

TROHIS

CLT AIR TIGHTNESS

Air tightness

The air and wind tightness of a building's cladding and structures is an important property that has a big impact on the building's indoor climate, noise, atmosphere and energy.

Two "TROHIS" cross-laminated timber panels, 3-ply (60mm) and 5-ply (140mm) were tested according EN 12114 for air tightness.

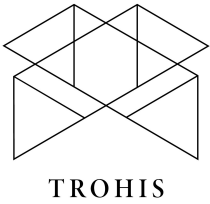
Tests has shown that the cross-laminated timber elements (one whole undisturbed element) produced by "TROHIS" can be and is described as airtight.

The values obtained during the tests with lower differential pressures lie within the range of measuring tolerance determined for the testing facility.

Airtightness means that buildings built with "TROHIS" can benefit you greatly:

- Seven-story CLT building was tested in Japan for its durability in an earthquake scenario building and construction was with minimal damage. Airtight construction of each panel and precision fitting through CNC preparation leads to seismic resilience, as does its unique strength-to-weight ratio.
- "TROHIS" produced CLT airtight design makes auditory insulation and thermal insulation. Very tightly packed panels can trap up to 90% of the heat that would escape from a home. As it was mentioned, CLT has high thermal mass means that temperatures will be kept stable and comfortable.





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The tests were carried out on wall elements with dimensions 2.4m x 2.4m and total thickness of 60mm - consisting of 3 cross-laminated layers (Fig. 1) and a total thickness of 140mm - consisting of 5 cross-laminated layers (Fig. 2).

"TROHIS" CLT was tested using facade test rig of Holzforschung Austria. The test rig assures the correct installation of the elements and the execution of the test according to the requirements of the respective standards.

The conditioning of the test took place in a climatic environment as stated in the standard.

The air tightness measurement for the quantitative determination of the leakage was carried out according to EN 12114:2000.

The test specimens were tested by exposure to positive as well as well as negative differential pressures.



Fig. 1: Test specimen 1, 60mm, 3-ply with airtight sealing and foil for reference measurement

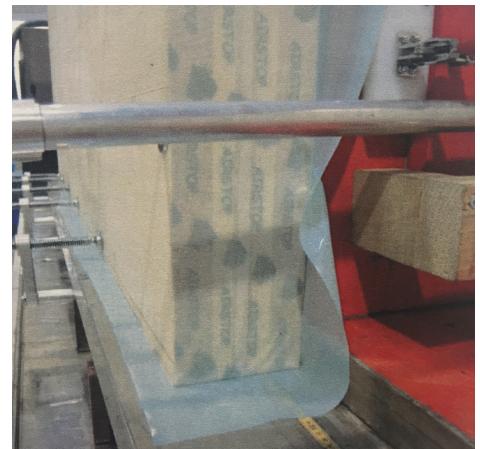
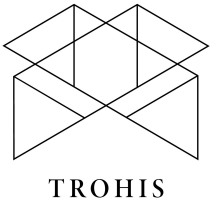


Fig. 2: Test specimen 2, 140mm, 5-ply with airtight sealing and foil for reference measurement



CLT AIR TIGHTNESS

Why build an airtight house? – Leakage problems

The external wall of a building has to be as airtight as it is possible and "TROHIS" CLT is providing this extra.

- Construction damage caused by water vapor that is moved in air draughts can be prevented by airtightness of external wall. Buildings usually get damage because there is lack of airtightness in the roof area.
- Cold air pockets and draughty living spaces are not acceptable for residents: an actually airtight method of building leads to better comfort.
- Ventilation systems with exhaust air and supply air spaces only function properly if building envelope is sufficiently airtight.
- Airtightness results also have better sound protection

According to construction technology regulations a good level of airtightness is required.

Airtightness should never be confused with thermal insulation. Both are important for the construction envelope, but they must be applied independently of each other:

A well-insulating construction component do not have to be airtight, it is possible to "blow through" mineral wool or cellulose filling insulation. Even though materials are good insulators, but they are not airtight. Foam glass, is the only insulation material that can also be used as an airtight layer is.

