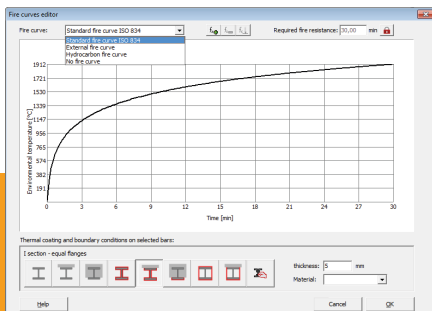




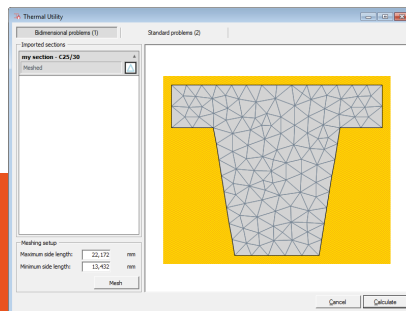
Fire Resistance

FIRE RESISTANCE ANALYSIS SOFTWARE
(DIAMONDS MODULE)



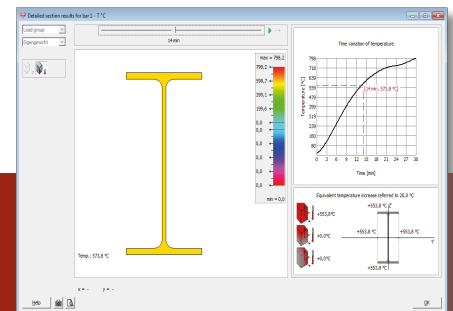
Fire curves

You easily complete the model geometry, boundary conditions and loads with all data needed for a fire safety analysis. The fire can simply be defined through an appropriate fire curve (ISO 834, external fire, hydrocarbon fire) and imposed fire resistance time. Cross-section definitions can easily be extended with all relevant thermal properties and thermal coatings.



Slender and solid

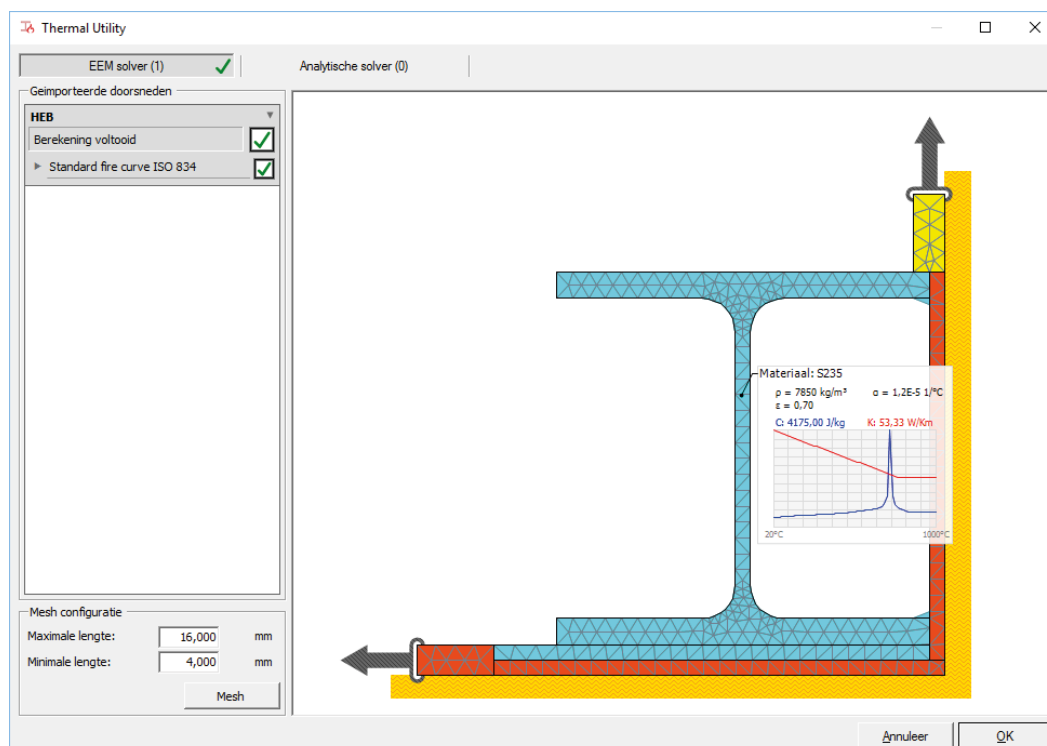
Thanks to the thermodynamic finite element solver, Diamonds allows the user to perform a fire safety analysis for slender sections (steel) as well as solid sections (concrete). Cross-section temperature distribution is calculated as the fire develops, monitoring mechanical and thermal property changes for any type of section subject to fire loads.



