection

- But what protection level do we need Pascal?
- And how can we protect CLT with environmental friendly material Johanna?

11

TU/e