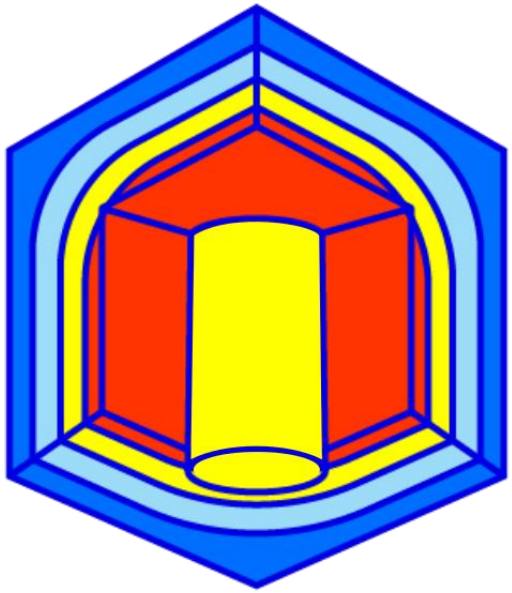
physibel

SOLIDO v5 New program performances



www.physibel.be/en/products/solido

SOLIDO v5 - Overview

overview

A Improved STL file handling

- A.1 Import of multiple STL files in 1 step
- A.2 Dragging of STL files (selecting any point)
- A.3 Improved algorithms for STL transformations
- A.4 Automatic colour index assignment to STL blocks
- A.5 Block points of the bounding box STL file available

B Geometrical modelling and graphic visualisation performance

- B.1 Orthogonal and transparent views
- B.2 Rotate 3D object (pan 2D view) with mouse wheel
- B.3 New function to drag (multiple) block(s) with mouse
- B.4 New function 'Enable' to quickly include/exclude block(s) from model
- B.5 Improved graphic visualisation performance
- B.6 Miscellaneous

C Revision of Colours Window

- C.1 Allows conformity with different EN standards
- C.2 Customisable Colour Database

D EN ISO standards

- D.1 Cavities and layers according to EN ISO 6946
- D.2 Cavities according to EN ISO 10077-2

E Grid generation and calculation of view factors

- E.1 Improved algorithm: "AutoGrid Generation"
- E.2 Improved algorithms for view factor calculations (RADCON)

F Graphic output and Text output

- F.1 Legend
- F.2 New thermal Palette
- F.3 Export text output in .csv format
- F.4 Miscellaneous

G Compatibility with BISCO and TRISCO & Trisco2D

- G.1 Areas and U-values from TRISCO files read
- G.2 Trisco2D and BISCO files can be imported and extruded in 3D according to user preferences

H Online Physibel Portal

- H.1 User management
- H.2 Support
- H.3 Physibel Knowledge Base

I Licencing

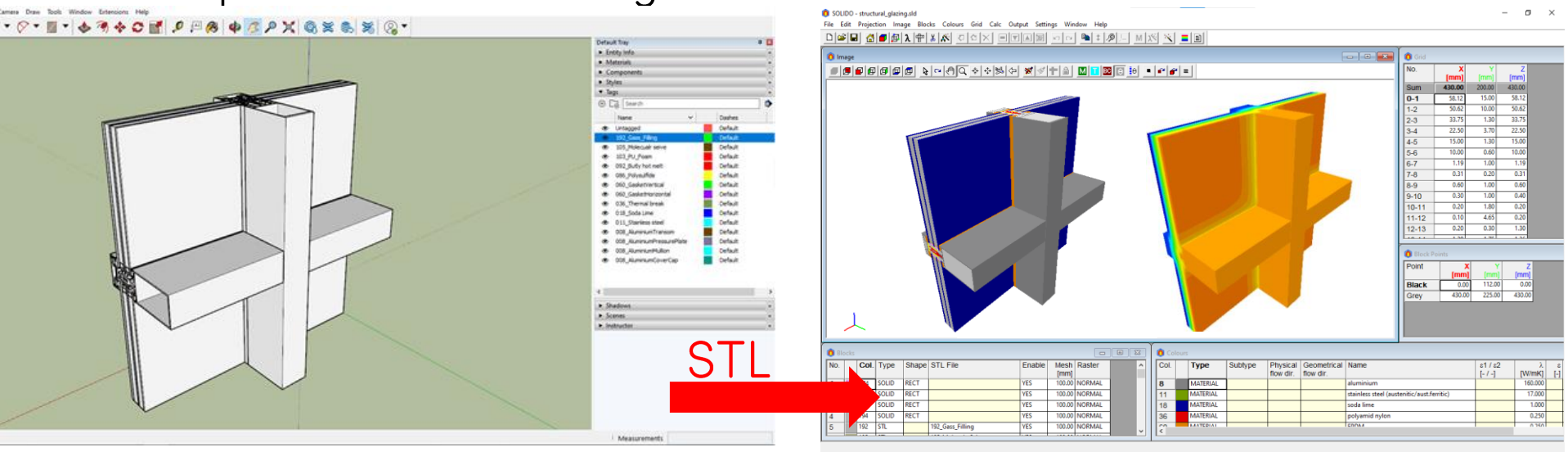
- I.1 Perpetual licence (USB key)
- I.2 Subscription licence (software key)

A. Improved STL file handing

overview

Several new and improved functions increase the speed to model geometries imported via STL files (created by e.g. Revit, Rhino, Sketchup...)

- Import of multiple STL files in 1 step
- Dragging of STL files (selecting any point)
- Improved algorithms for STL transformations
- Automatic colour index assignment to STL blocks
- Block points of the bounding box STL file available

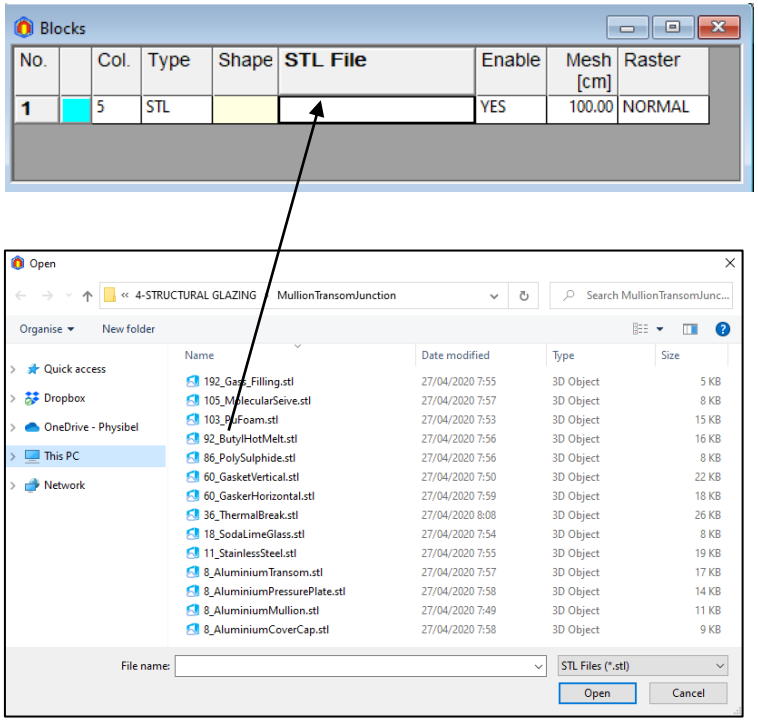


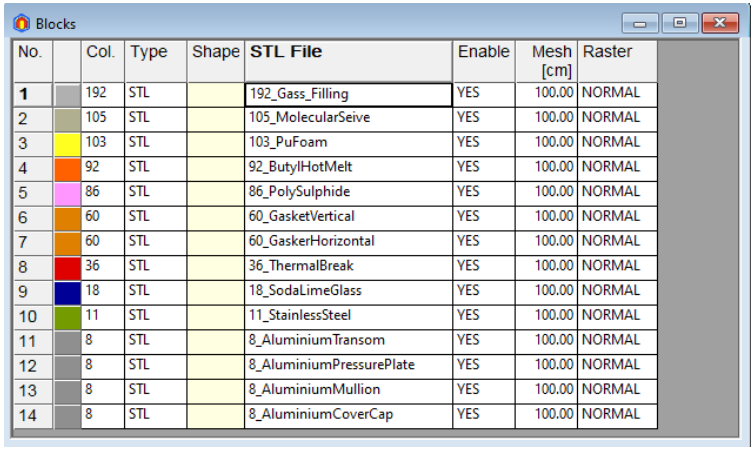
From SOLID-modelling software to thermal output in SOLIDO in a few clicks

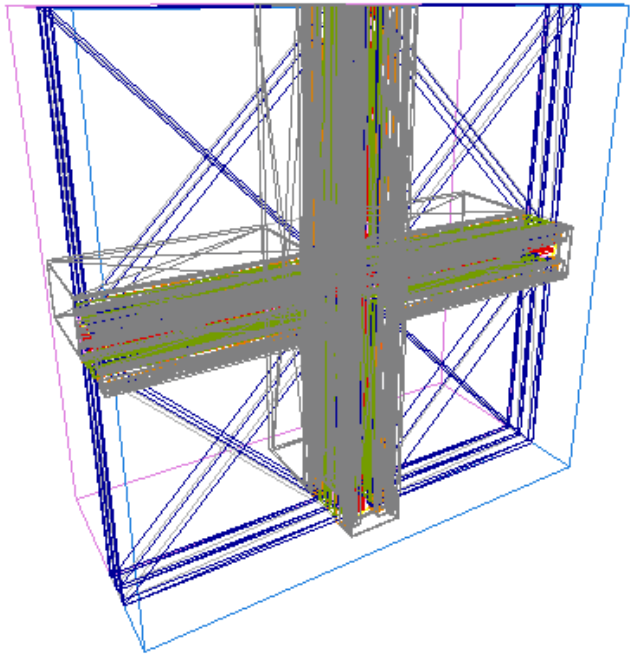
A.1 Import of multiple STL files in 1 step

overview

Multiple STL files can be selected





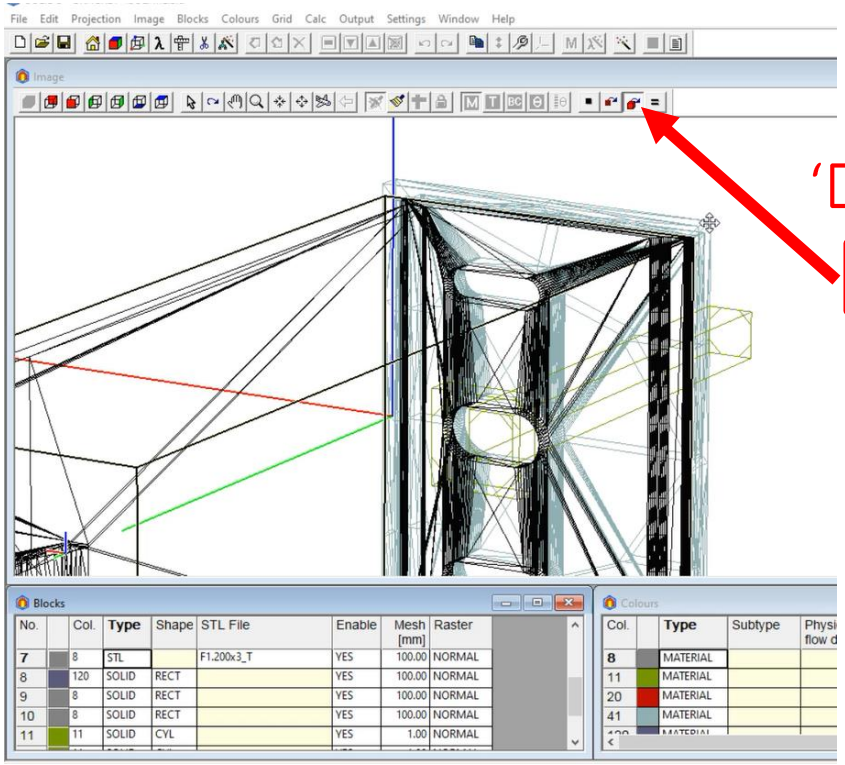


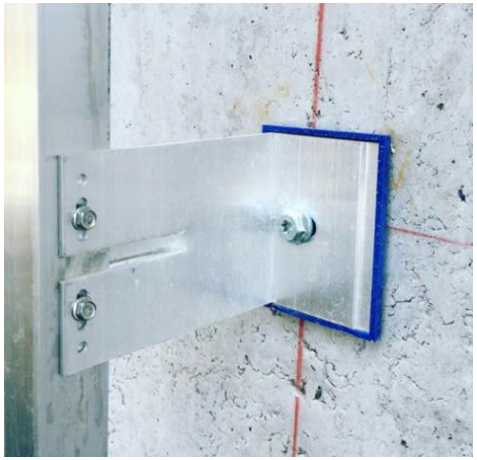
By using the colour index in the STL file, the properties are automatically recognized (see A.4)

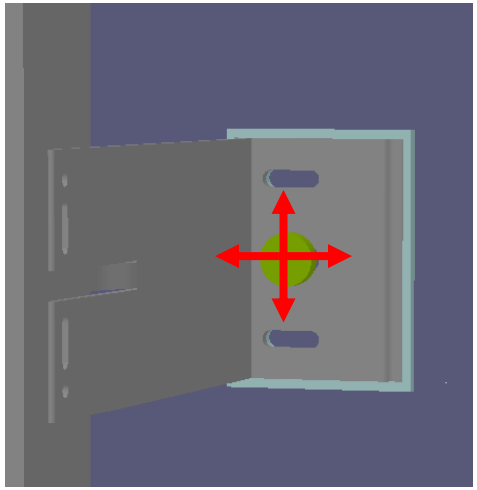
A.2 Dragging of STL files (selecting any point)

overview

- New function ‘Drag block’ allows to quickly position STL blocks with mouse
- Any STL point can be used for dragging
- New position of point in blue during dragging
- Snapping suggestions are given during dragging



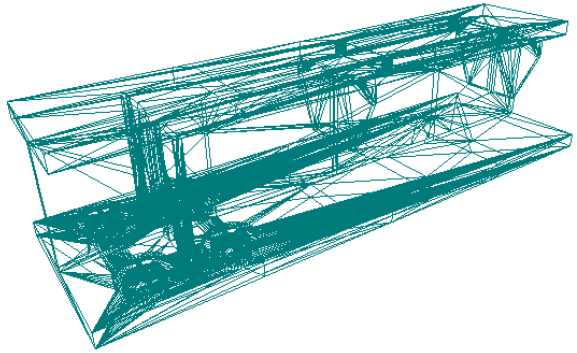




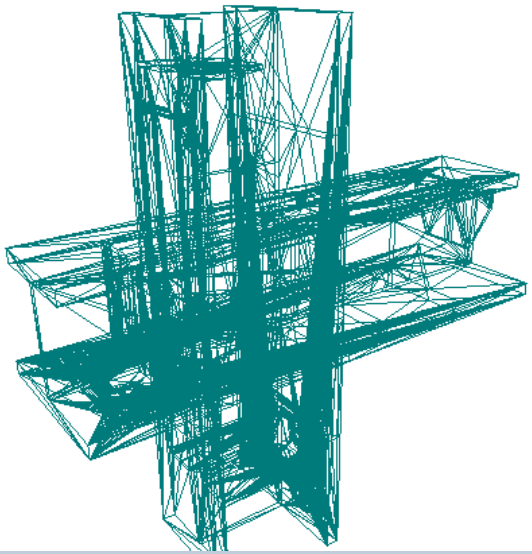
A.3 Improved algorithms for STL transformations

overview

- No need anymore to save the new STL file after every transformation
- A request to save to adjusted STL file is appearing when saving the project:
  - YES = file names + '_T'
  - No = overwrite existing STL files
  - Cancel = do not save modified STL files
- Several bug fixes in STL transformation functions (translate, rotate, scale)



copy & rotate beam



Blocks

No.		Col.	Type	Shape	STL File	Enable	Mesh [cm]	Raster
1		13	STL		BEAM	YES	100.00	NORMAL

