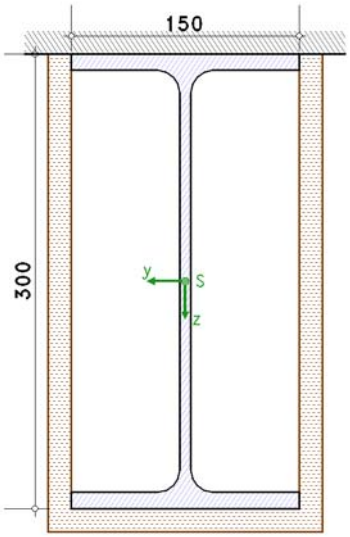
POS. 7: FIRE DESIGN EX. 4.4

fire design EC 3-1-2 (12.10), NA: Deutschland

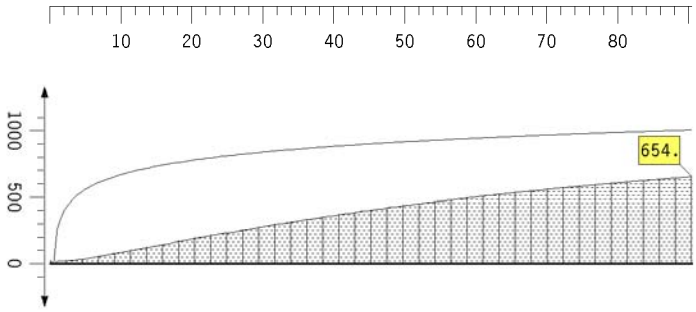
1. input report



steel
steel grade S235
geometry
section IPE300
cross-section temperature
thermal action due to the standard curve, fire resistance time t = 90 min
shadow effect of the section by wall/ceiling top
thermal insulation protection by Faser-Zement-plated structures:
thermal conductivity λ_p = 0.15 W/(m·K), specific heat capacity c_p = 1200 J/(kg·K), maximum density ρ_p = 800 kg/m³
thickness of insulating material d_p = 15.2 mm

2. cross-section temperature

internal development of the fire-stressed box A_p = 750.0 mm²/mm
section factor of the protected component A_p/V = 750.0 / 5381.2 ·10³ = 139.4 1/m
temperature development:



temperature in °C
fire time in min
max T_a = 653.5°C
max t = 91 min

cross-section temperature acc. to t = 90 min: T_a = 653.5 °C