

# Space Boundary Tool SBT

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# What Is SBT?



Space Boundary  
icon

- ***A precision tool that semi-automatically transforms CAD building geometry defined in IFC2x3 format into format readable by EnergyPlus or other BEP simulation engines that are compliant with IFC-based BIM***
- ***Automatically corrects errors in CAD when objects (walls, slabs) do not connect with other objects they are supposed to***
- ***Uses geometry library under license from Geometry Factory in France***
- ***Free executable SBT version 1.5.7***

## **SBT versions not released**

- **Curved surfaces and volumes (requires special EnergyPlus 7.2c version, never released)**
- **Adjustable variable gaps: Defining size of intentional gaps between non-connecting objects**

# Space Boundary Tool (SBT)

IFC File: C:\Users\vlado\Documents\SVN\T16\_TheLatestGeometryModels\BLIS\_3StoreyBuilding\VE\_E\_DEMO\architect\AC13\BLIS\_AC13\_IFC2x3\_zones\_no\_shading\_LowEDoubleGlass.ifc Browse...

Space Boundaries Constructions & Materials Generate IDF Output Errors & Warnings

Existing Space Boundaries  
Use of existing space boundaries is not yet supported.

Calculate Space Boundaries

☒ Write IFC file with new space boundaries to: C:\Users\vlado\Documents\SVN\T16\_TheLatestGeometryModels\BLIS\_3StoreyBuilding\VE\_E\_DEMO\architect\AC13\BLIS\_AC13\_IFC2x3\_zones\_no\_shading\_LowEDoubleGlass-SB-2015.ifc Browse...

Calculate Space Boundaries

# SBT: Material Properties Mapping

IFC File: C:\Users\vlado\Documents\SVN\T16\_TheLatestGeometryModels\BLIS\_3StoreyBuilding\VE\_E\_DEMO\architect\AC13\BLIS\_AC13\_IFC2x3\_zones\_no\_shading\_LowEDoubleGlass.ifc Browse...

Space Boundaries **Constructions & Materials** Generate IDF Output Errors & Warnings

Library Constructions & Materials

IDF Materials Library: C:\Users\vlado\Documents\SVN\General\Materials\_Revit\_ArchiCAD\_GST\ASHRAE\_2005\_HOF\_ArchiCAD\_Revit\_Materials.idf Browse... Load

Name	Type
Phase - Temporary	Normal
Plant	Normal
Plywood (Douglas Fir) - 12.7mm	Normal
Plywood (Douglas Fir) - 15.9mm	Normal
Plywood (Douglas Fir) - 6.4mm	Normal
Plywood (Douglas Fir) - 9.5mm	Normal
Plywood or wood panels - 19.0mm	Normal
Poche	Normal
Precast Concrete Panels	Normal
Quartzitic and sandstone - 1920 kg/m3 - 13mm	Normal
Quartzitic and sandstone - 2240 kg/m3 - 13mm	Normal
Quartzitic and sandstone - 2560 kg/m3 - 13mm	Normal
Quartzitic and sandstone - 2880 kg/m3 - 13mm	Normal
Roofing - EPDM Membrane	Normal

Building Materials Map Load

Name	For Windows	IDF Mapping Target
(Generic Door)	False	Plywood or wood panels - 19.0mm
03   Concrete Lightweight	False	03   Concrete Lightweight
03   Concrete Structural	False	03   Concrete Structural
07   Insulation Rigid	False	07   Insulation Rigid
31   Gravel Fill	False	31   Gravel Fill
Air Space	False	Air Space
09   Gypsum Board	False	09   Gypsum Board
2x Steel Framing	False	2x Steel Framing
09   Stucco	False	09   Stucco
04   Block Concrete	False	04   Block Concrete
07   Insulation Foamboard	False	07   Insulation Foamboard
06   Ext. Sheathing+Bldg Paper	False	06   Ext. Sheathing+Bldg Paper
(Generic Window)	True	

# SBT: IDF and BEPS Run Controls

IFC File:

Simulation control parameters

Building location:

Time zone:

Solar distribution:

Building terrain:

Loads convergence tolerance:

Temperature convergence tolerance:

Start day:  /

End day:  /

Number of timesteps per hour:

Output IDF:

# IFC Classification of SB Levels

SPACE BOUNDARY LEVEL \ IFC TYPE	INTERIOR	EXTERIOR	VIRTUAL
First (1 <sup>st</sup> ) level	1	1	1
Second (2 <sup>nd</sup> ) level	2a	2a	2a
Third (3 <sup>rd</sup> ) level	2b	N/A	2b
Fourth (4 <sup>th</sup> ) level	incorporated in 2b	N/A	incorporated in 2b
Fifth (5 <sup>th</sup> ) level	incorporated in 2b	N/A	incorporated in 2b

**Thank you!**