Sandwich panel selection and design

Trimo provides full technical support regarding its sandwich panel design process – it is important to take into account design based on external static loads and fire resistance requests.

What is necessarily to know for successful design process:

1 Intended assembly type and geometrical dimensions

- Intended use type: roof, ceiling, external wall, internal wall
- horizontal / vertical assembly, wall / roof declination angle
- loadbearing structure material, distances, support width, statics
- system etc

2 Intended building use

3 External loads

- Wind load (location, terrain category, building geometry, building form, closed / open building
- Snow load (location, snow load category, location altitude, building geometry, building form
- Temperature load (external sheet colour tone, external temperatures, internal temperatures)

4 Additional loads

- Long term and/or occasional loads: man load, equipment load, impact loads etc
- External load definition process and calculations are given in EUROCODE standards – see EN 1991-1-3 and EN 1991-1-4 – including national Annexes. If the building is located in other c ountries, national standards or customer requirements must be observed.

5 Design standards / rules

- Trimo performing sandwich panel design based on load definition standard EN 1090:2010-12 and EN 14509:2013 product standard with defined safety / load combination factors and load combinations rules (see EN 14509 – annex E).
- On request also design variations based on national legislation such as German Technical Approval + DIN EN 14509, European Recommendations for Sandwich Panels (ECCS), Dutch Norm NEN 6702+ NEN EN 1990/ NB 2011, French NF EN 14509 – complement national, Sweden SS EN 1990/NB 2002 etc.

6 Design tools

- For sandwich panel static design a specially developed software package called SandStat 4 is used

- It is possible to perform accurate calculations of allowed sandwich panel span lenghts or allowed loads for wide variations of static systems (multispan up to 30 spans, cantilevers, partial movable fixings etc), different variations of steel sheet thicknesses, face profile design, load combinations (equal loads, line loads, point loads), different temperature loads ... On request print out of calculation results are available for evidence or further checking by experts.

7 Sandwich panel design under fire load

- If sandwich panels are used as fire resistance elements, additional to standard static design it is necessary to check limit values of span lenghts for requested fire resistance. These values are written in Extended Application of fire resistance test report document based on EN 15254-5 norm.
- Trimoterm / Qbiss One sandwich panels were tested under a wide range of test conditions and give possibility to produce fire resistance walls, ceilings and roofs with fire resistance class EI 30 – EI 240 / REI 30 – REI 180 and span lengths up to 12 m.

For sandwich panel design please contact Trimo technical support service (technical@trimo-group.com).

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