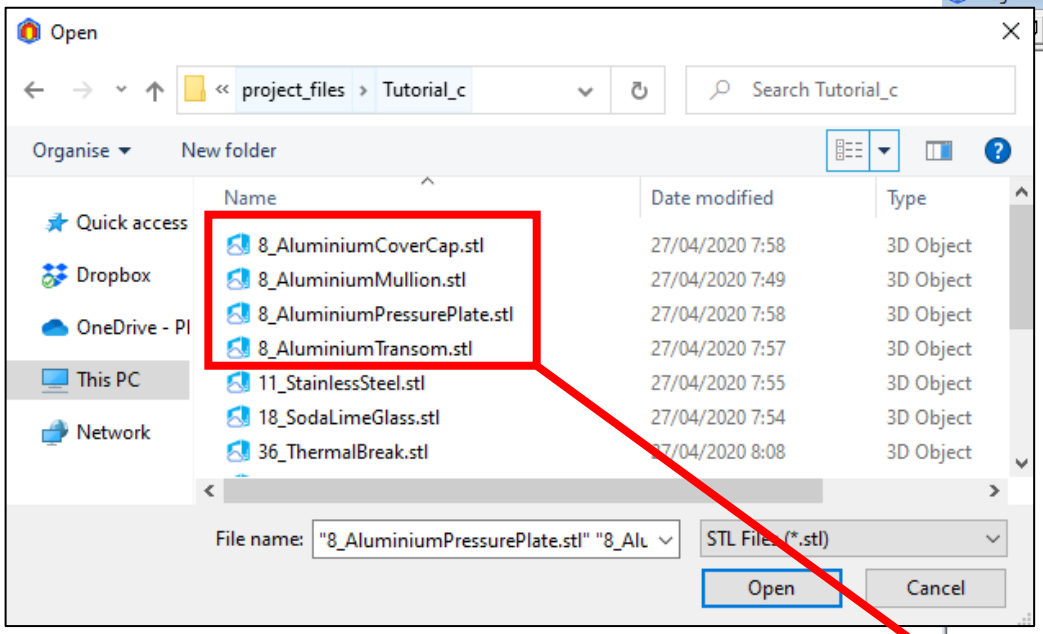
Blocks

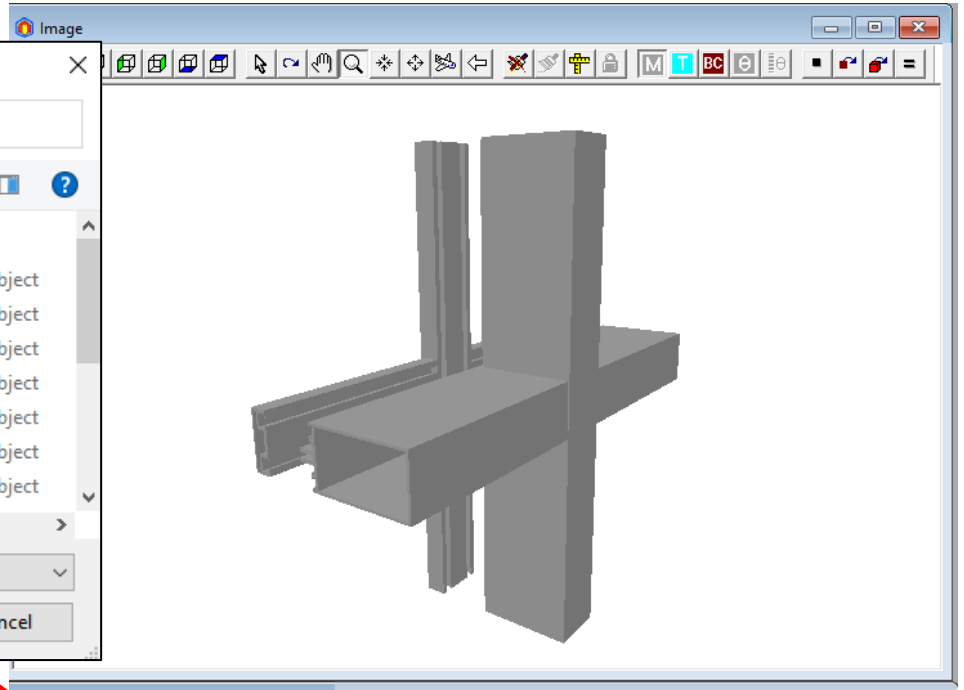
No.		Col.	Type	Shape	STL File	Enable	Mesh [cm]	Raster
1		13	STL		BEAM	YES	100.00	NORMAL
2		13	STL		BEAM_T	YES	100.00	NORMAL

A.4 Automatic colour index assignment to STL blocks

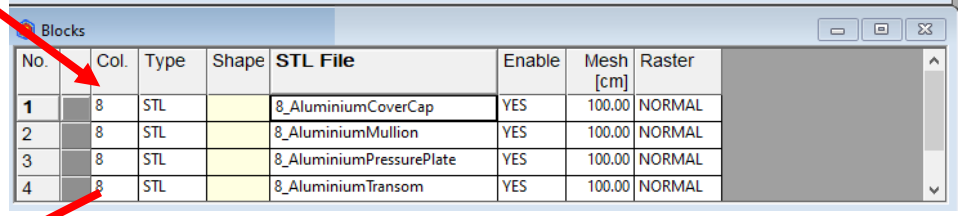
overview

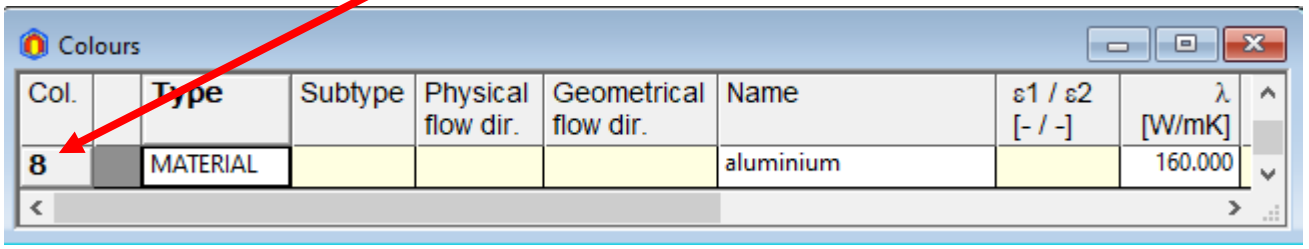
Link material properties/boundary conditions via colour index to STL file name





Colour index defined in adjustable Colour database with frequently used materials and boundary conditions (see C.2)





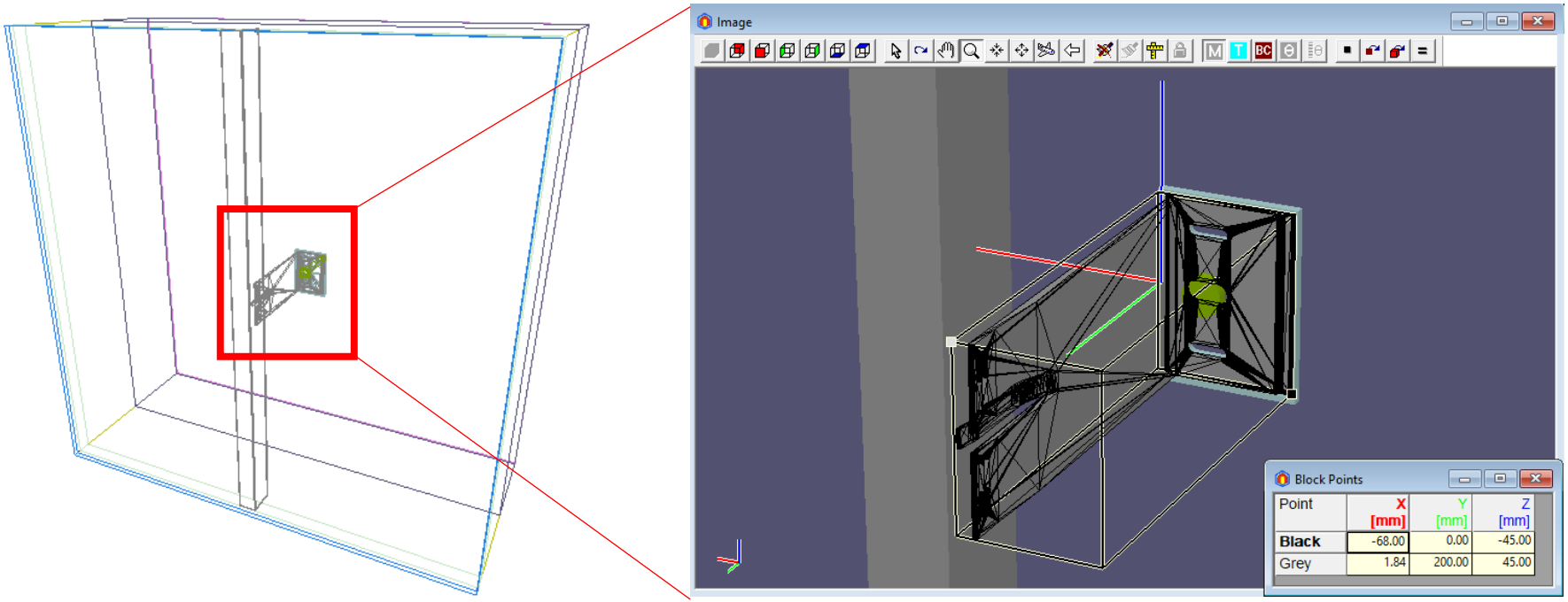
A.5 Block points of the bounding box STL file

overview

A bounding box with block points is now available for each STL-file which simplifies positioning STL objects in the coordinate system

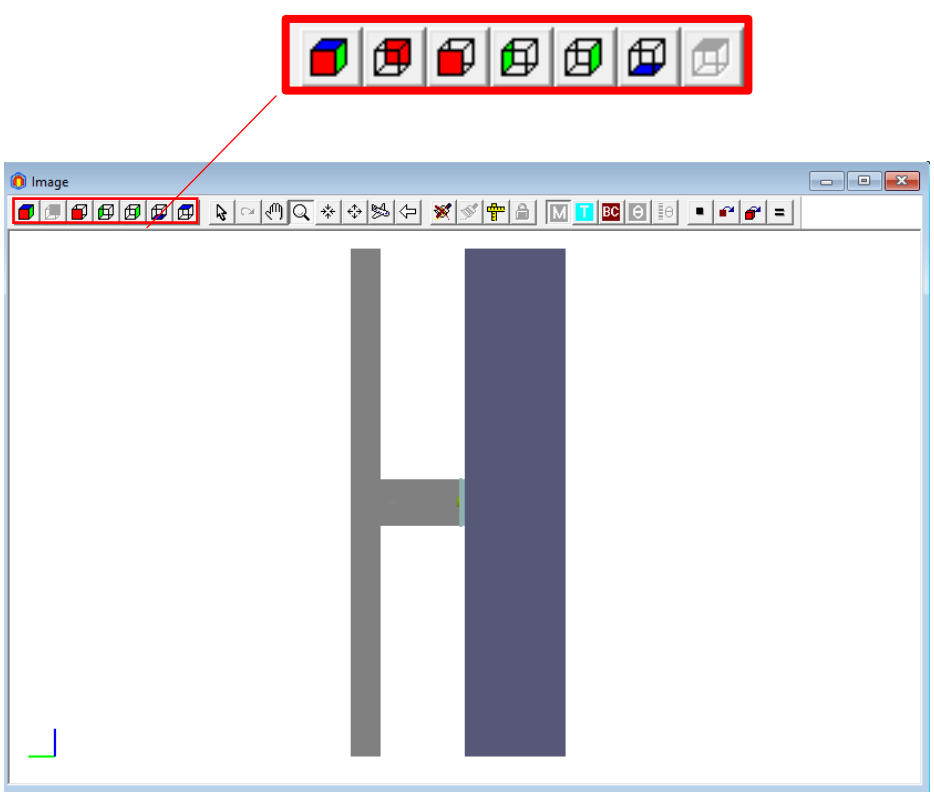
Example: rainscreen cladding wall

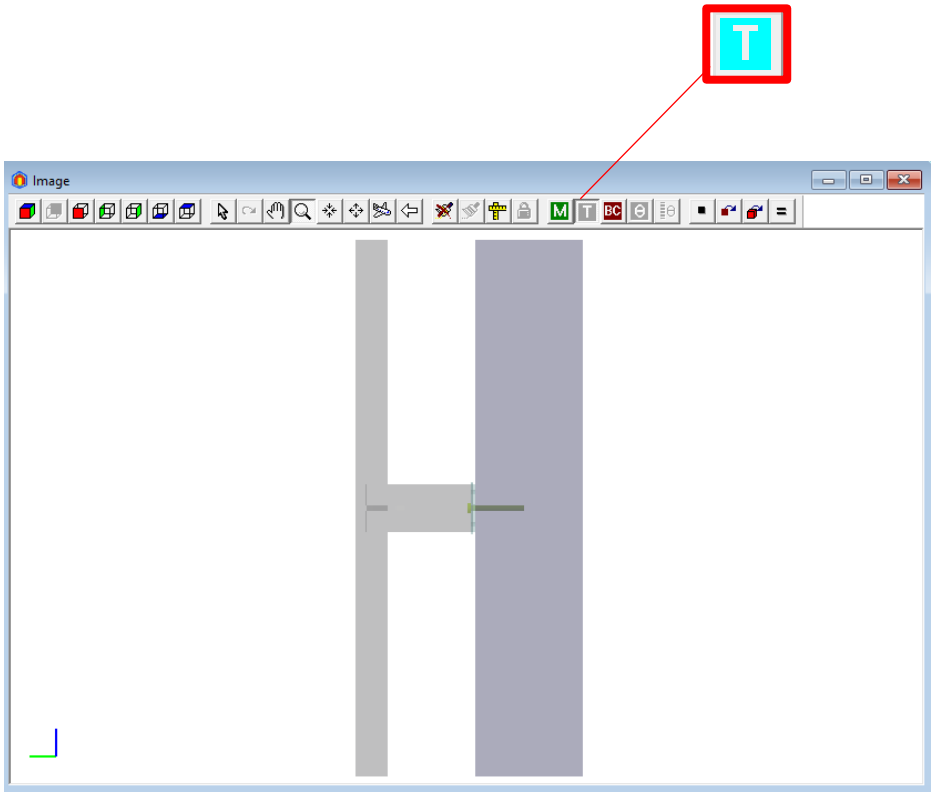
- Dragging the bracket and insulator via the block points of the STL-file



