



LOCAFI+

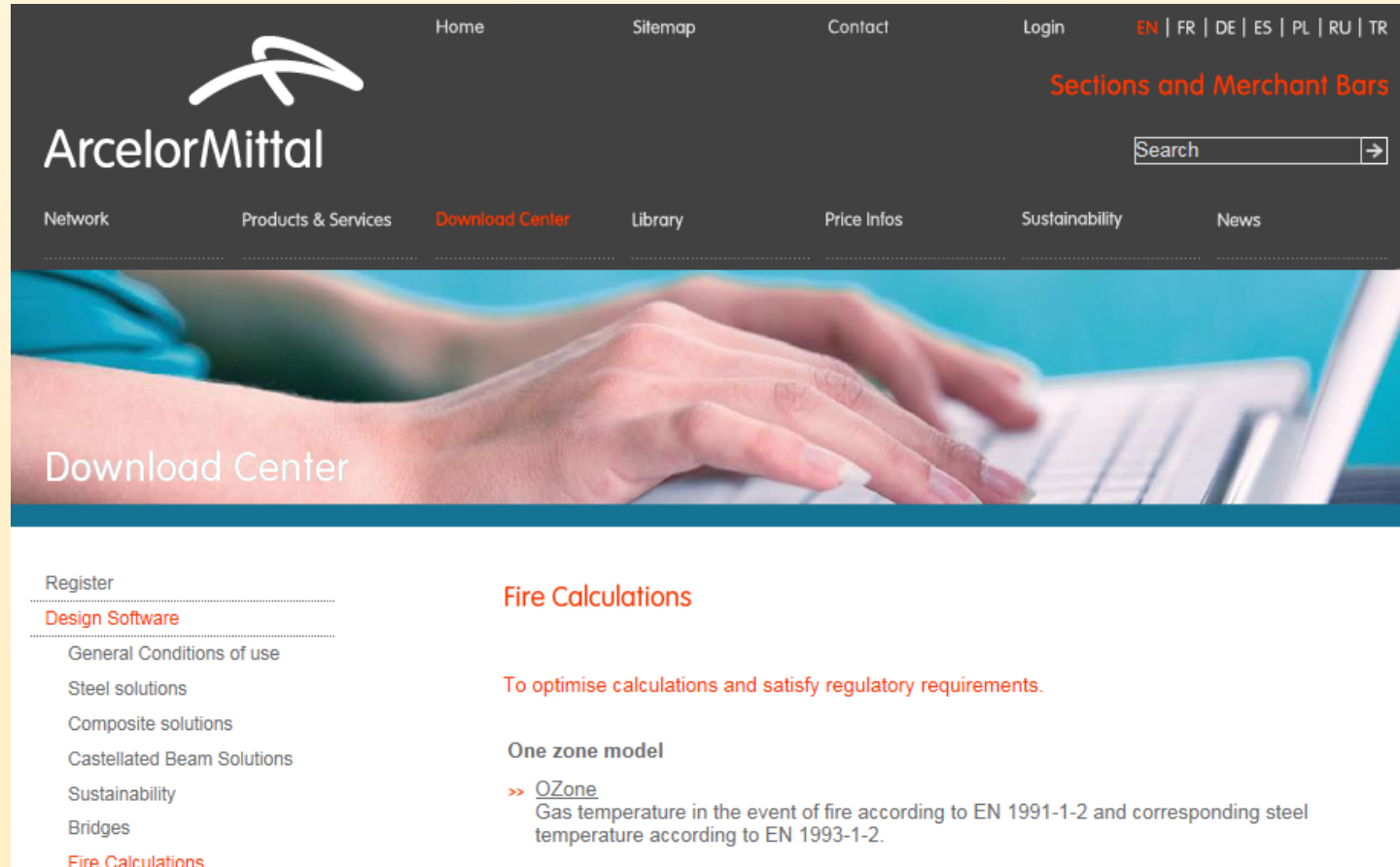
Temperature assessment of a vertical member subjected to LOCAIised FIre
Dissemination

