

5. Software

5.1. OZone Compartment Cases

1 Hospital acc. to EN 1993-1-2, see [hospital.ozn](#)

2 Ziekenhuis acc. to EN 1993-1-2 + NL NB, see [ziekenhuis NB.ozn](#)

3 Steel fabricator, see [casus steel fabricator industrial building.ozn](#)

5. Software

5.1. OZone Compartment Case 1 Hospital

acc. to EN 1993-1-2, see hospital.ozn

5. Software

5.1. OZone Compartment Case 2 Ziekenhuis

acc. to EN 1993-1-2 + NL NB, see ziekenhuis NB.ozn

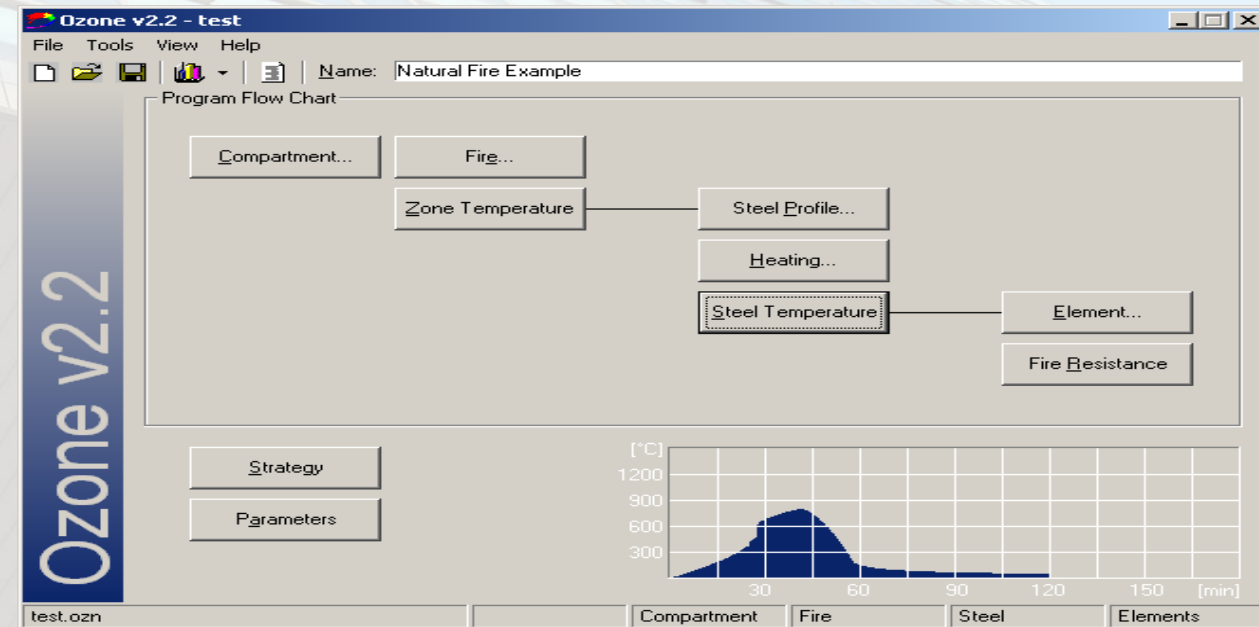
5. Software

5.1. OZone Compartment Case 3 Steel fabricator

see casus steel fabricator industrial building.ozn

Thermal action: natural fire (Annex E)

