

C4

Reaction to Fire & Fire Resistance

- 01 Reaction to Fire
- 02 REI 120
- 03 REI 120ef

Reaction to Fire: B-s1, d0

- » EcoCocon panels were tested for reaction to fire with the plastered surfaces included in the Technical Assessment.
- » Flammability characteristics - B: „not readily flammable“
- » Smoke - s1: „little or no smoke generation“
- » Burning droplets - d0: „no droplets within 600 seconds“

Note

- » Straw contains silica (4%) - a natural flame retardant
- » Compressed straw provides little air, the carbonized surface protects against further combustion
- » Insulating properties of straw prevent self-ignition deeper in the construction
- » The B-s1, d0 test was done with plastered surfaces

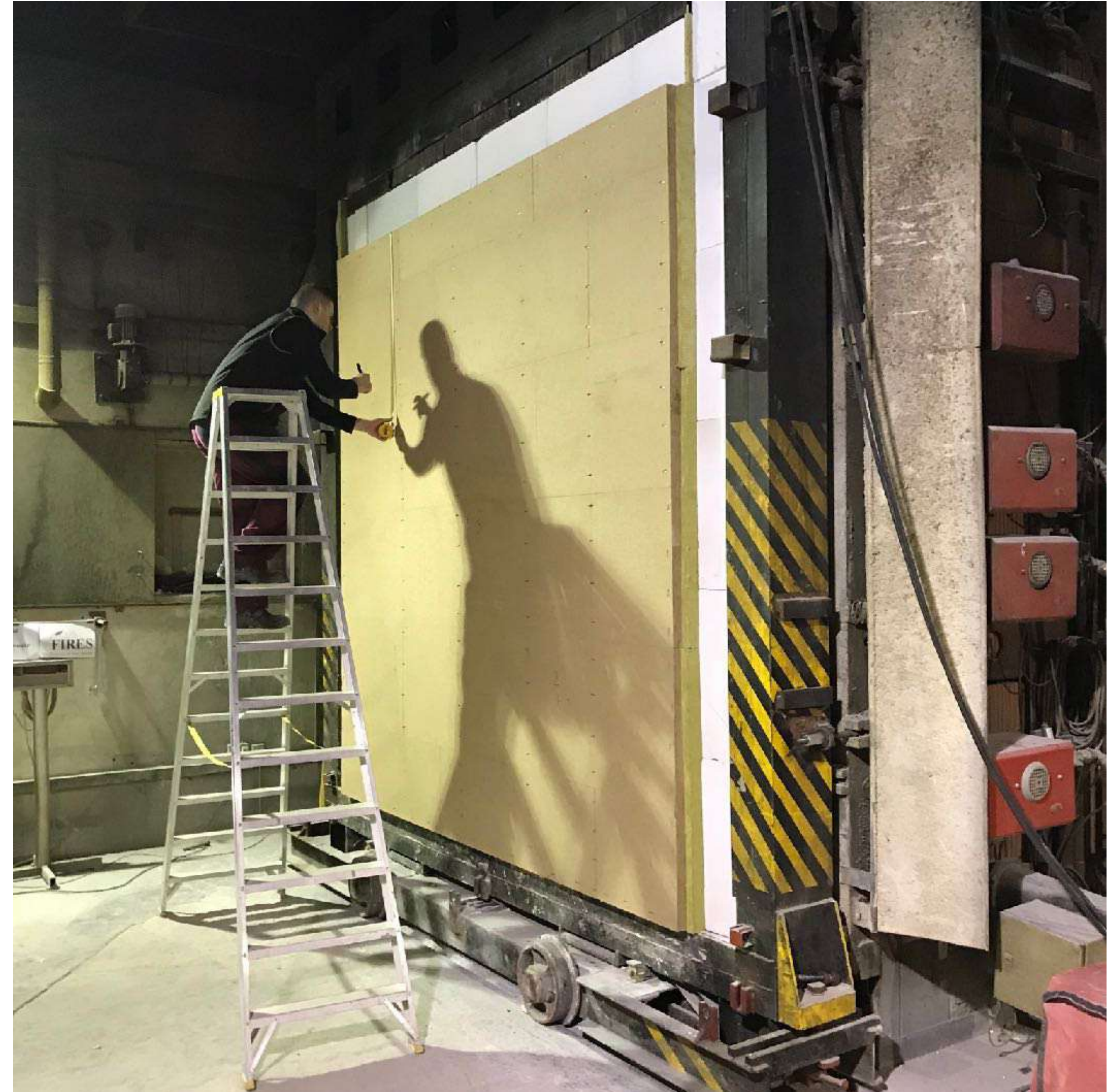
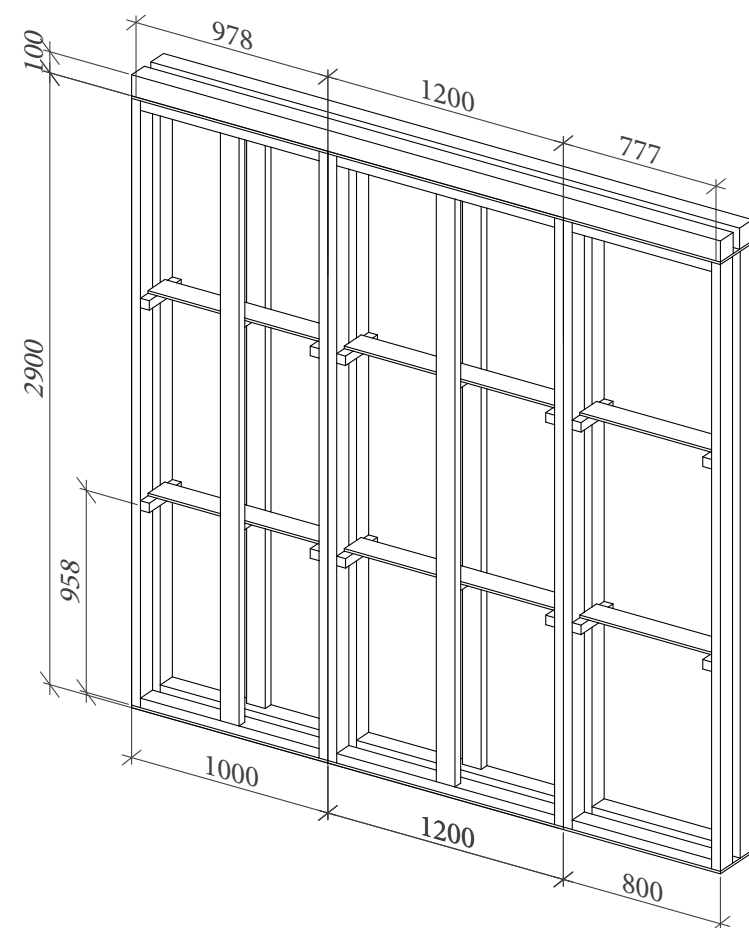


