ABSTRACT

to report no.: 091503

Trapezoidal sheeting made of stainless steel

For high demands on the optical appearance and on the corrosion resistance, trapezoidal profiles are made of stainless steel. Bases for a mathematical determination of the load-bearing capacity, however, have not been available up to now. Together with EN 1993-1-3, EN 1993-1-4 shall facilitate the mathematical determination of the load-bearing capacity of trapezoidal sheeting made of stainless steels. Since EN 1993-1-4 has not been established for thin-walled components, especially for trapezoidal sheeting, typical problems were not treated. As an example, the lacking buckling stress curves for chord stiffeners and web stiffeners should be mentioned, that for example stiffen chords and decompose them into several partial areas. This results in significant differences between the buckling stress curves for steel trapezoidal profiles and aluminium trapezoidal profiles, which also show a non-linear stress-strain relationship.

Within the report
- existing design proofs for the design of general building components made of stainless steel are checked towards their applicability for the design of trapezoidal sheeting
- design proofs for trapezoidal sheeting made of non-alloy steel or aluminium are checked towards their applicability for the design of trapezoidal sheeting made of stainless steel

If necessary, changes and amendments are proposed. With the presented design formulae and procedures, the complete calculation of the load-bearing capacity of trapezoidal sheeting made of stainless steel is possible.