Critical t°

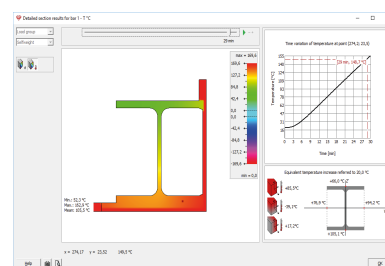
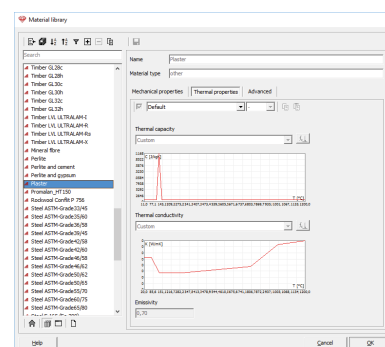
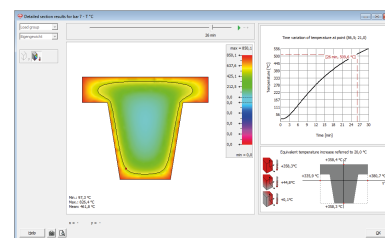
All derived data from the fire analysis are exploited to the fullest possible extent within both the elastic structural analysis and all subsequent code checks. Among the results you get the critical temperature for steel sections and the temperature of the reinforcement for concrete sections.

The fire resistance analysis module is available as an add-on to each Diamonds license.



Features

- Definition of fire hazard through an appropriate fire curve and the imposed fire resistance requirements. Choice between ISO 834, external, hydrocarbon and parametric fire curves. Import and export of custom fire curves.
- Wide variety of predefined thermal protection and boundary conditions for standard cross-sections: no protection, thermal coating, boxed thermal protection, exposed to fire loads at one side only, at all sides or at bottom flange only.
- Hands-on creating of alternative configurations of thermal protection and/or boundary conditions for each single cross-sections.
- Automatic generation of accidental combinations upon activation of a fire hazard.
- Automatic selection of most appropriate analysis strategy depending on cross-section type: FEM Solver for solid cross-sections vs. Analytical Solver for slender cross-sections. Easy conversion from one analysis strategy to another for comparison.
- Thermodynamic analysis of structural members subjected to fire, accounting for heat radiation, convection and conduction.
- Calculation of indirect actions (tension, compression, bending,...) caused by a global temperature increase and/or temperature gradient, considering imposed deformation restraints. Indirect actions can be limited to account for plastic behaviour of nodes.
- Evaluation of impaired mechanical properties as a function of temperature.
- Detailed thermal results window with an animation and graph of cross-section's temperature variation over time. Temperature can be consulted at any position of the cross-section.
- Verification of steel member resistance and stability, considering fundamental and accidental loads combinations. Impaired mechanical properties are automatically accounted for within the verifications for accidental loads combinations.



In numbers

- **2000** customers use BuildSoft software in more than 50 different countries
- **25+** years of experience in structural design analysis and design codes
- **4000** BuildSoft licenses in use with customers
- **75%** of the customers have a maintenance or subscription contract
- **2200** student registrations every year for a free educational license

Our customers

- Engineering offices & consultants
- General contractors
- Construction companies
- Public organisations
- Universities & colleges

Fire resistance is a module for Diamonds, a BuildSoft product. Get your free 30-day trial version at www.buildsoft.eu. For more information, please contact:

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