B.1 Orthogonal and transparent views

overview





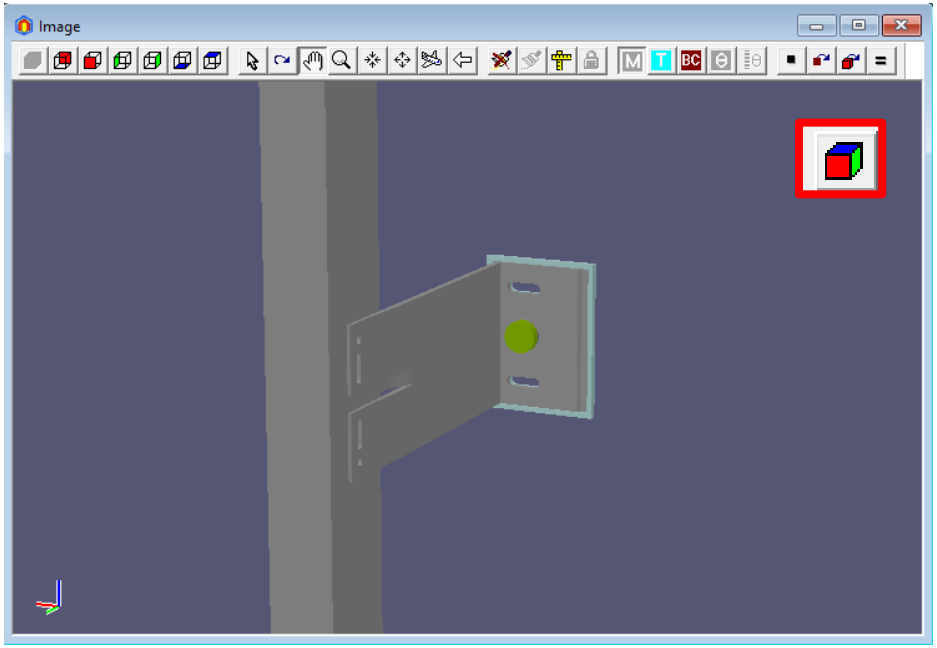
B.2 Rotate 3D object (pan 2D view) with mouse wheel

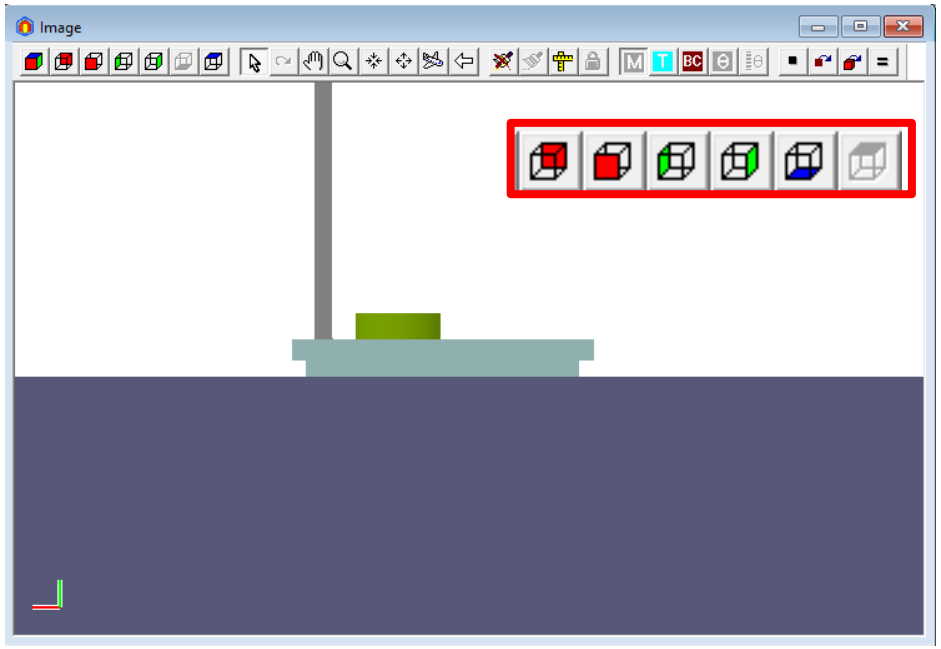
overview

Mouse wheel actions:

Perspective view:
- Scroll to zoom
- Press to rotate

Orthogonal view:
- Scroll to zoom
- Press to pan



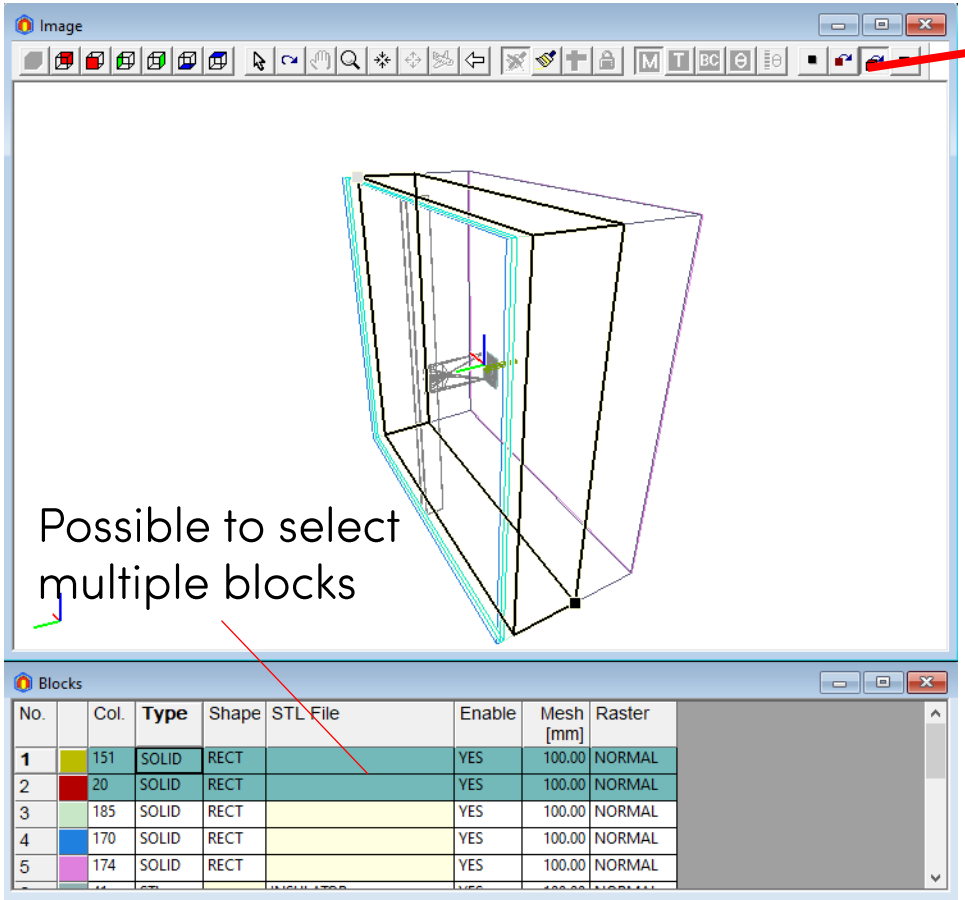


B.3 New function to drag (multiple) block(s) with mouse

overview

- New function 'Drag block' allows to quickly position 1 or more blocks with mouse
- Snapping suggestions are given during dragging

'Drag block'



Dragging restriction options:
<Shift> only in X
<Alt> only in Y
<Ctrl> only in Z

New position in status bar

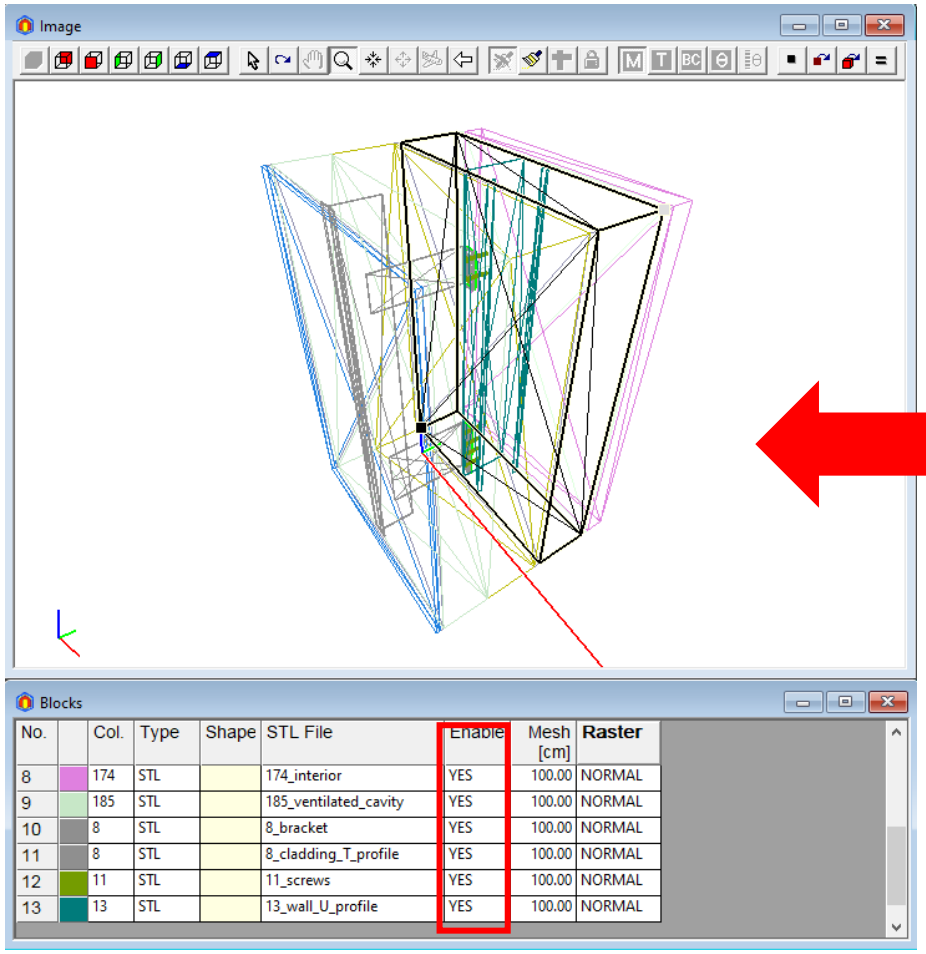
B.4 New function ‘Enable’

overview

New function ‘Enable’ to quickly include/exclude block(s) from model

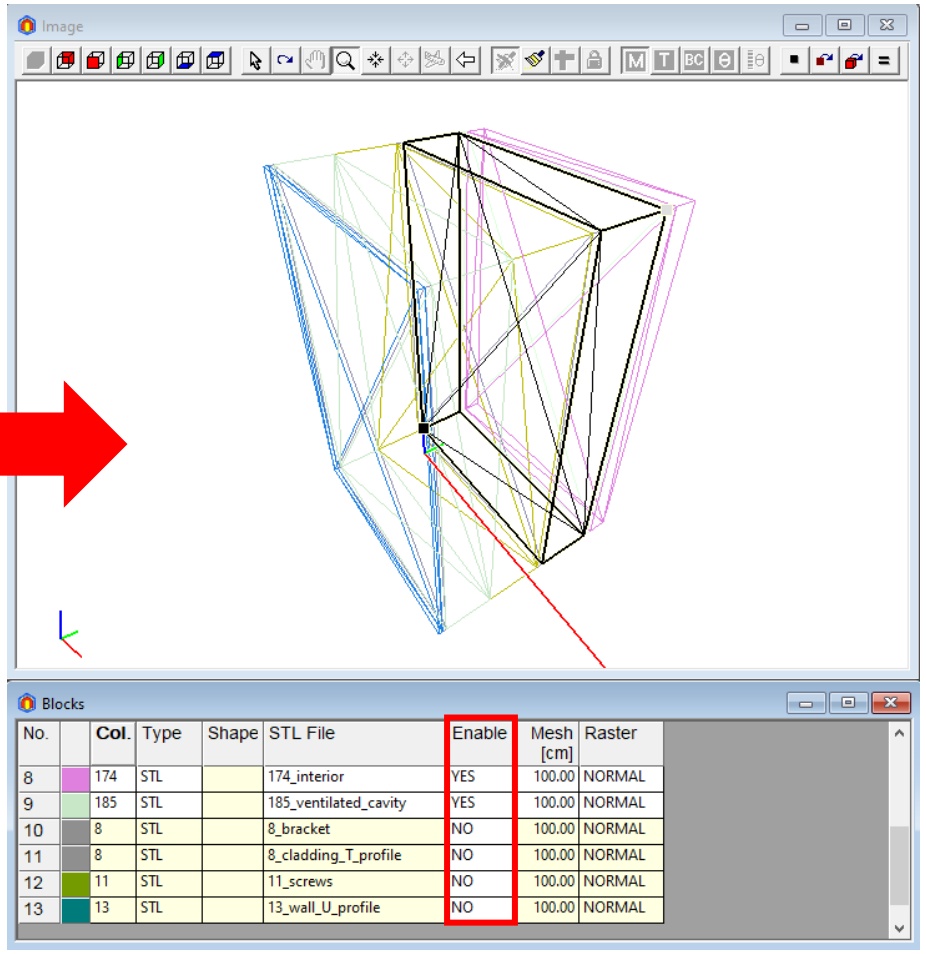
Example: rainscreen bracket wall

Simulation with bracket and screws



No.		Col.	Type	Shape	STL File	Enable	Mesh [cm]	Raster
8		174	STL		174_interior	YES	100.00	NORMAL
9		185	STL		185_ventilated_cavity	YES	100.00	NORMAL
10		8	STL		8_bracket	YES	100.00	NORMAL
11		8	STL		8_cladding_T_profile	YES	100.00	NORMAL
12		11	STL		11_screws	YES	100.00	NORMAL
13		13	STL		13_wall_U_profile	YES	100.00	NORMAL

Simulation without bracket and screws

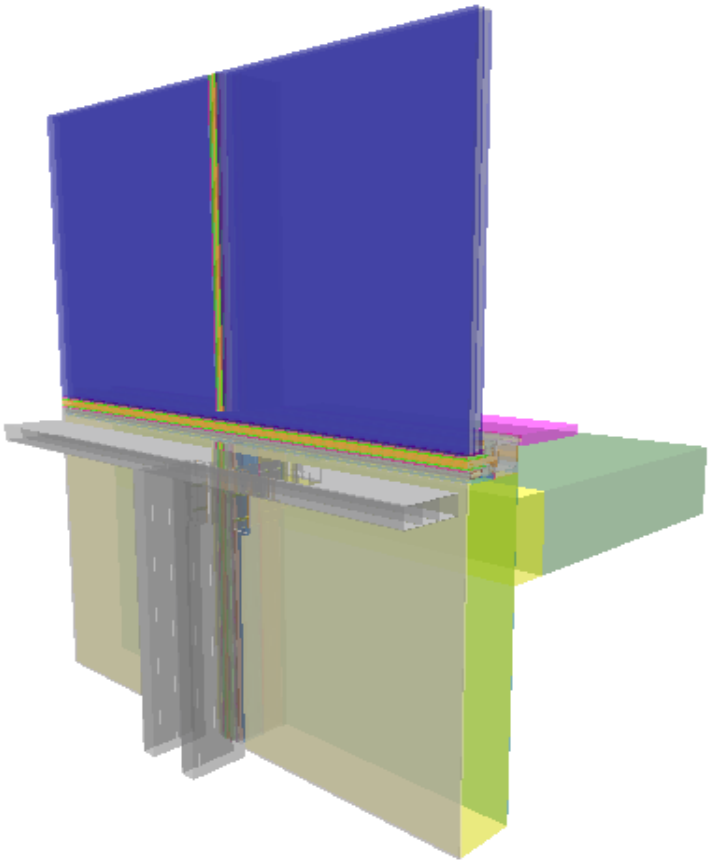


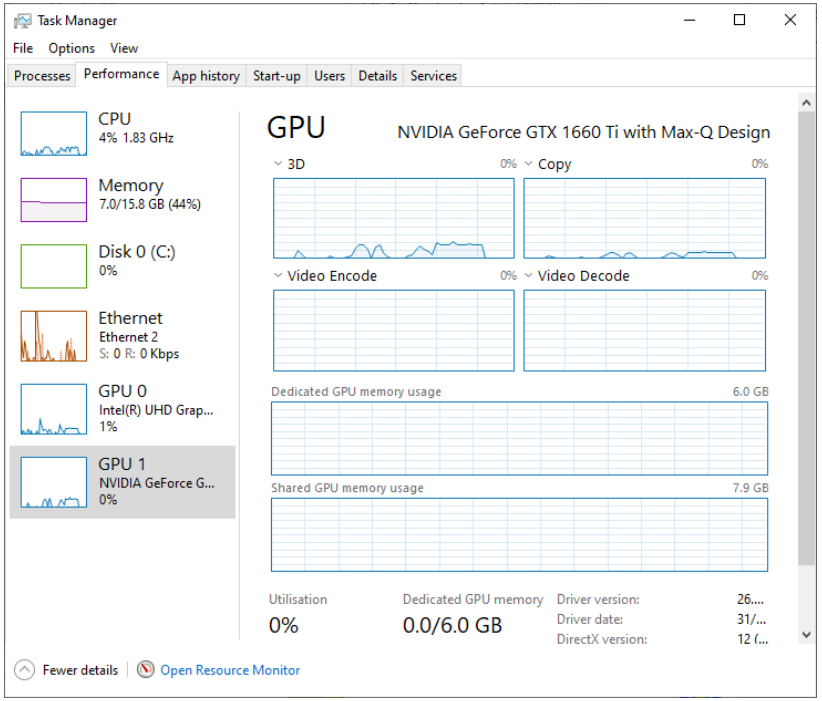
No.		Col.	Type	Shape	STL File	Enable	Mesh [cm]	Raster
8		174	STL		174_interior	YES	100.00	NORMAL
9		185	STL		185_ventilated_cavity	YES	100.00	NORMAL
10		8	STL		8_bracket	NO	100.00	NORMAL
11		8	STL		8_cladding_T_profile	NO	100.00	NORMAL
12		11	STL		11_screws	NO	100.00	NORMAL
13		13	STL		13_wall_U_profile	NO	100.00	NORMAL