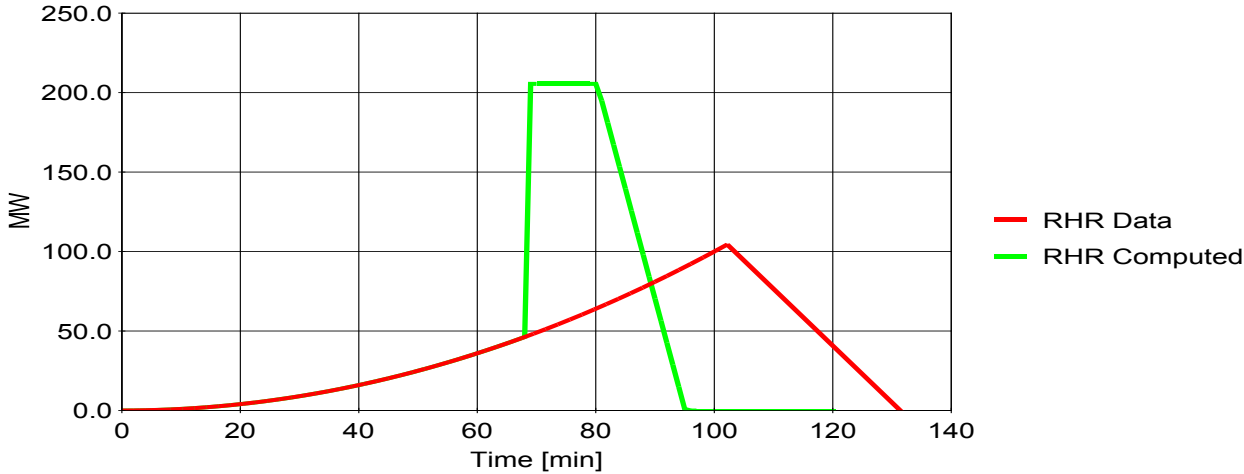
- computer model 'OZone V3.0'
- 1, 2 zone fire model, but also localised fire and ISO)
- response of steel (EC3-1-2)
- flexible, user friendly
- Download from www.arcelormittal.com/sections from the 'download center' (online registration with immediate direct login per e-mail)
- Note: . as decimal (country setting 'English')
- design example
- demonstration



- Single-storey building / steel fabricator
 - 41x20 m² (822 m²), 10 m high
 - CC2
 - Roof: steel + rockwool + bitumen + polycarbonate natural light(melting at 145 °C)
 - Façades: sandwich with isolaton, overhead-doors: total 10x3
 - Floor: concrete
 - Fire load density 15 kg/m² = 285 MJ/m² (determined)
 - RHR (rate of heat release) 250 kW/m²
 - time constant $t_{\alpha} = 600$ s (slow fire growth rate)
 - danger of fire activation $\delta_{q2} = 1,22$ (manufacturing of machines)
 - IPE 450 roof beam with $\theta_{a,cr} = 665$ °C (calculated)

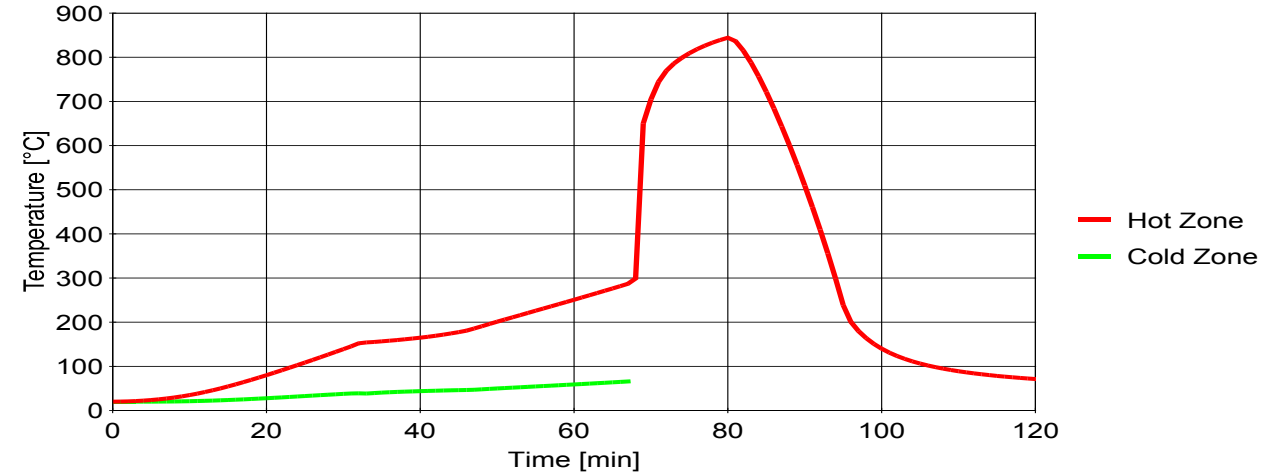
SFSE Thermal: natural fires: case with software Ozone

