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

The input is the same as for the Module "CLT-Plate 1D - Continuous beam".

Show description

In this module it is not possible to change the cross sectional width.

Fire

The input is the same as for the Module "CLT-Plate 1D - Continuous beam".

Show description

Fire left / right instead of fire above and below.

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 which is chosen when defining the cross section.

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.