B.5 Improved graphic visualisation performance

overview

- Adjusted algorithm improves 3D visualization, avoiding sporadic crashes when relying on an integrated graphic processor (INTEL)
- Automatic selection of high-performance dedicated GPU (AMD or Nvidia) if present to ensure high quality 3D visualization of complex models





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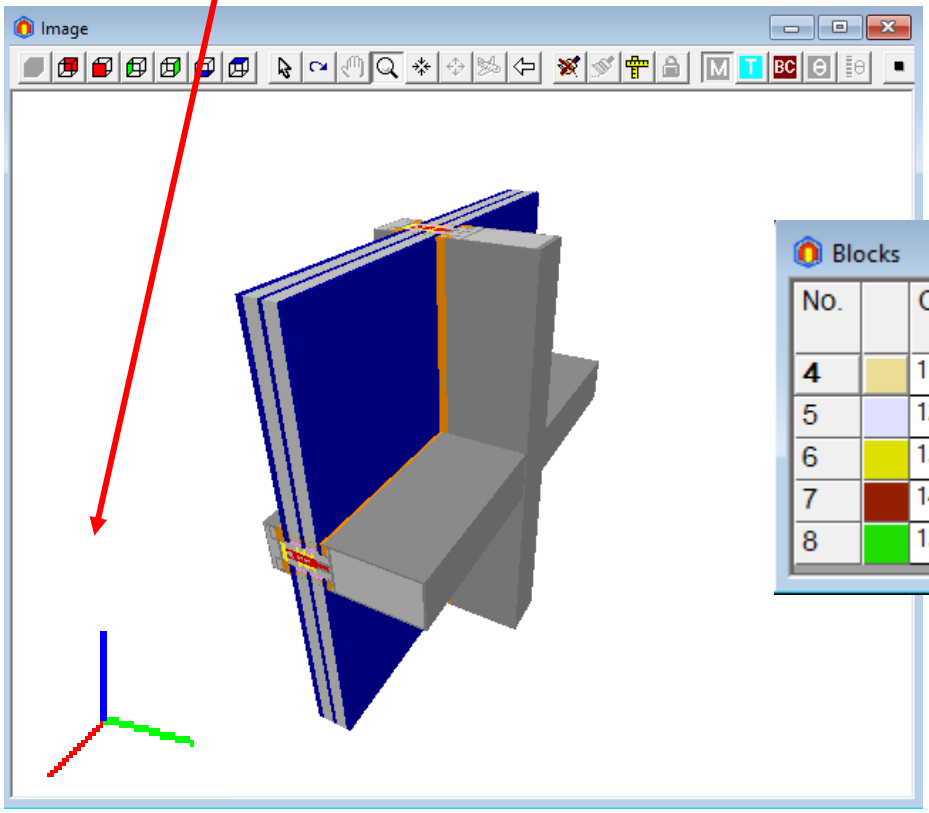
SOLIDO v5

B.6 Miscellaneous

overview

1. New function ‘Make property global’ to change a property for all the blocks in the Blocks window (e.g. changing Mesh Size for all blocks)
2. Non-consecutive blocks can be copied and moved
3. ‘Raster’ and ‘Mesh’ properties moved to Blocks window
4. Coordinate system in left corner of Image window



Blocks

No.		Col.	Type	Shape	STL File	Enable	Mesh [cm]	Raster
4		15	SOLID	RECT		YES	100.00	NORMAL
5		129	SOLID	RECT		YES	100.00	NORMAL
6		135	SOLID	RECT		YES	100.00	NORMAL
7		148	SOLID	RECT		YES	100.00	NORMAL
8		131	SOLID	RECT		YES	100.00	NORMAL

C.1 Colours window – revision

overview

The Colours window is revised to allow conformity with different EN standards:

- Rule → Subtype
- Physical flow direction (horizontal, up, down): defined by the user (and standard)
- Geometrical flow direction (X, Y, Z)
- Standard (EN10077, EN6946)
- ε1/ ε2: emissivities linked to a cavity ("single equivalent thermal conductivity method")
- ε emissivity linked to a material ("radiosity method")

Colours

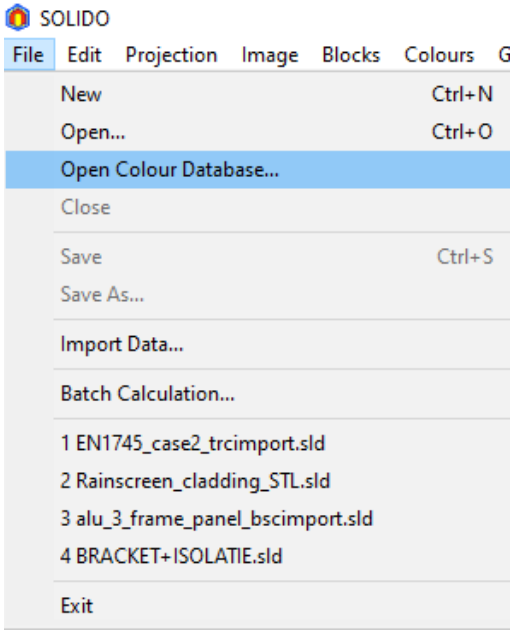
Col.	Type	Subtype	Physical flow dir.	Geometrical flow dir.	Name	ε1 / ε2 [- / -]	λ [W/mK]	ε [-]	θ [°C]	h [W/m²K]	q [W/m²]	θa [°C]	hc [W/m²K]	Pc [W/m]	θr [°C]	Standard
18	MATERIAL				soda lime		1.000									
60	MATERIAL				EPDM		0.250									
86	MATERIAL				polysulfide		0.400									
92	MATERIAL				butyl hot melt		0.240									
105	MATERIAL				molecular sieve		0.100									
170	BC_SIMPL	HE	HOR		exterior				0.0	25.00	0					EN10077
174	BC_SIMPL	HI_NORML	HOR		interior (normal)				20.0	7.70	0					EN10077
182	BC_SIMPL	HI_REDUC	HOR		interior (reduced)				20.0	5.00	0					EN10077
192	EQUIMAT	CAVITY	HOR	Y	cavity (CEN)	0.90 / 0.90	0.079									EN10077
193	EQUIMAT	CAVITY	HOR	Y	cavity (CEN)	0.90 / 0.90	0.052									EN10077
195	EQUIMAT	CAVITY	HOR	X	cavity (CEN)	0.90 / 0.90	0.037									EN10077
214	EQUIMAT	CAVITY	HOR	Y	cavity (CEN)	0.90 / 0.90	0.065									EN10077
215	EQUIMAT	CAVITY	HOR	Y	cavity (CEN)	0.90 / 0.90	0.102									EN10077

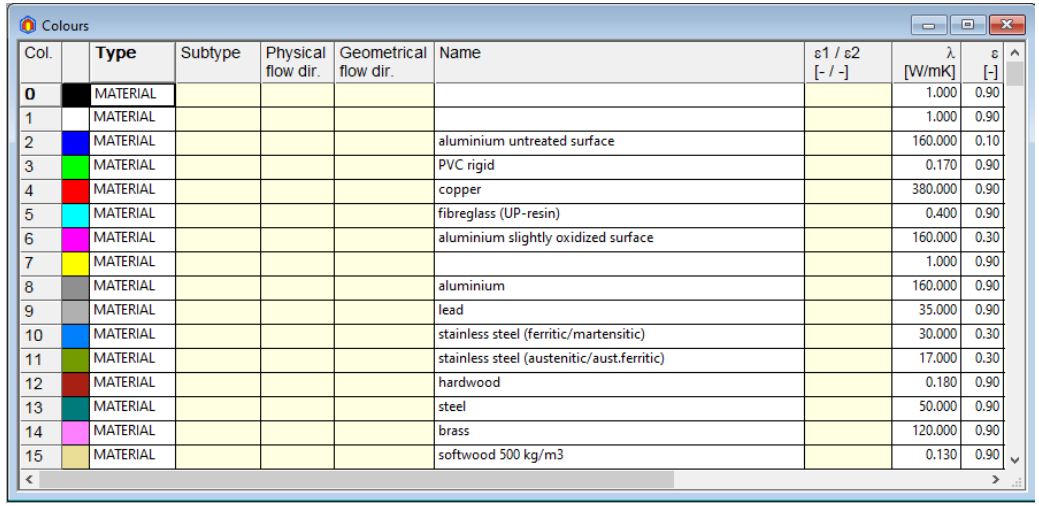
C.2 Colours window – Colour Database

overview

Customisable Colour Database with predefined colours

File → Open Colour Database... allows to quickly adjust frequently-used materials and boundary conditions.





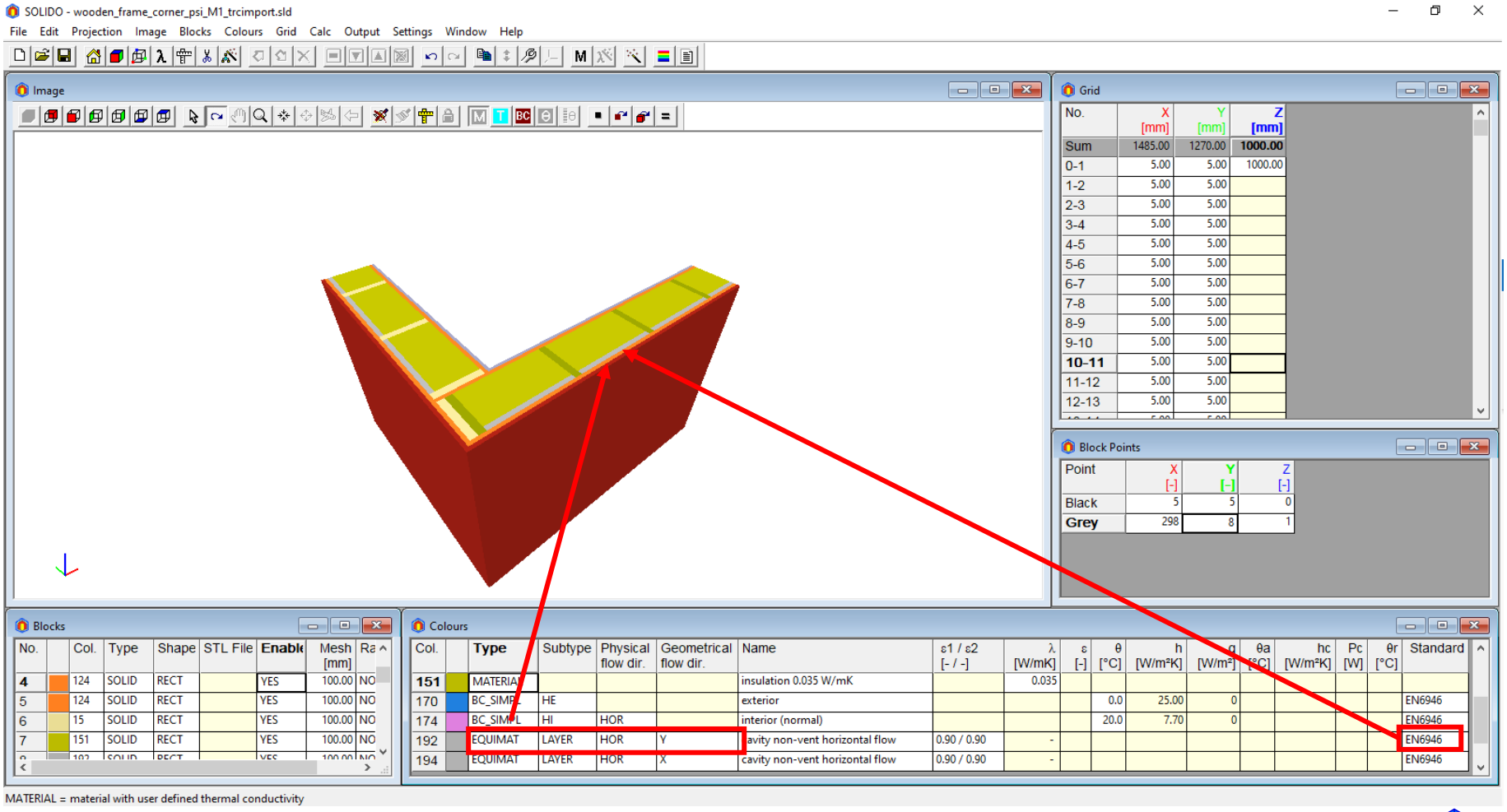
Col.		Type	Subtype	Physical flow dir.	Geometrical flow dir.	Name	ε1 / ε2 [- / -]	λ [W/mK]	ε [-]
0		MATERIAL						1.000	0.90
1		MATERIAL						1.000	0.90
2		MATERIAL				aluminium untreated surface		160.000	0.10
3		MATERIAL				PVC rigid		0.170	0.90
4		MATERIAL				copper		380.000	0.90
5		MATERIAL				fibreglass (UP-resin)		0.400	0.90
6		MATERIAL				aluminium slightly oxidized surface		160.000	0.30
7		MATERIAL						1.000	0.90
8		MATERIAL				aluminium		160.000	0.90
9		MATERIAL				lead		35.000	0.90
10		MATERIAL				stainless steel (ferritic/martensitic)		30.000	0.30
11		MATERIAL				stainless steel (austenitic/aust.ferritic)		17.000	0.30
12		MATERIAL				hardwood		0.180	0.90
13		MATERIAL				steel		50.000	0.90
14		MATERIAL				brass		120.000	0.90
15		MATERIAL				softwood 500 kg/m3		0.130	0.90

