2ND INTERNATIONAL SYMPOSIUM K-FORCE 2019

Tirana, September 9, 2019

IT TEACHING TOOLS FOR BUILDING FIRE SAFETY

INTRODUCTION

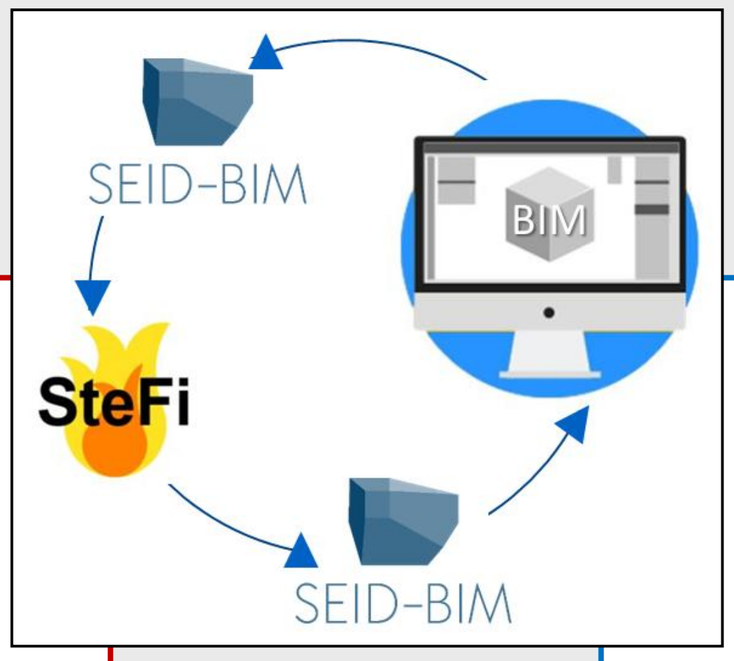
Two integrated software have been developed at DTU to address two current issues of fire safety design of structures: the lack of a fast tool for parametric fire design of structural elements (software called **SteFi**) and the difficulties of importing and exporting the structural data from and into a BIM-enviroment (software called **SEID-BIM**).

The software is *open source* and mainly developed as aid for teaching and learning. Since the commercial use is not restricted, it can also be used or further developed by the industry.

CORE IDEA OF THE RESEARCH

SteFi Steel in Fire

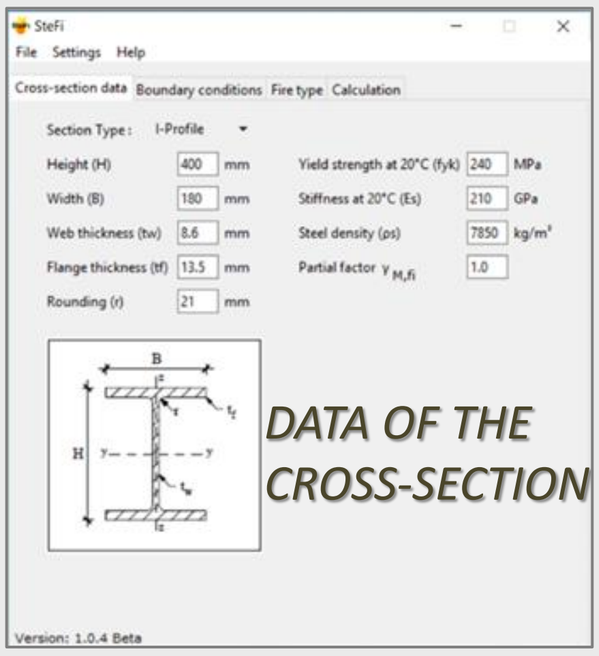
- Standard and Parametric design fires
- Reliable steel degradation models
- Libraries for steel profiles and insulation materials
- Calculation of load capacity
- Design of required insulation