Fire resistance test REI with 70 kN/m load (approx. 7 t/m)

R - The structural element should not collapse or deflect beyond the permitted levels when subjected to the applied load.

E - The integrity of the room must be maintained. No breakthrough of flames is permitted.

I - The temperature on the non-exposed side of the structural element must not rise more than 140°C above ambient temperature as an average measurement and no more than 180°C at any one location.



REI 120 - all criteria fulfilled for 120 minutes

- » Test conducted on 25 cm thick EcoCocon wall (valid also for larger thickness) with a 30 mm clay plaster on the inside and 60 mm wood fibre board on the outside (not plastered)
- » Test was done according to EU test regulations with temperatures up to 1050°C
- » **Test achieved REI 120.** That is the time in minutes the construction fulfilled the demanded criteria.
- » Max. measured deformation was 7.2 mm



Temperatures in the sample

After 60 min:

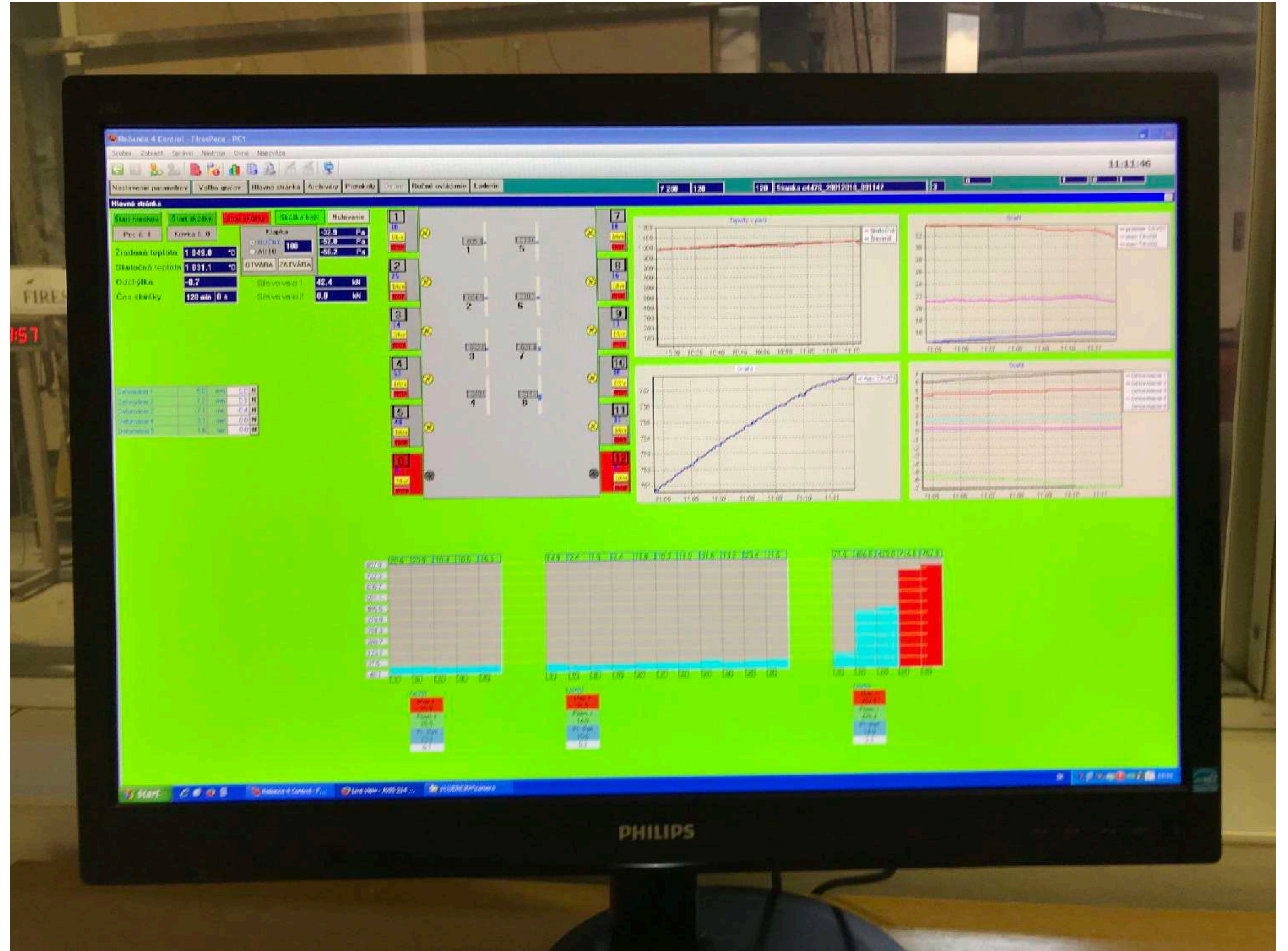
- » The highest temperature on the outside surface was lower than at the beginning
- » Below wood fibre board **57.8°C**
- » In the middle of the straw **79.5°C**

After 90 min:

- » The highest temperature on the outside surface **14.3°C**
- » Below woodfibre board **68.6°C**
- » In the middle of the straw **196.1°C**