The default Colour Database delivered with the software is updated for EN ISO 10077-2, EN ISO 10456 and EN ISO 6946

D.1 EN ISO 6946 – cavities and layers

overview

Implementation of air layers according to EN ISO 6946
Example: wall junction with non-ventilated air layers in wall



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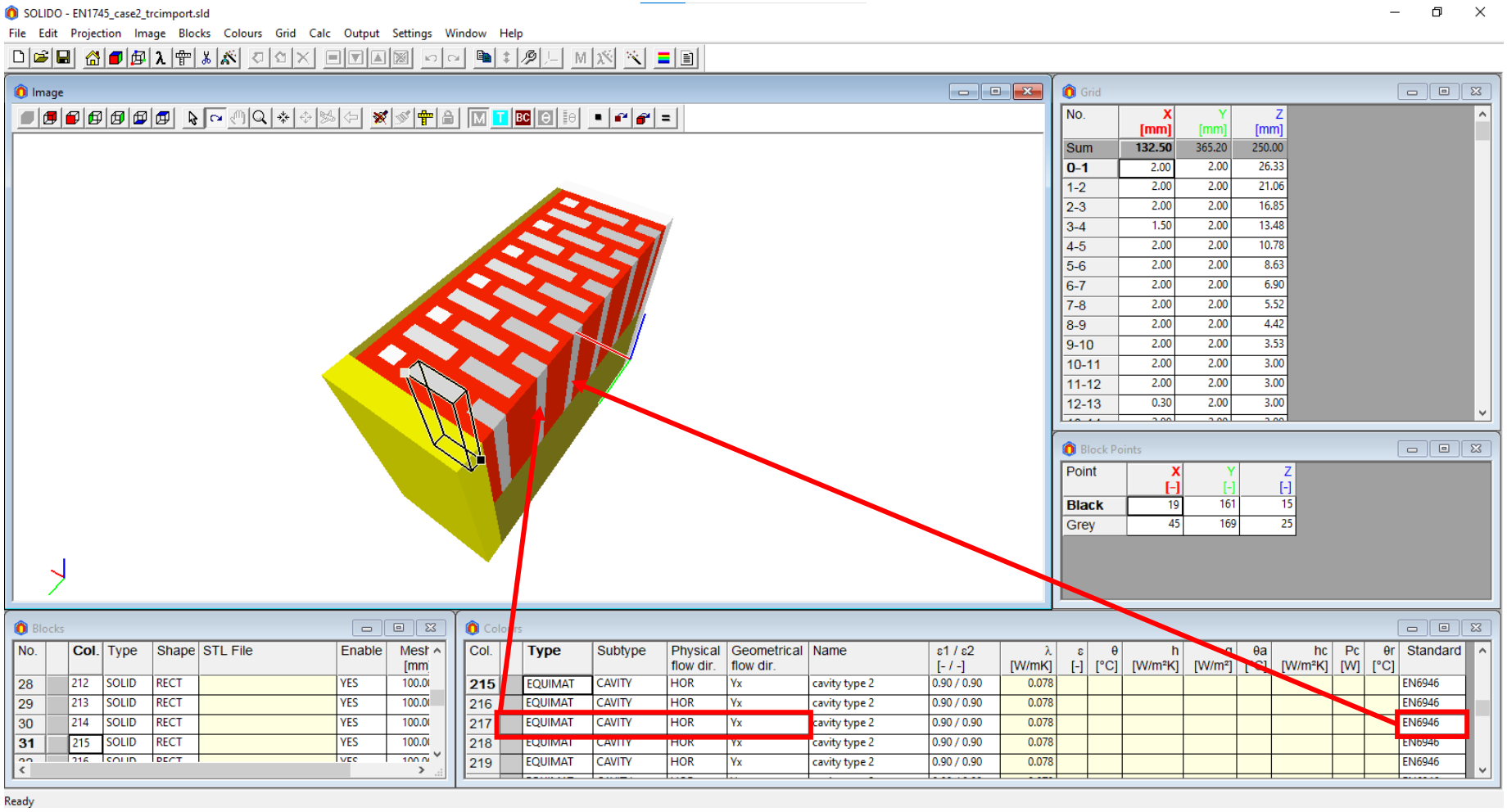
D.1 EN ISO 6946 – cavities and layers

overview

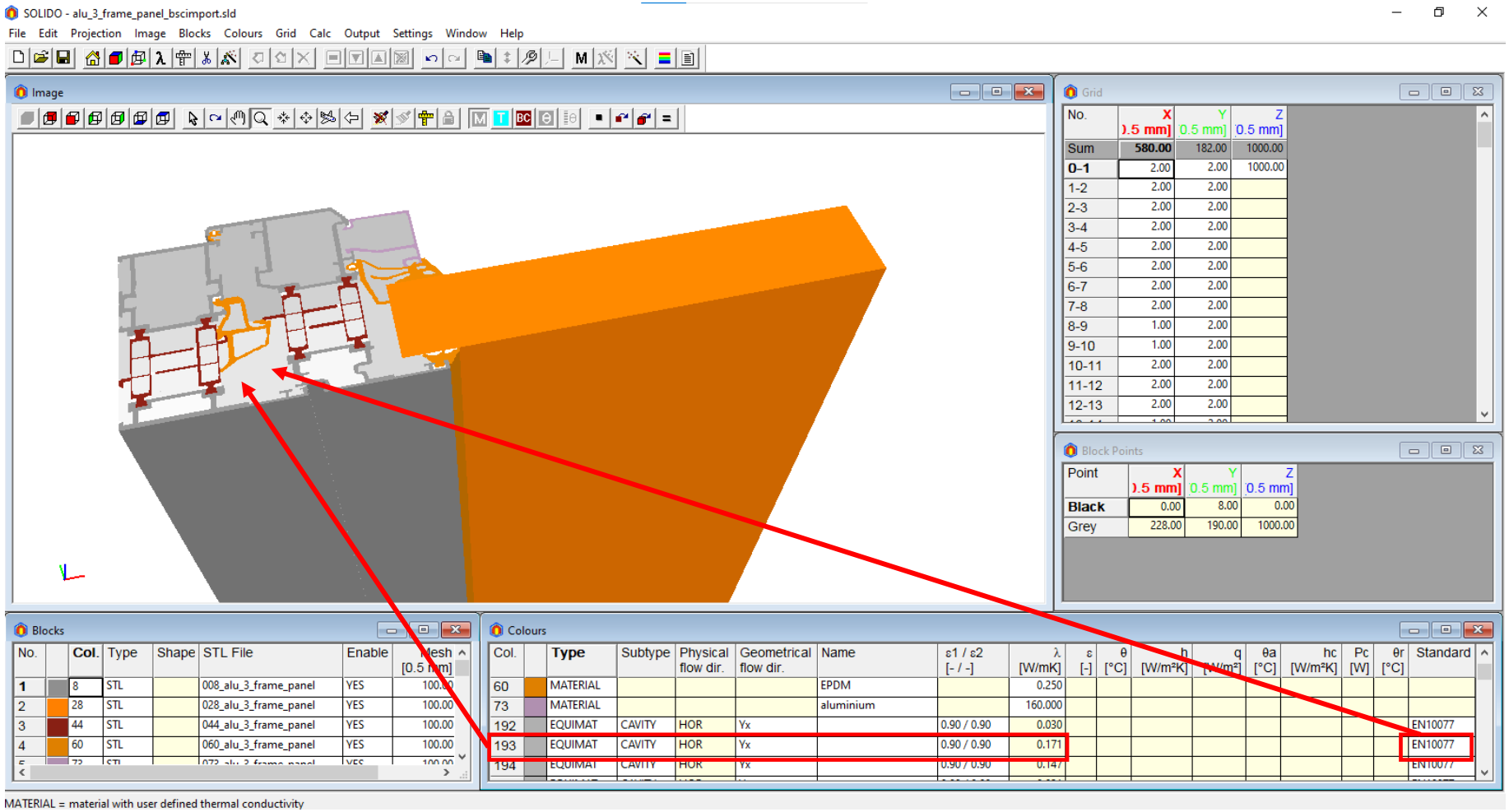
Implementation of cavities according to EN ISO 6946
Example: air cavities in masonry (EN ISO 1745)



D.2 Cavities according to EN ISO 10077-2

overview

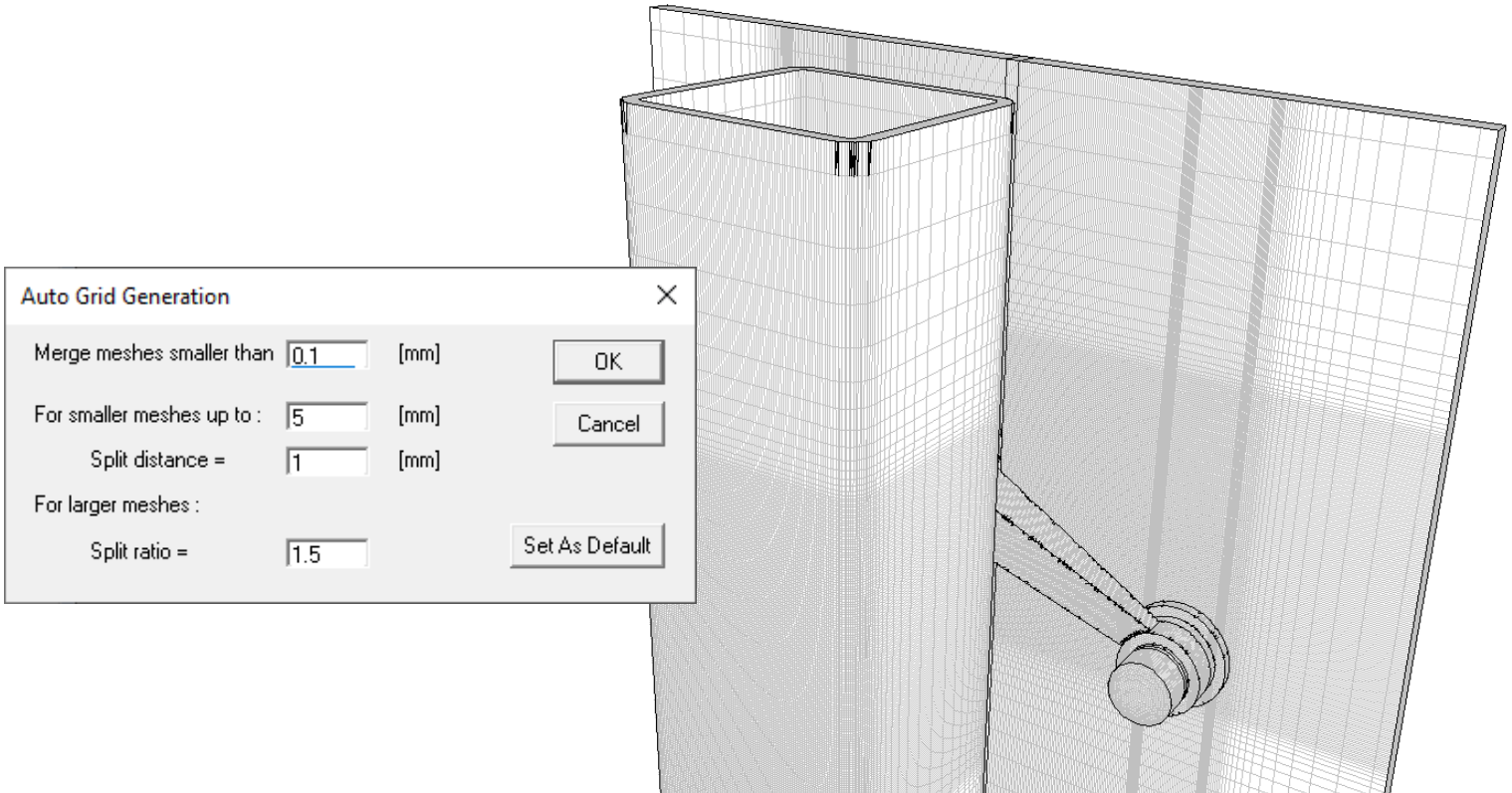
Implementation of cavities according to EN ISO 10077-2
Example: window frame in 3D



E.1 Improved algorithm: "AutoGrid Generation"

overview

- "AutoGrid Generation" generates suitable calculation grid
- The algorithm is improved, speeding up the automatic grid generation process

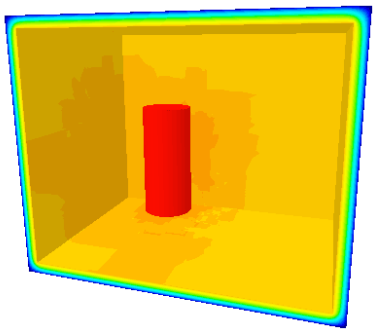


E.2 Improved algorithm for view factor calculations

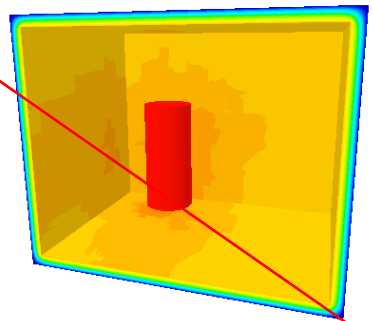
overview

Improvements in the RADCON-module (radiosity method for IR-radiation)

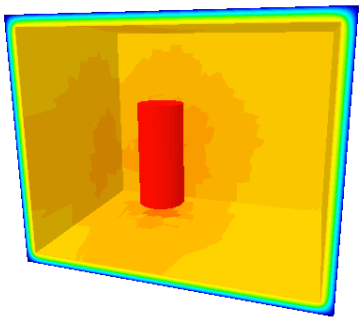
- Increased calculation speed due to improved neighbouring nodes algorithm for view factor zones (RADCON)
- Increased calculation speed due to improved algorithm when clustering viewfaces in viewfactor zone (RADCON)



