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Module „CLT-Plate loaded in plane“

Input data

The input is divided into:

- definitions of the cross section
- specification of parameters concerning structural fire design
- internal forces (design values)
- definitions of design factors

Cross section

See Module CLT-Plate 1D - Continuous beam

In diesem Modul kann die Querschnittsbreite nicht verändert werden.

Fire

See Module CLT-Plate 1D - Continuous beam

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Internal forces and design factors

In the tab „internal forces, stresses and utilization ratio“ it is possible to define the shear force in plane per unit length $n_{xy,d}$, as well as the design factors. The design method is based on a board width of 150 mm. Fix Me!

Results and Output

Cross section values

The effective stiffnesses of a plate loaded in plane are given in the tab "cross section values" for the full cross section and in case of structural fire design for the charred cross section.

The small differences between the extensional stiffnesses D_x and D_y and the effective extensional stiffness EA_{ef} in the module CLT-Plate 1D result from the negligence of the extensional stiffness of the cross layers in this module.

Summary of the results

The calculated substituted thicknesses, stresses as well as utilization ratios of the two mechanisms (Mechanism I – shear and Mechanism II – torsion) are given in the tab "internal forces, stresses and utilization ratios".

Furthermore, the utilization ratios, that were calculated based on ETA-08/242 [1] and ETA-09/0036 [2] are given.