Rate of Heat Release



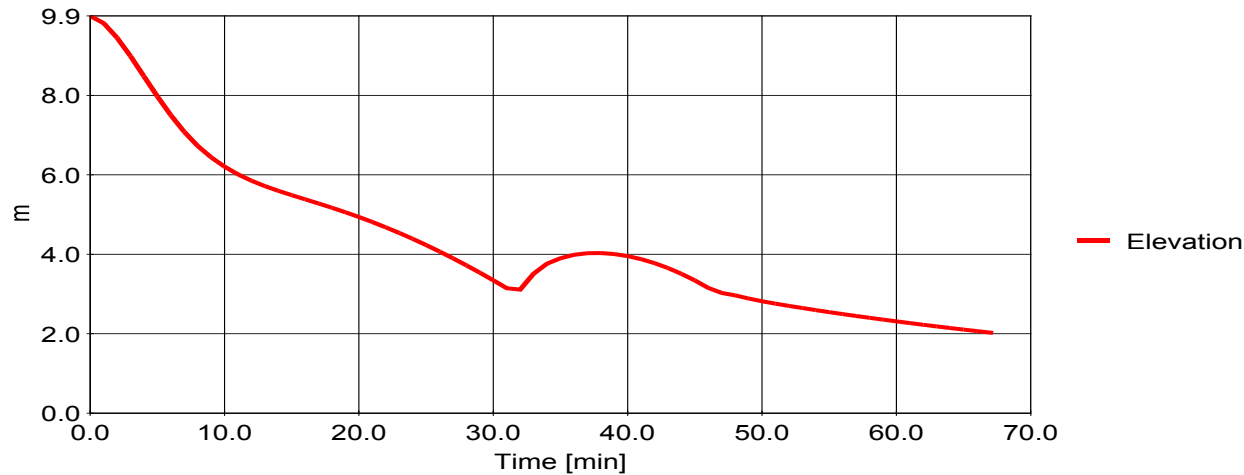
Analysis Name: course KFD casus steel fabricator hall

Gas Temperature



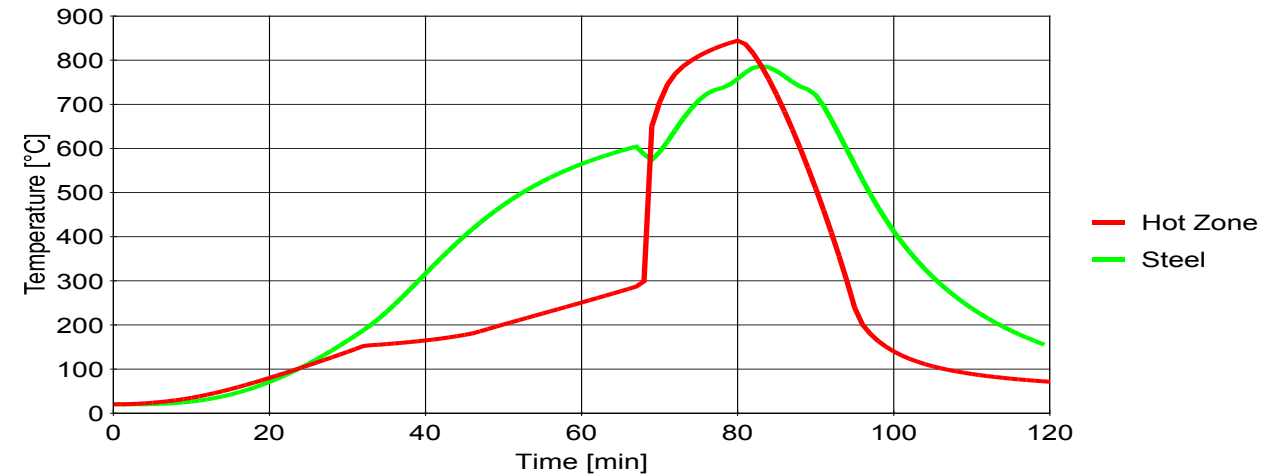
Analysis Name: course KFD casus steel fabricator hall

Zones Interface Elevation



Analysis Name: course KFD casus steel fabricator hall

Steel Temperature



Analysis Name: course KFD casus steel fabricator hall

- Roof beam IPE 450, $\theta_{a,cr} = 665 \text{ }^\circ\text{C}$
- $\theta_{fi,max} = 844^\circ\text{C}$ (at 73 minutes)
- $\theta_{a,30} = 164^\circ\text{C}$, $\theta_{a,60} = 565^\circ\text{C}$ and $\theta_{a,max=83'} = 787^\circ\text{C}$ (natural fire)
- collapse after 73 minutes of natural fire
- vs. 18 minutes in standard fire ($\theta_{a,30} = 789 \text{ }^\circ\text{C}$ and $\theta_{a,60} = 939^\circ\text{C}$)
- Sensitivity analysis (doors open/closed) and roof venting scenarios)
- [casus\course KFD casus steel fabricator hall.ozn](#)