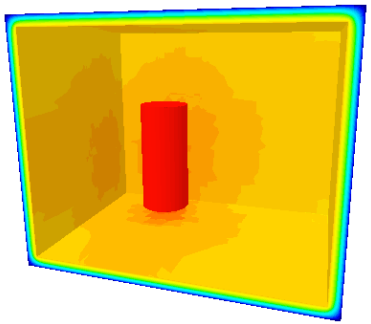
50 faces → 1125 VF



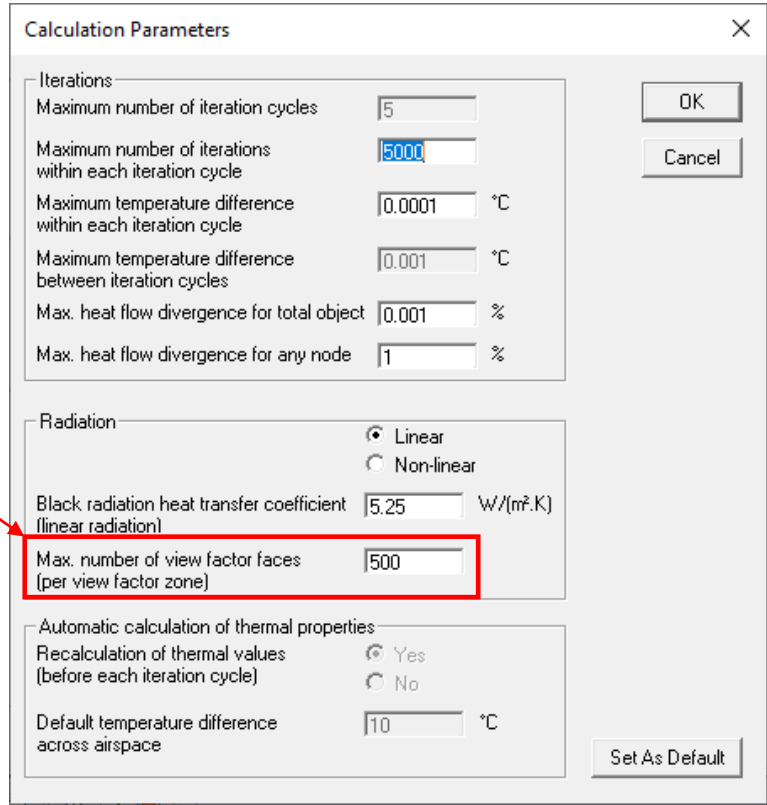
250 faces → 31 125 VF



500 faces → 124 875 VF



750 faces → 280 875 VF

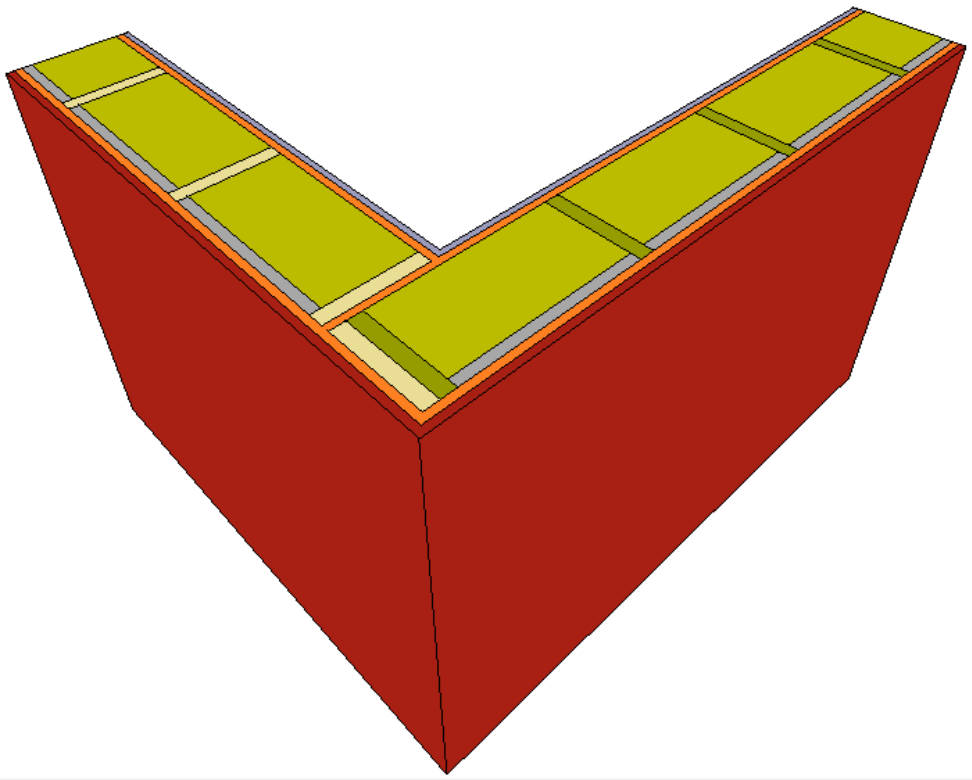


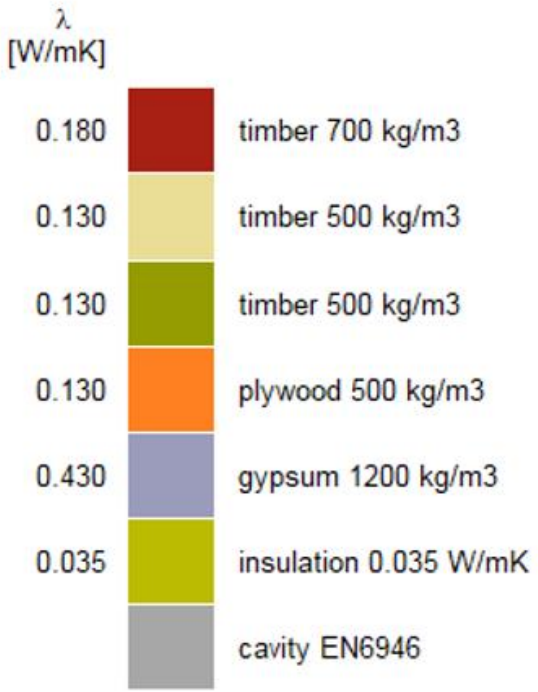
F.1 Graphic output – Legend

overview

Fill materials

→ revised legend: material name + clustered cavities (with relevant standard)





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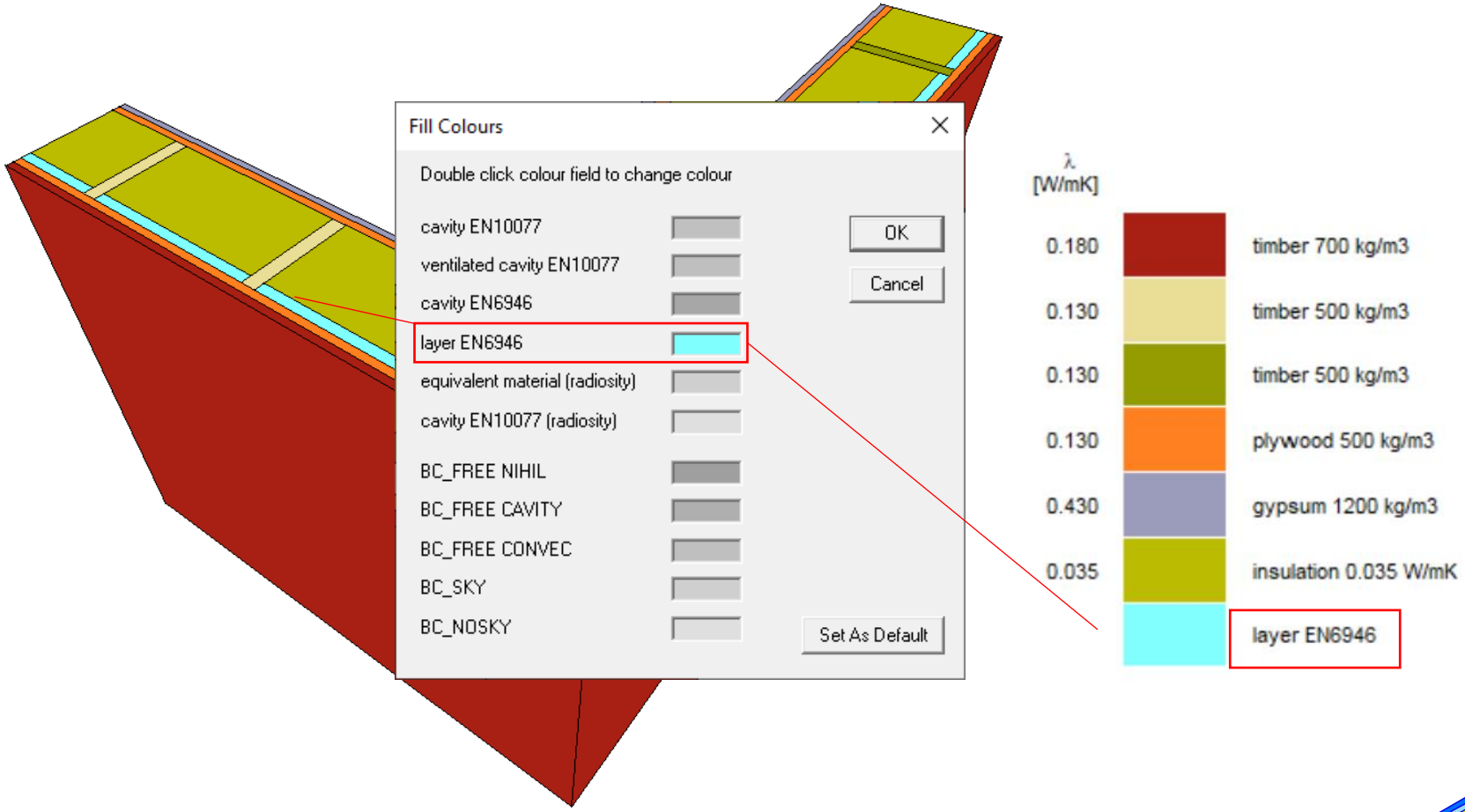
SOLIDO v5

F.1 Graphic output – Legend

overview

Fill materials

→ revised legend: material name + clustered cavities (with relevant standard)



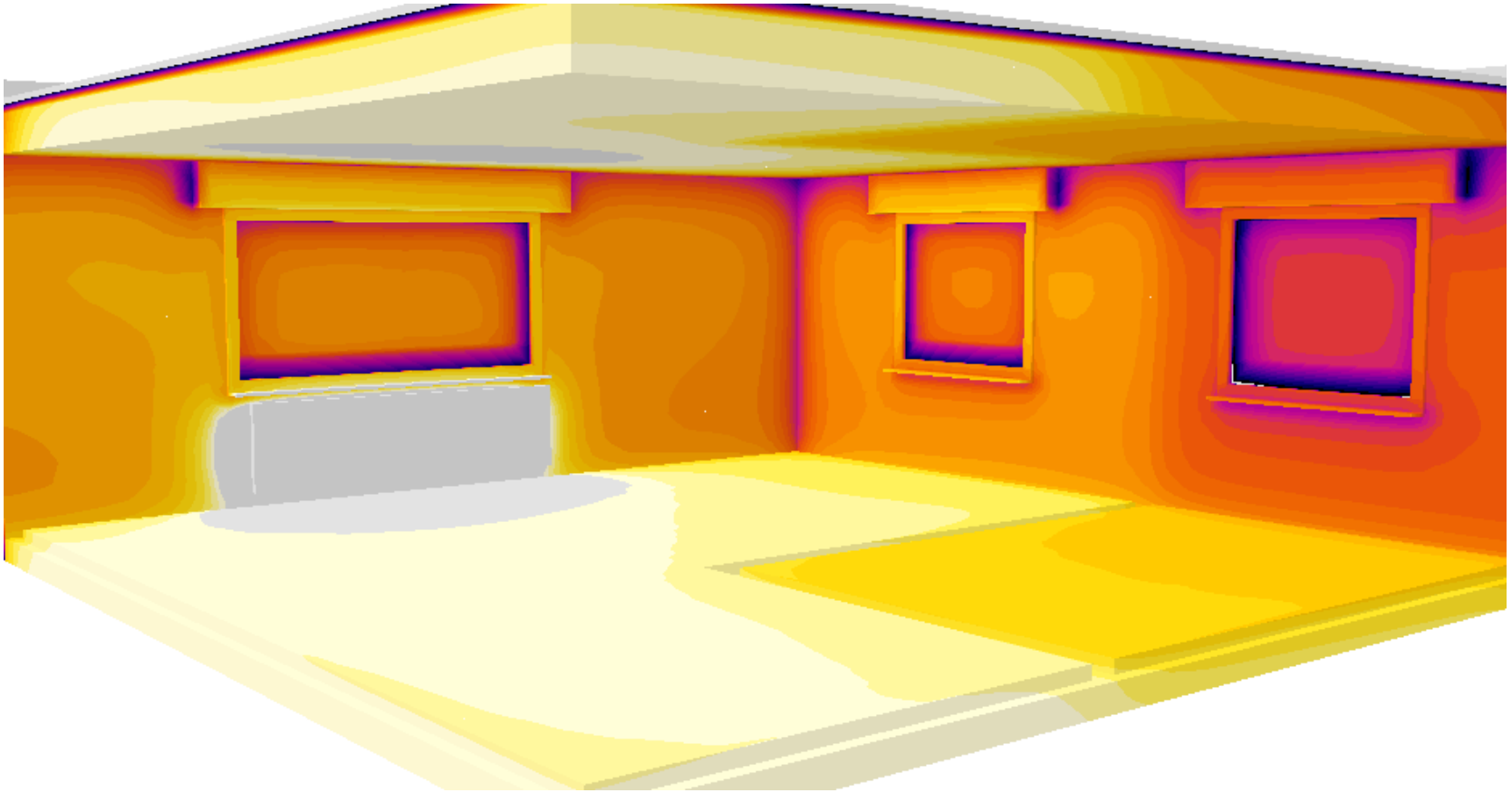
physibel

SOLIDO v5

F.2 New thermal Palette – comparison with IR-images

overview

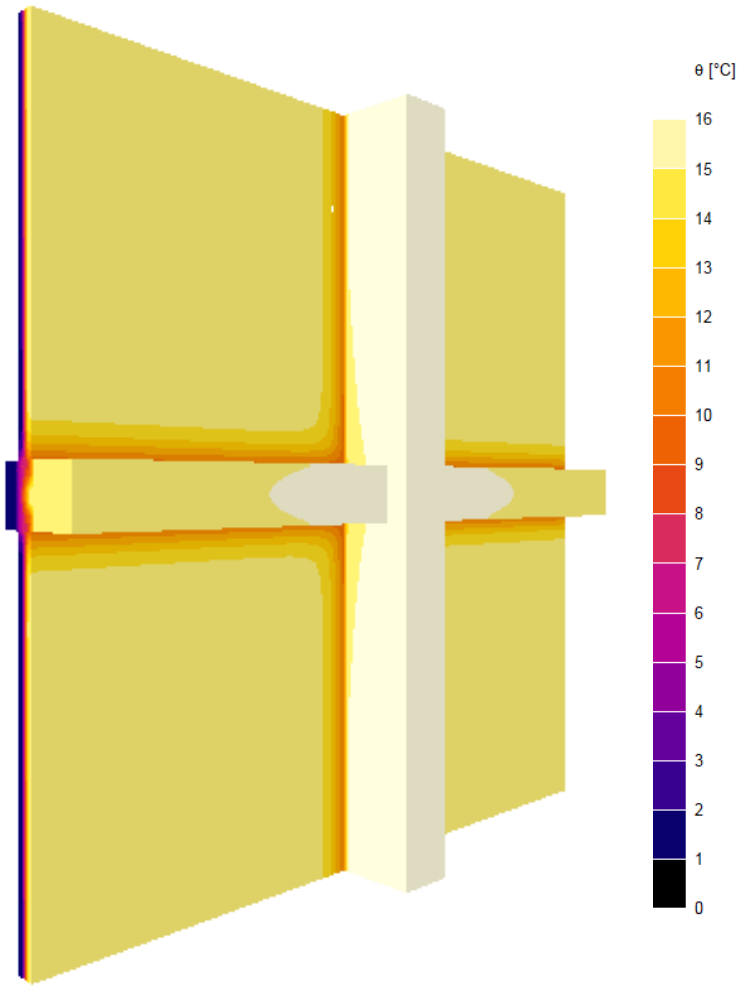
New thermal palette allows to compare simulation with IR-image

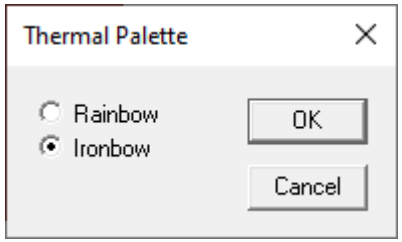


F.2 New thermal Palette – comparison with IR-images

overview

Settings → Thermal Palette...