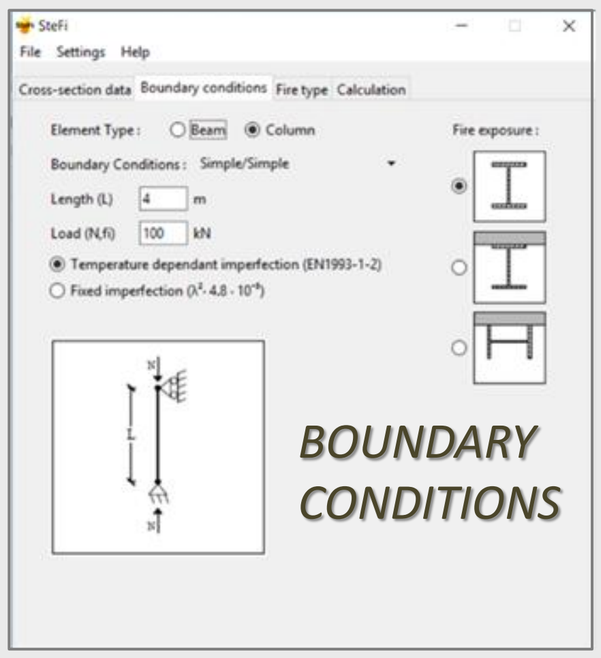
Structural Export and Import of Data for BIM

SEID-BIM

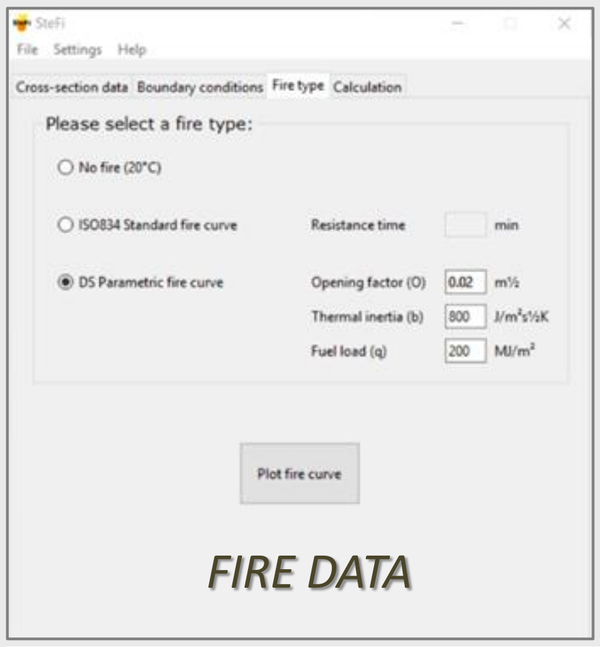
- Export geometry and material properties of a steel element from Revit
- Import geometry and material properties of the insulation into Revit
- Compatible with the IFC format



