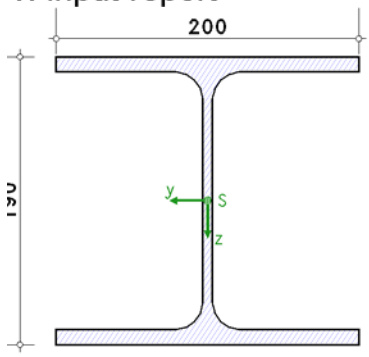
POS. 6: FIRE DESIGN EX. 4.3

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

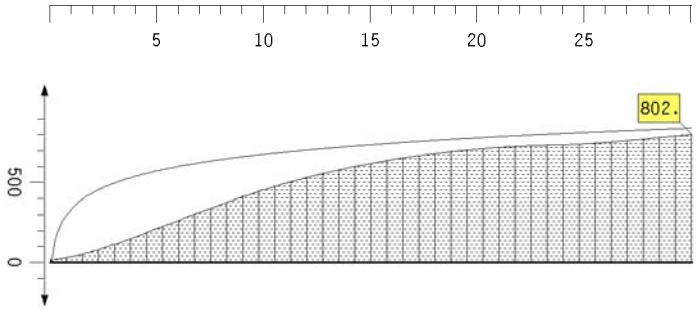
1. input report



steel
steel grade S235
geometry
section HE200A
cross-section temperature
thermal action due to the standard curve, fire resistance time t = 30 min
section all sides flamed

2. cross-section temperature

surface of the section exposed to fire A_m = 1136.1 mm²/mm
section factor of the unprotected component A_m/V = 1136.1 / 5383.1 ·10³ = 211.0 1/m
fire-stressed inner surface of the enclosing box A_b = 780.0 mm²/mm
section factor for the enclosing box A_b/V = 780.0 / 5383.1 ·10³ = 144.9 1/m
correction factor k_{sh} = (A_b/V) / (A_m/V) = 144.9 / 211.0 = 0.687, I-section: 0.9·k_{sh} = 0.618
temperature development:



temperature in °C
fire time in min
max T_a = 801.9°C
max t = 30 min

cross-section temperature acc. to t = 30 min: T_a = 801.9 °C