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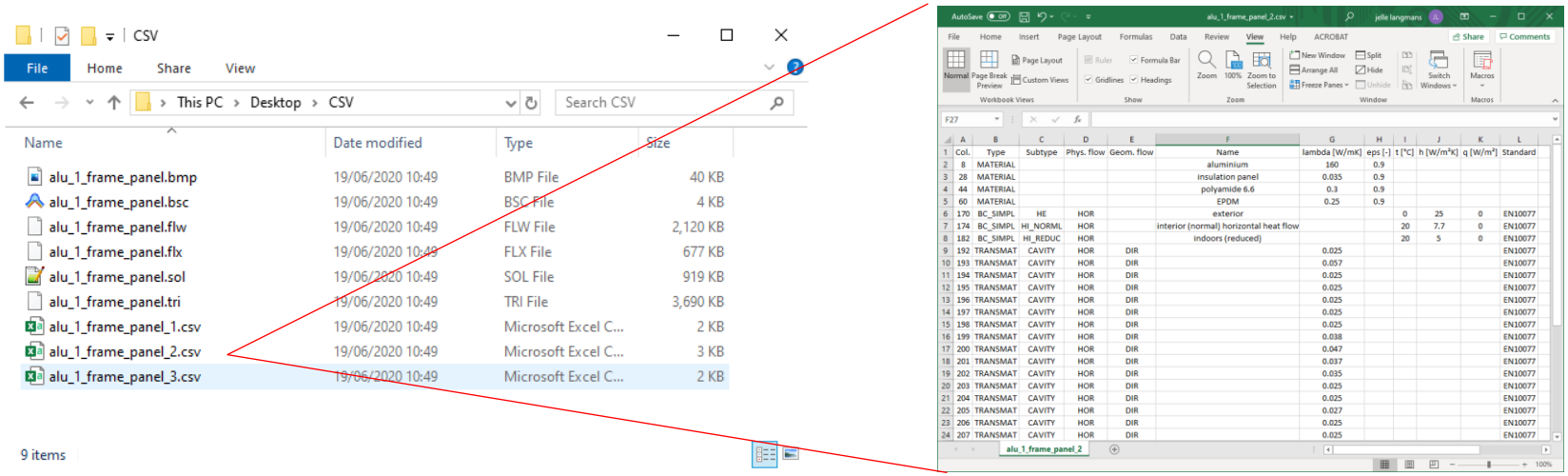
SOLIDO v5

F.3 Export text output in .csv format

overview

feature to save text output in .csv format (e.g. process data in MS Excel)

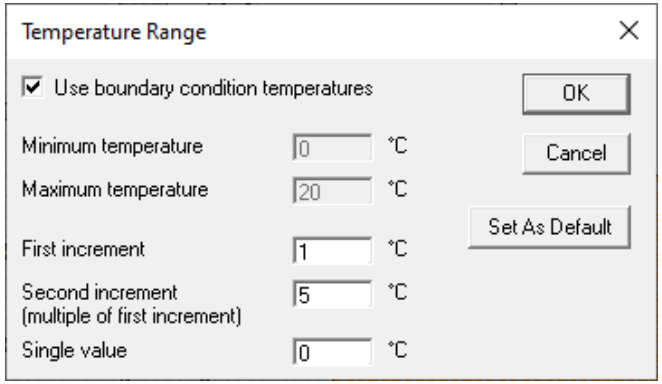


F.4 Graphic output – Miscellaneous

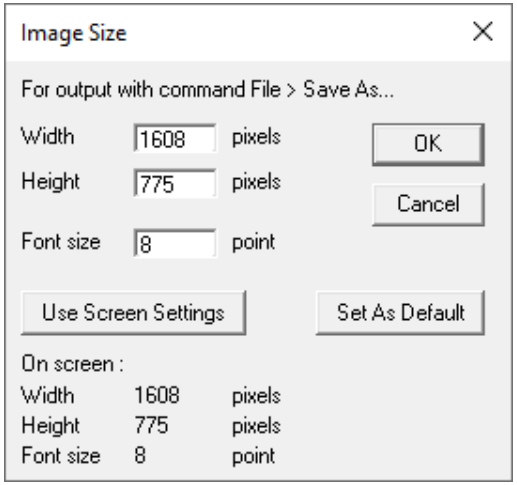
overview

1. Automatic selection of temperature range
2. Image Size: possible to use Screen Settings for image output
3. Areas and U-values available in Graphic output (derived thermal properties)

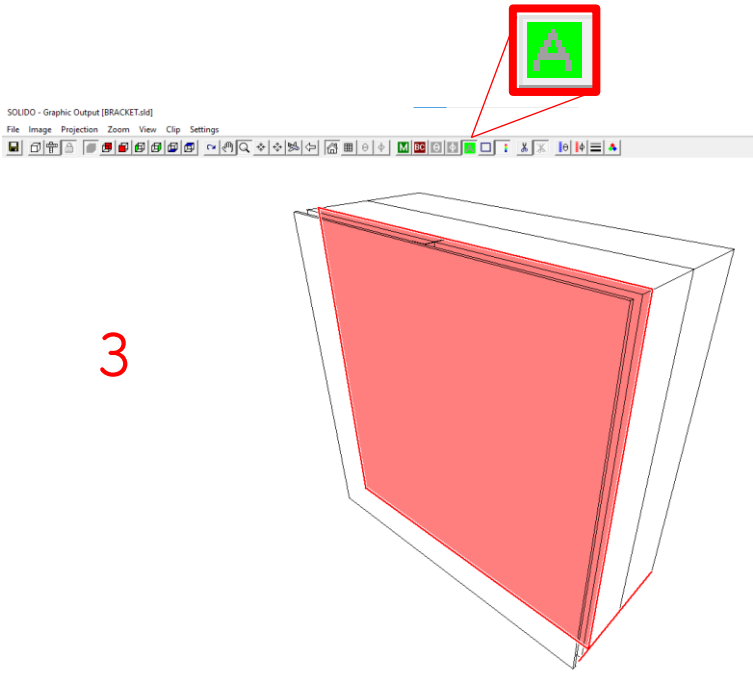
1



2



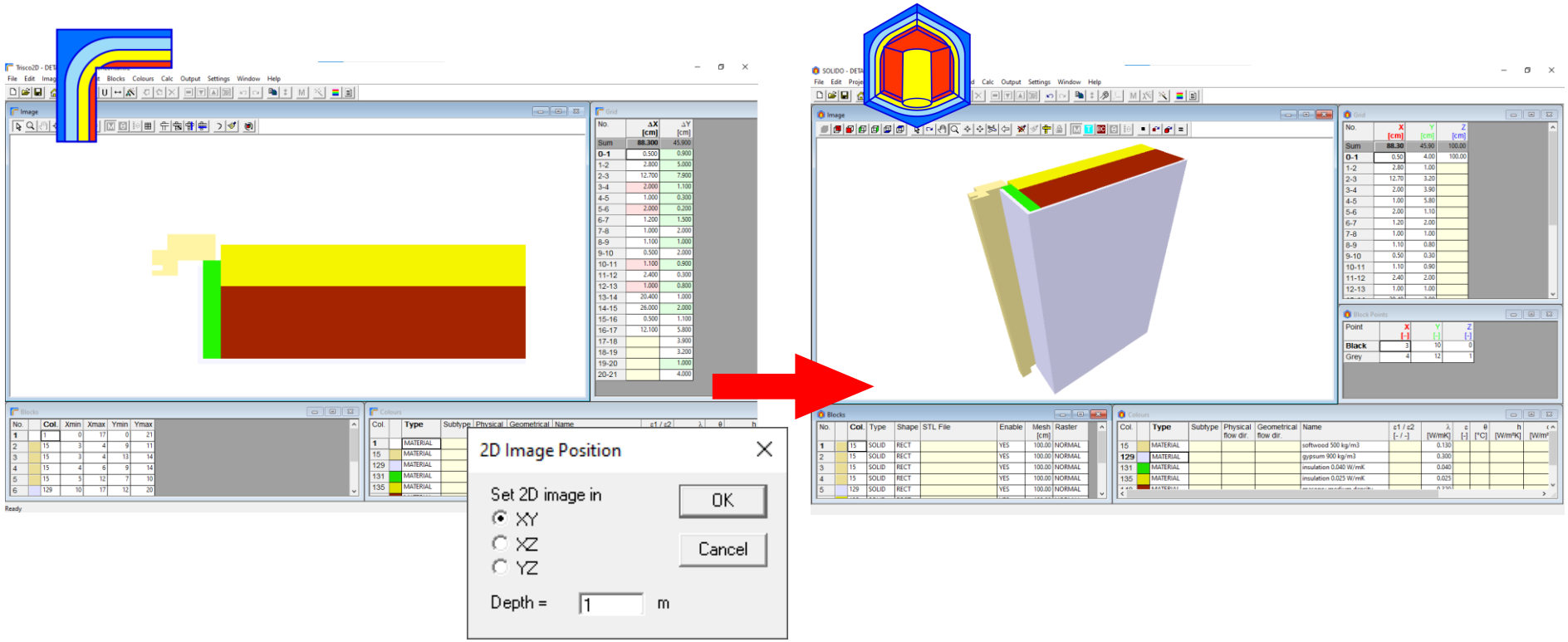
3



G.1 Interaction between TRISCO/Trisco2D and SOLIDO

overview

- Trisco2D project files can be imported in SOLIDO



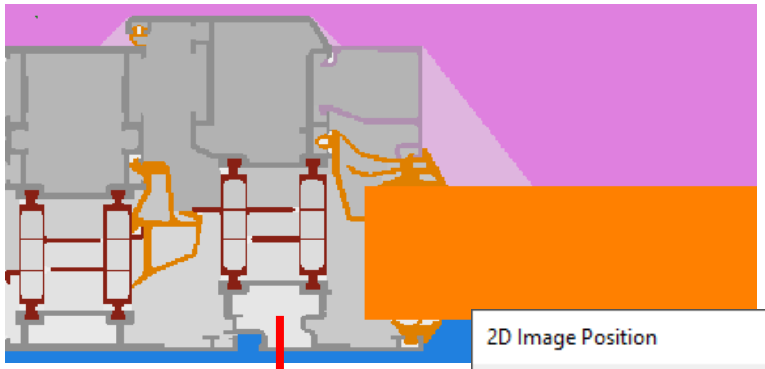
- Areas and U-values from TRISCO files read in SOLIDO

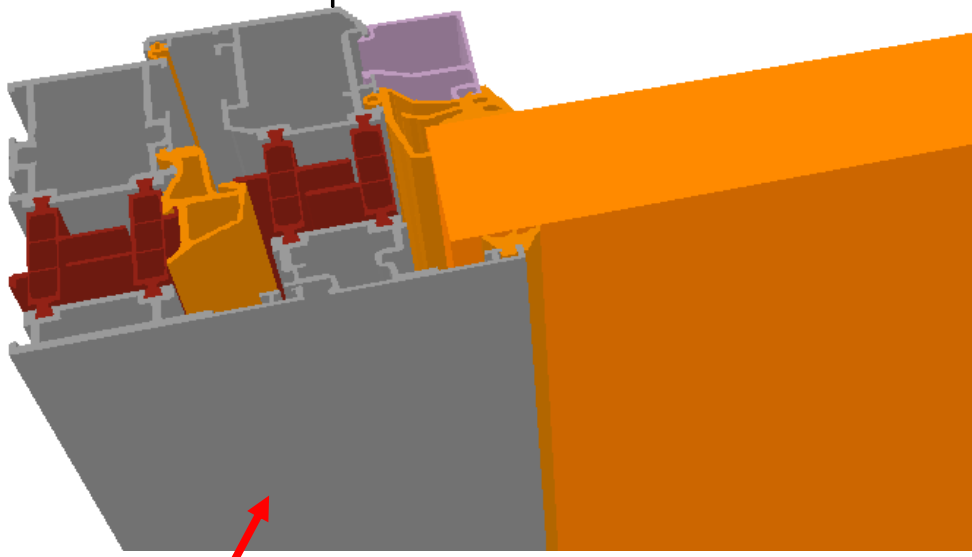
G.2 Interaction between BISCO and SOLIDO

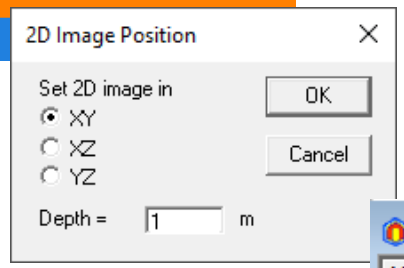
overview

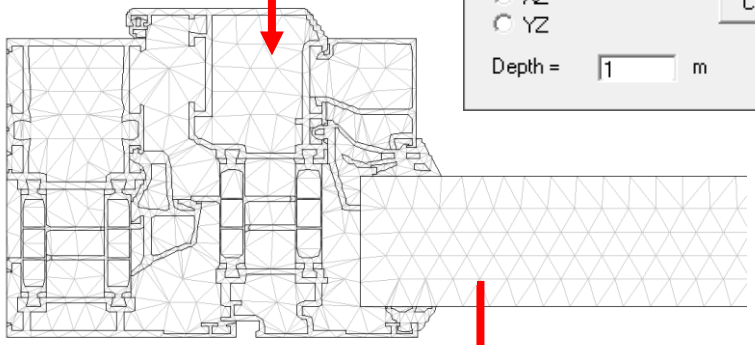
3D extrusion of BISCO files in SOLIDO:

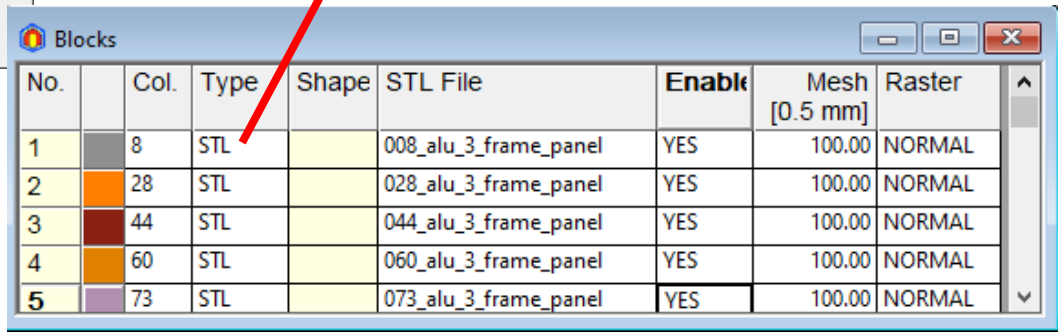
- Implementation of air cavities according to EN ISO 10077-2 (see D.2)
- Fixed equivalent thermal conductivities (clustered cavities)
- Selection of 2D image position and extrusion depth