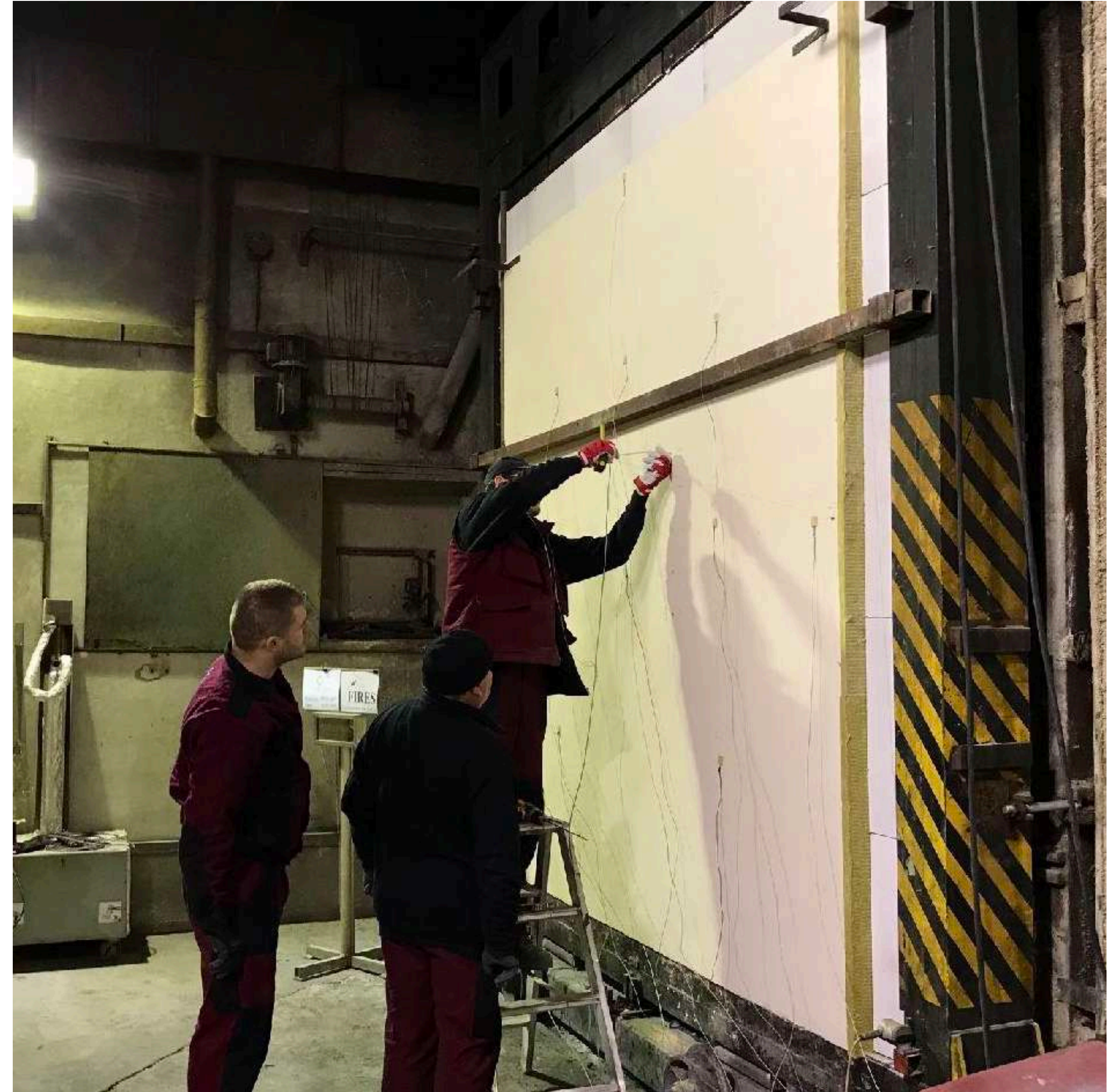
After 120 min:

- » The highest temperature on the outside surface **31.6°C**
- » Below wood fibre board **71.9°C**
- » In the middle of the straw **429.0°C**



Test RElef on wood fibre board (from outside)

- » Test conducted on 25 cm thick EcoCocon wall (valid also for larger thickness)
- » Tested surface: 60 mm wood fibre board (not plastered)
- » Other surface: 30 mm clay plaster
- » Test done according to EU test regulations with temperatures up to 680°C, simulating outside conditions



After 2 min. the wood fibre board started burning

Wood fibre board on fire during the whole test:

- » The wood fibre board protected the construction for approx. 55 min
- » Straw protected the construction to the end of the test (120 min)



Test RElef on wood fibre board (from outside)

Test achieved RElef 120! That is the time in minutes the construction fulfilled the demanded criteria.

- » Max. measured deformation was 7.7 mm
- » No visible damage on the outside
- » Max. temperature on clay surface less than 40°C



After the test

- » 25 mm of wooden surface construction is charred
- » The fire progressed only approx. 50 mm deep into the straw