Grant Agreement n° 754072

5. Software

5. Software

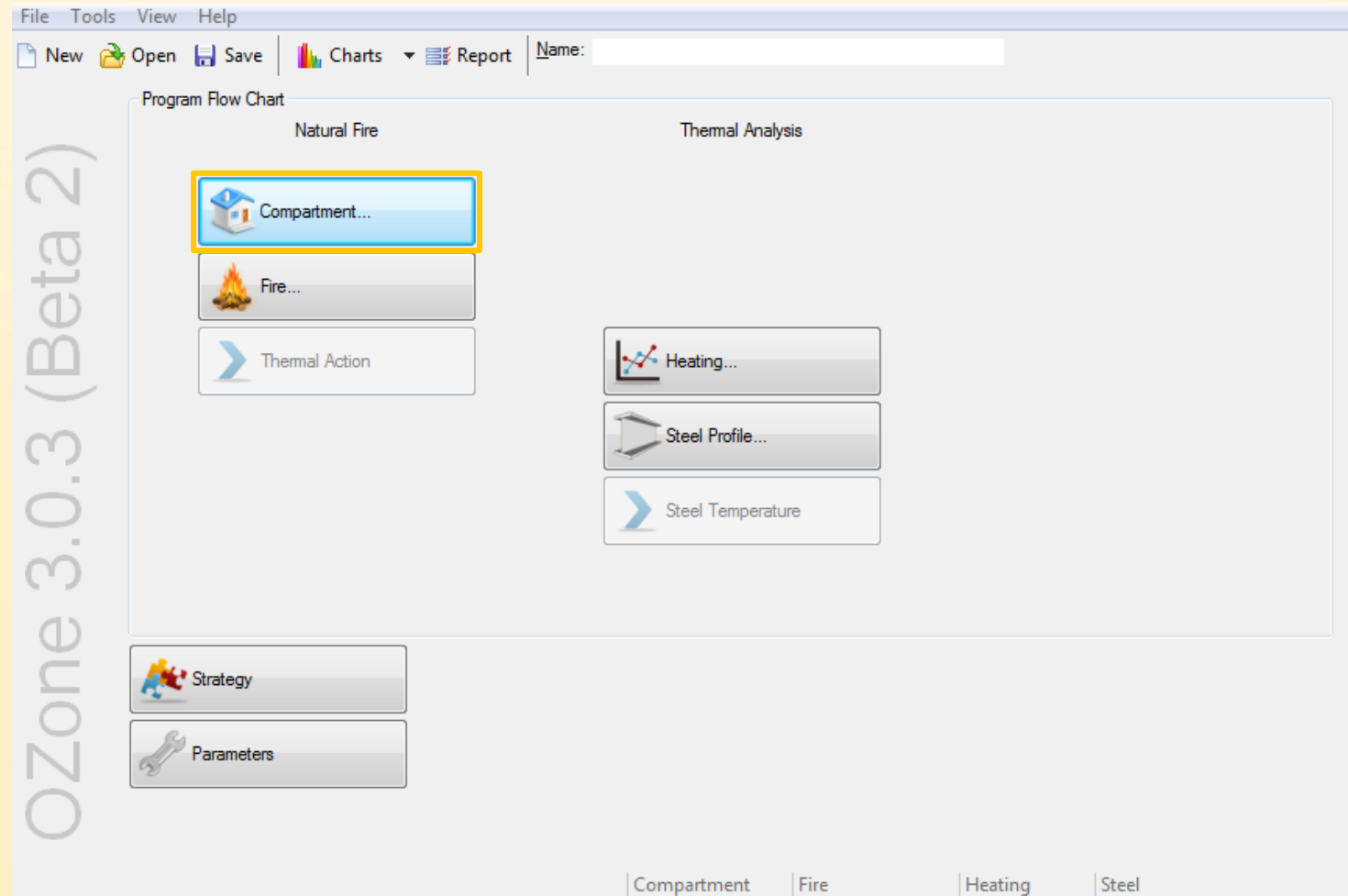
5.1. OZone Compartment



<http://sections.arcelormittal.com/download-center/design-software/fire-calculations.html>

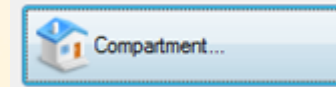
5. Software

5.1. OZone Compartment



5. Software

5.1. OZone Compartment



File Tools View Help

Form of Compartment

☒ Rectangular Floor
☒ Flat Roof
☐ Single Pitch Roof
☐ Double Pitch Roof
☐ Any Compartment

Height: m
Depth: m
Length: m

Define Layers and Openings

Select Wall: Define

Select Walls to Copy to:
Ceiling
Wall 1
Wall 2
Wall 3
Wall 4

Copy

☐ Copy Openings

Defined Walls:

| Wall | Type | Openings | Length |
|---------|------|----------|--------|
| Floor | | | |
| Ceiling | | | |
| Wall 1 | | | |
| Wall 2 | | | |
| Wall 3 | | | |
| Wall 4 | | | |