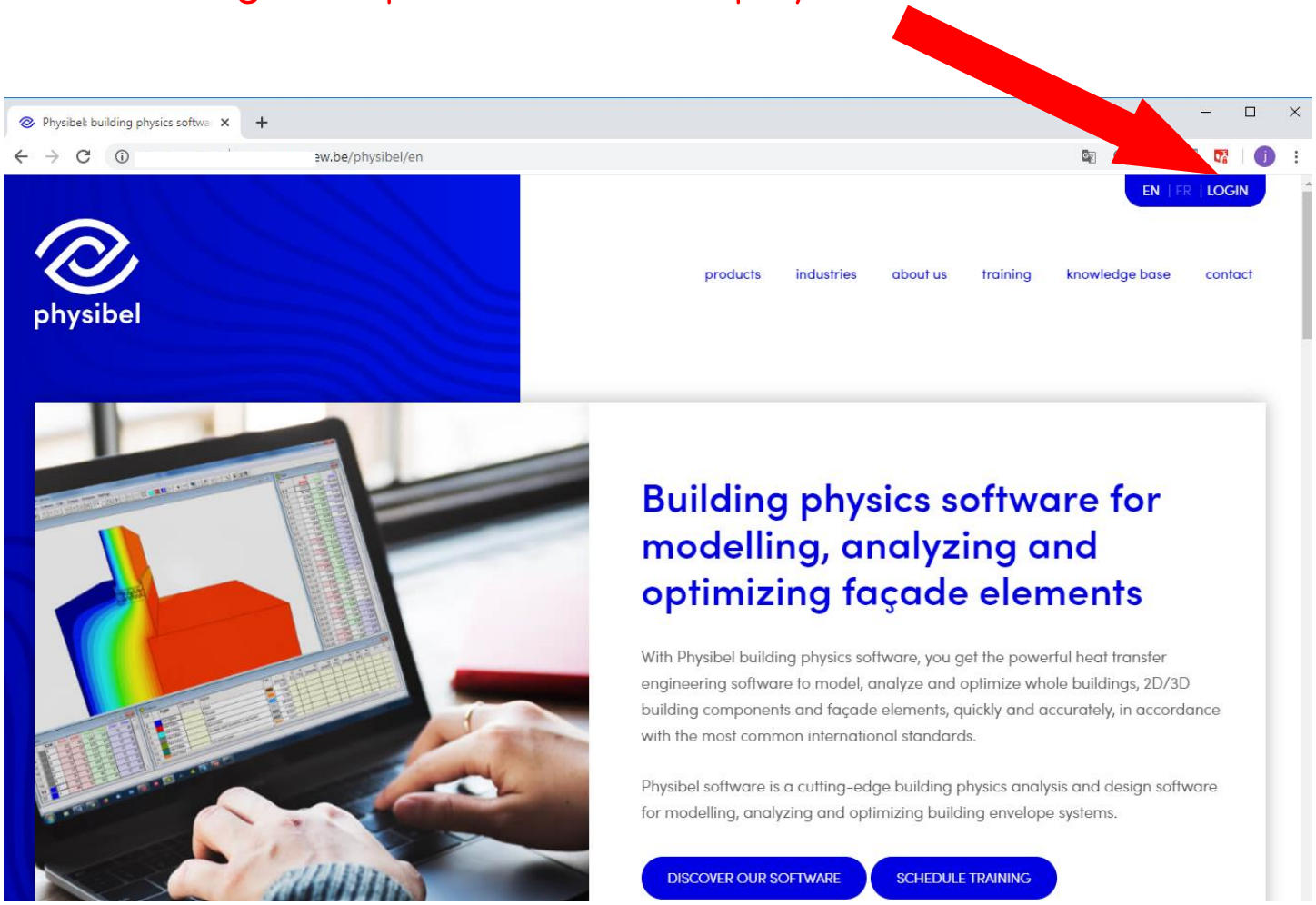
No.		Col.	Type	Shape	STL File	Enable	Mesh [0.5 mm]	Raster
1		8	STL		008_alu_3_frame_panel	YES	100.00	NORMAL
2		28	STL		028_alu_3_frame_panel	YES	100.00	NORMAL
3		44	STL		044_alu_3_frame_panel	YES	100.00	NORMAL
4		60	STL		060_alu_3_frame_panel	YES	100.00	NORMAL
5		73	STL		073_alu_3_frame_panel	YES	100.00	NORMAL

STL-file generated per colour using the triangulation mesh of BISCO

H Online Physibel Portal

overview

log in to portal via www.physibel.be



H Online Physibel Portal

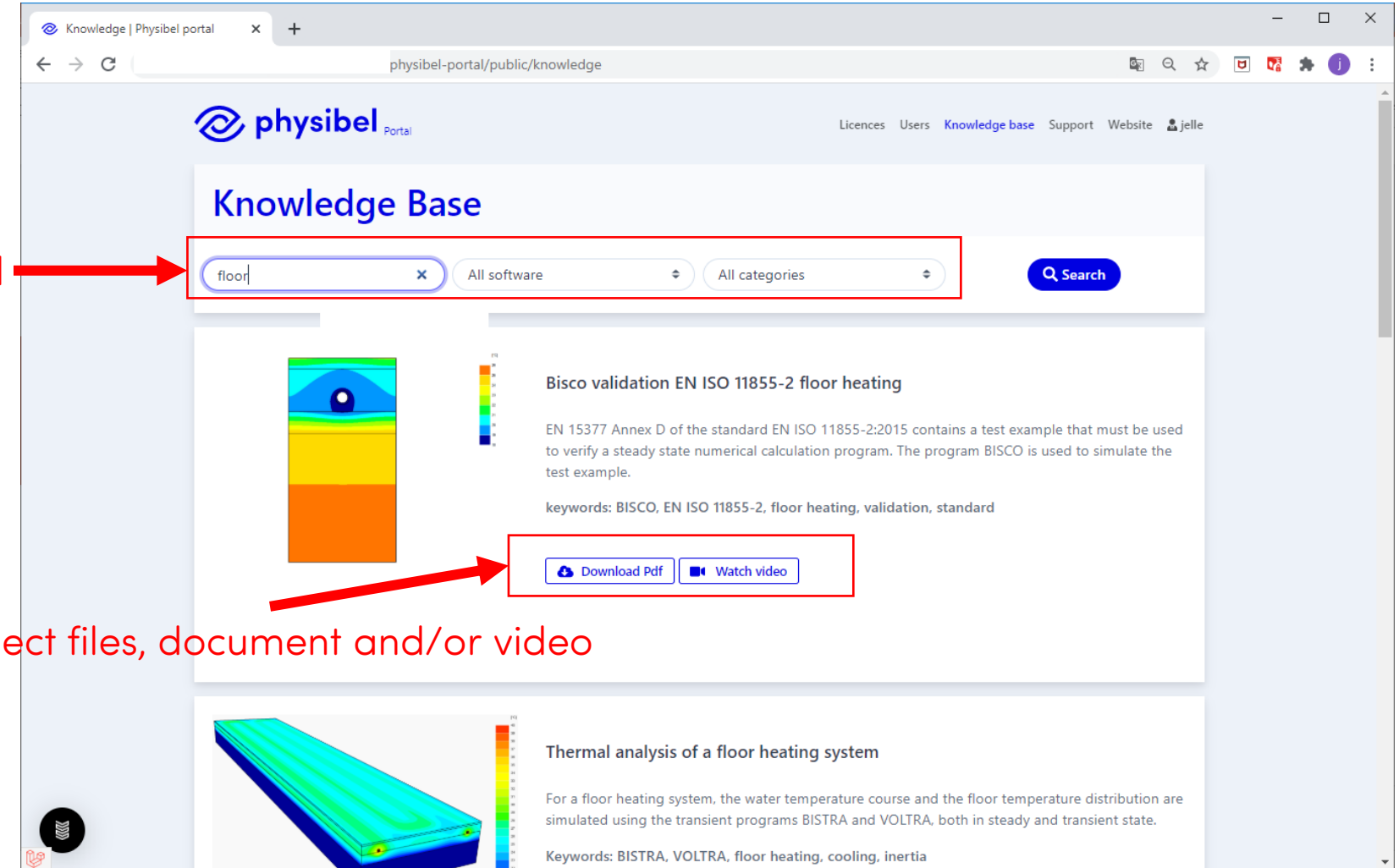
overview

Access to

- Knowledge Base with example projects, tutorials and videos

Search tool

Access project files, document and/or video

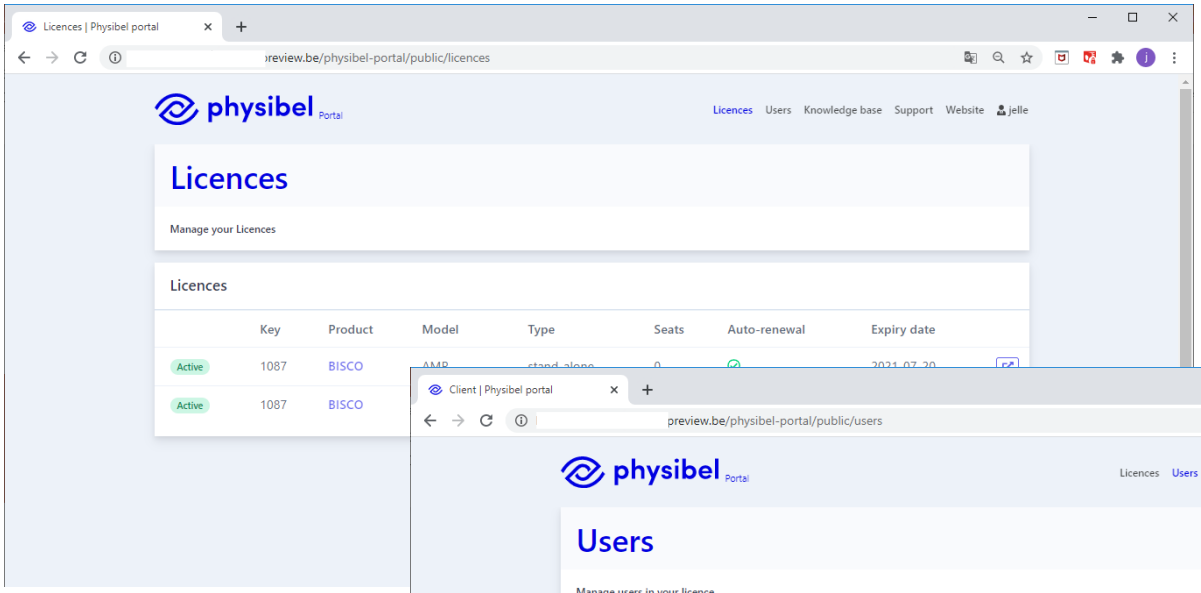


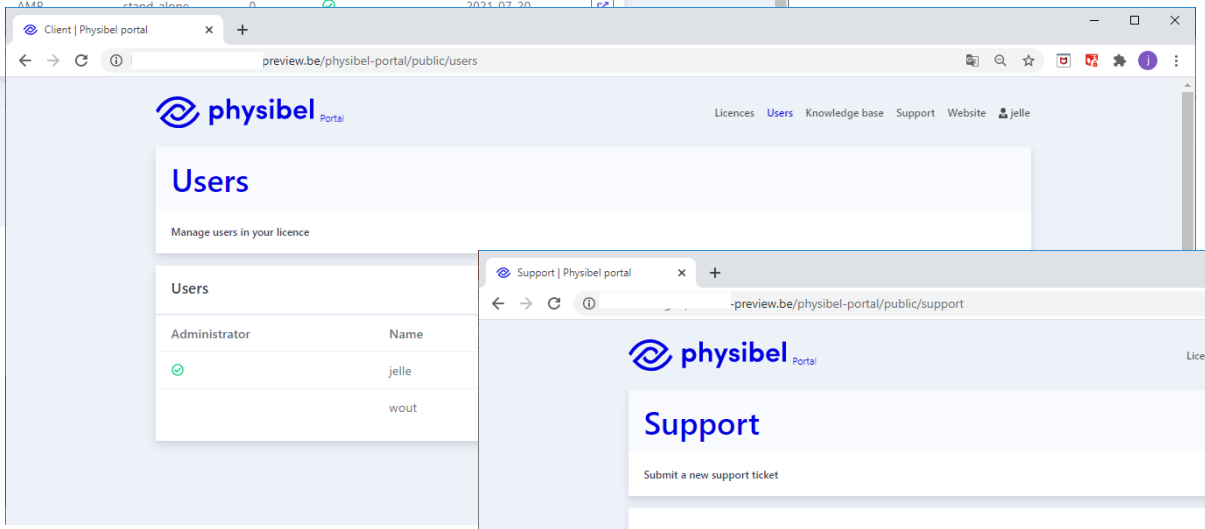
H Online Physibel Portal

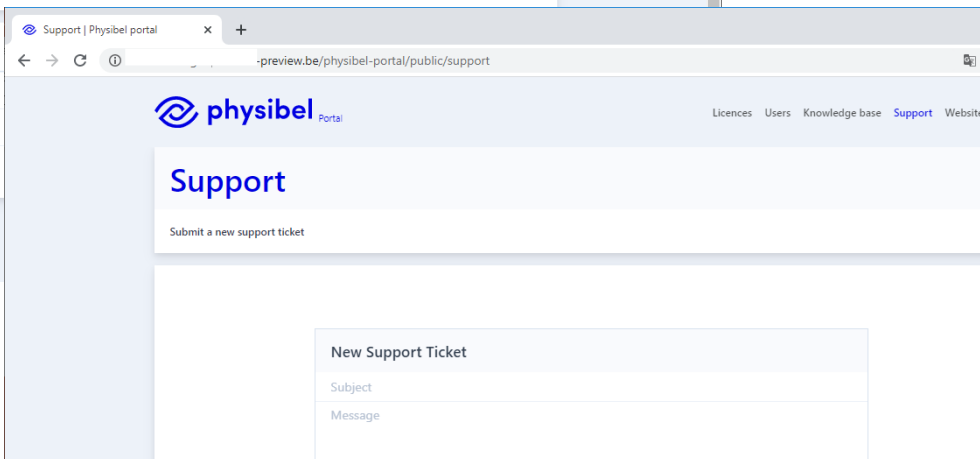
overview

Access to

- Licence and user management
- Support







I Licencing options

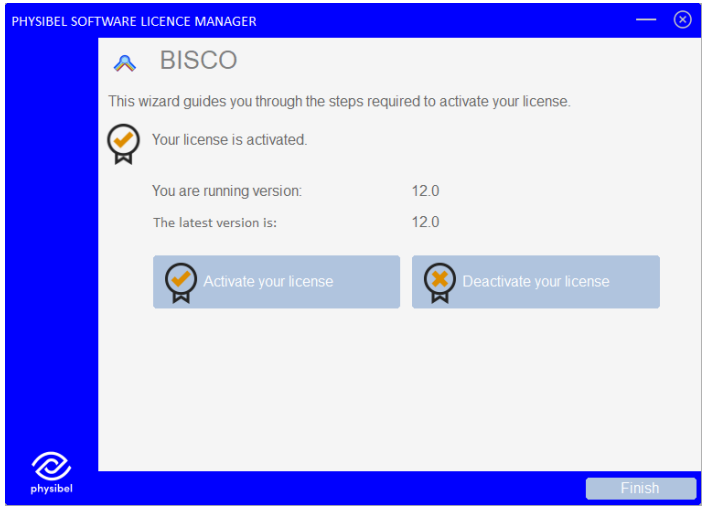
overview

Option 1: hardware key

- Stand-alone
- Model: perpetual
- Updates and support via Annual Maintenance Plan (AMP)

Option 2: Software licence

- Stand-alone / network floating / cloud-based floating
- Model: subscription (1 or 3-yearly)
- Updates and support included in subscription



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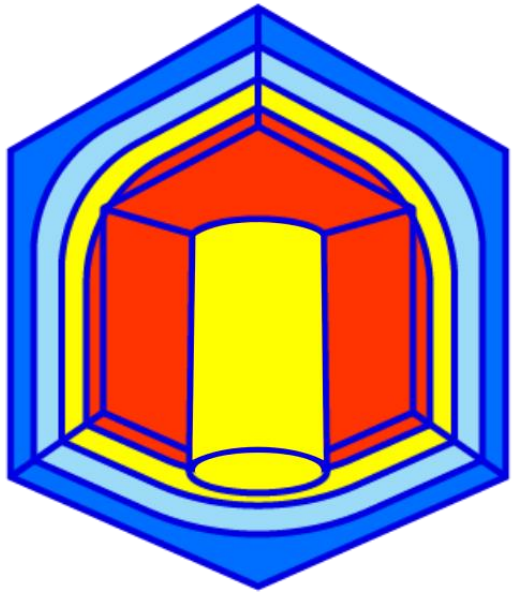
SOLIDO v5 New program performances



www.physibel.be/en/products/solido

downloadable program demo version