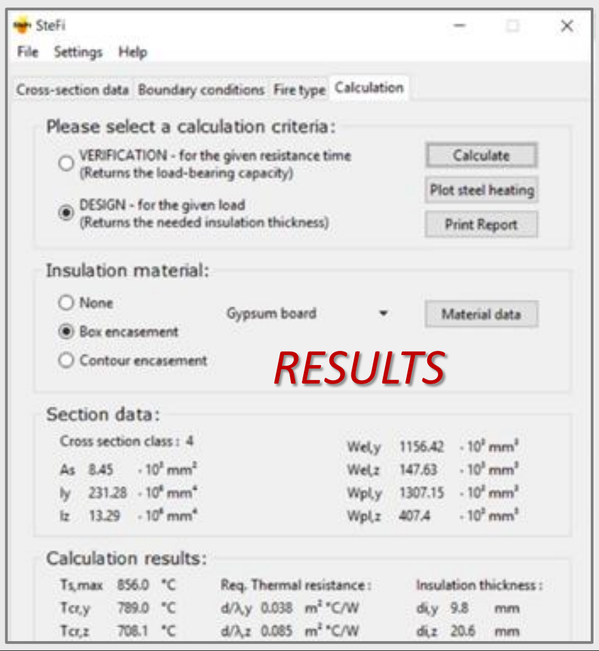
DATA OF THE CROSS-SECTION



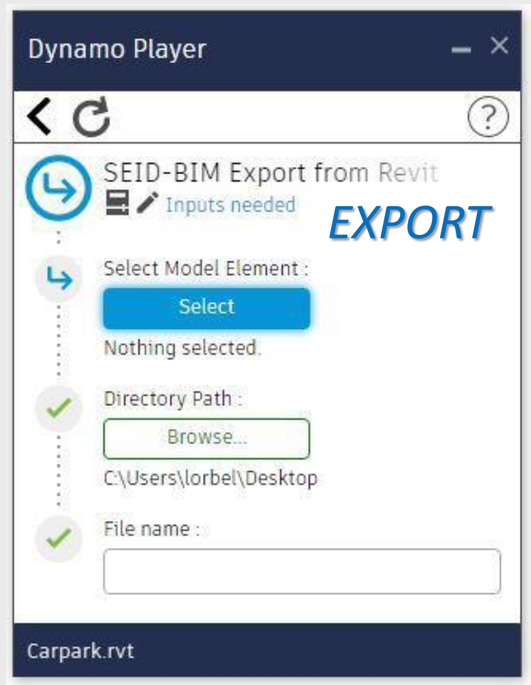
BOUNDARY CONDITIONS



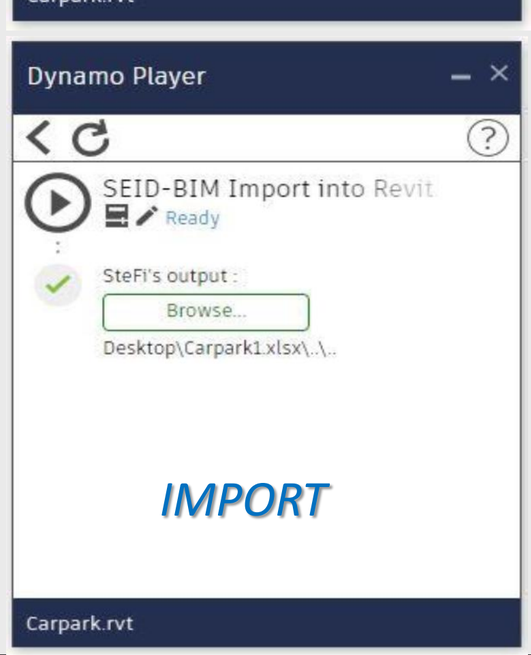
FIRE DATA



RESULTS

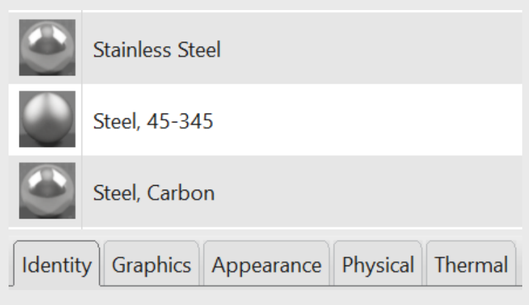


EXPORT



IMPORT

MATERIAL



GEOMETRY

Dimensions	
b	300.0
h	340.0
r	27.0
tw	12.0
tf	21.5

Routine for profile identification

Fire Protection	
Solicitant load in fire	20.00 kN/m
Load-bearing capac...	20.00 kN/m
Fire type	DS Parametric fire
Resistance time	69 [min]
Opening factor	0,04 [m^(1/2)]
Thermal inertia	1160 [J/(m^2*s^(1/2...
Fuel load	200 [MJ/m^2]
Thermal resistance	0,086 [m² °C/W]
Hosted insulation ID	868478

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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Co-funded by the Erasmus+ Programme of the European Union