Forced Ventilation

Smoke Extractors:

| | Height m | Diameter m | Volume m³/sec | In/Out |
|-------------|-------------|---------------|------------------|--------|
| Extractor 1 | | | | |
| Extractor 2 | | | | |
| Extractor 3 | | | | |

OK Cancel

Geometry of the compartment

Properties of floor, walls and ceiling

Forced Ventilation (if any)

5. Software

5.1. OZone Compartment

File Tools View Help

Wall Length: 13 m


| | Material | Thickness | Unit mass | Conductivity | Specific Heat | Rel Emissivity | Rel Emissivity |
|---------|-----------------------|-----------|-------------------|--------------|---------------|----------------|----------------|
| | | cm | kg/m ³ | W/mK | J/kgK | Hot Surface | Cold Surface |
| Layer 1 | Steel [EN1994-1-2] | 0.1 | 7850 | 45 | 600 | 0.8 | 0.8 |
| Layer 2 | Glass wool _Rock wool | 6 | 60 | 0.037 | 1030 | 0.8 | 0.8 |
| Layer 3 | Steel [EN1994-1-2] | 0.1 | 7850 | 45 | 600 | 0.8 | 0.8 |
| Layer 4 | | | | | | | |

Enter each layer on a single row in the table above (up to four layers). Just click in a cell and edit it's value. If not found in the list of materials you can define your own material, by filling in the appropriate cells. Define your layers starting from Layer 1 (Inside).

Define your openings if any (up to three openings in a single wall). Click in the desired cell and input your values. Start from Opening 1.

To delete or insert a row, right click on a row header and select the appropriate command from the popup menu.

Inside



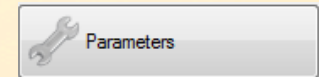
Outside

| | Sill Height Hi | Soffit Height Hs | Width | Variation | Adiabatic |
|-----------|----------------|------------------|-------|-----------|-----------|
| | m | m | m | | |
| Opening 1 | 0 | 4 | 4.2 | Stepwise | no |
| Opening 2 | 0 | 2 | 1 | Stepwise | no |
| Opening 3 | | | | | |

OK Cancel

Properties of
layers for each
wall

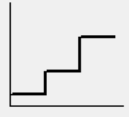
Openings



Temperature Dependent Openings

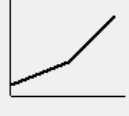
Temperature Dependent: 400 °C

Stepwise Variation



| Temperature °C | % of Total Openings |
|----------------|---------------------|
| 20 | 10 |
| 400 | 50 |
| 500 | 100 |

Linear Variation



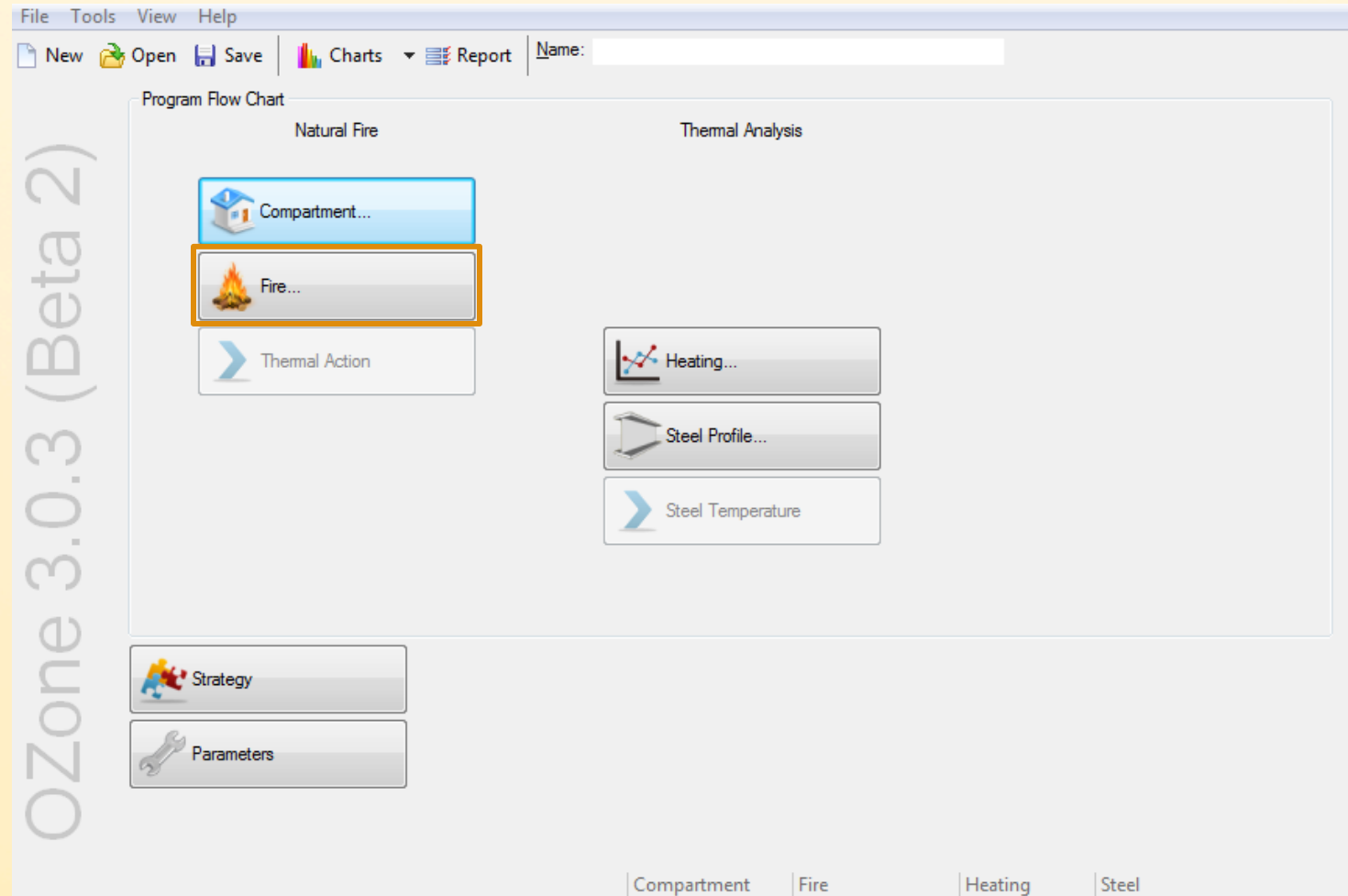
| Temperature °C | % of Total Openings |
|----------------|---------------------|
| 20 | 10 |
| 400 | 50 |
| 500 | 100 |

Time Dependent Openings

| Time sec | % of Total Openings |
|----------|---------------------|
| 0 | 5 |
| 1200 | 100 |

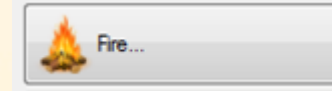
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Fire

File Tools View Help

Compartment Fire: ☒ Annex E (EN 1991-1-2) ☐ User Defined Fire

Localised Fire: ☐ Localised Fire

National Annex:

| Occupancy | Fire Growth Rate | RHRf | Fire Load $q_{f,k}$ | Danger of Fire Activation |
|-----------|------------------|----------------------|--------------------------------|---------------------------|
| | | [kW/m ²] | 80% Fractile MJ/m ² | |
| School | Medium | 250 | 347 | 1 |

Active Fire Fighting Measures

☐ Automatic Water Extinguishing System $\delta_{n,1}=1$

☐ Independent Water Supplies ☒ 1 ☐ 2 $\delta_{n,2}=1$

☐ Automatic Fire Detection by Heat $\delta_{n,3}=1$

☐ Automatic Fire Detection by Smoke $\delta_{n,5}=1$

☐ Automatic Alarm Transmission to Fire Brigade $\delta_{n,6}=1$

☐ Work Fire Brigade $\delta_{n,8}=1$

☐ Off Site Fire Brigade $\delta_{n,9}=1$

☒ Safe Access Routes $\delta_{n,10}=1$

☐ Staircases Under Overpressure in Fire Alarm $\delta_{n,9}=1$

☒ Fire Fighting Devices $\delta_{n,10}=1$

☒ Smoke Exhaust System $\delta_{n,10}=1$

Fire Info

Max Fire Area: m²

Fire Elevation: m

Fuel Height: m

Design Fire Load

Fire Risk Area: m² $\delta_{q,1}=1$

Danger of Fire Activation: $\delta_{q,2}=1$

Active Measures: $\prod \delta_{n,i}=1$

$q_{f,d} = \delta_{q,1} \delta_{q,2} \prod \delta_{n,i} m q_{f,k} = 277.6 \text{ MJ/m}^2$

Combustion

Combustion Efficiency Factor:

Combustion Model:

Stoichiometric Coefficient:

OK Cancel