BILT Academy

hogeschool **Windesheim** *Dichter bij jou*

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Introduction BIM

Short explanation BIM

Building Information Model
Virtual buildingmodel, whereby data (information) is connected to objects

Objects are:
- Walls
- Windows
- Doors
- Floors
- Roof
- etc

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Short explanation BIM

Building information modelling; profits

- 3D design
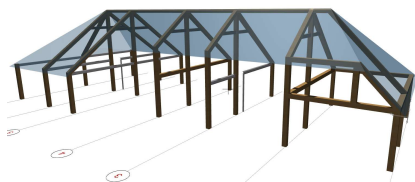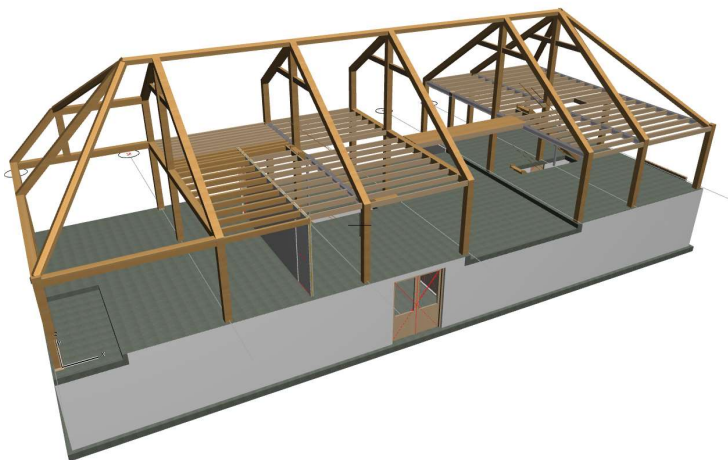 (the 'information' is only geometry)

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Short explanation BIM

Building information modelling; profits

- 3D design
- Advantage in engineering

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Short explanation BIM

Building information modelling; profits

- 3D design
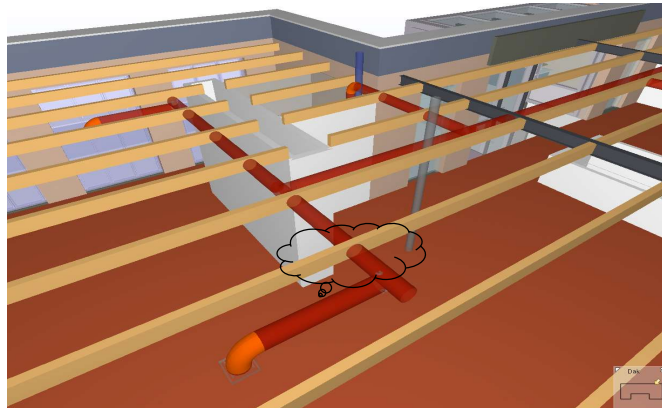- Advantage in engineering
- clashing

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Short explanation BIM

Building information modelling; profits

- 3D design
- Advantage in engineering
- Clashing
- Communication

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Short explanation BIM

Building information modelling; profits

- 3D design
- Advantage in engineering
- Clashing
- Communication
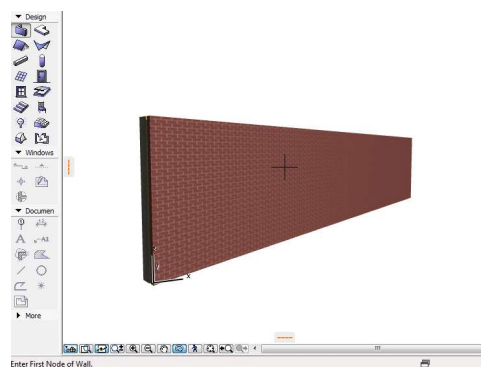- Re-use information

Less imperfections
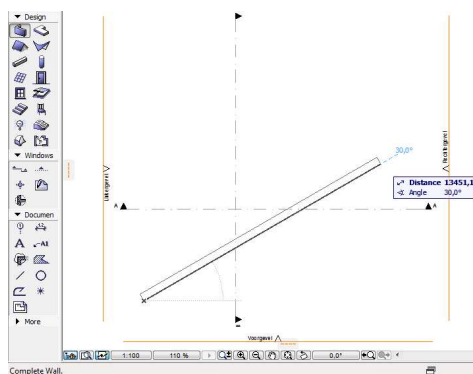= less unnecessary costs

Better insight = higher quality

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How will it be done

Lines are changed in objects: modelling to place objects

Objects do have length, width, height: *geometric information*

More data can be added to objects: **material, weight, color**, etc.: *Material information*
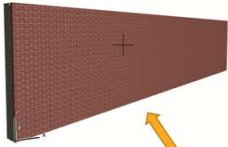
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Building Information Modelling

Building Information Model

Virtual buildingmodel, whereby data (information) is connected to objects

a BIMmodel is actually a visual database

Find back by using a

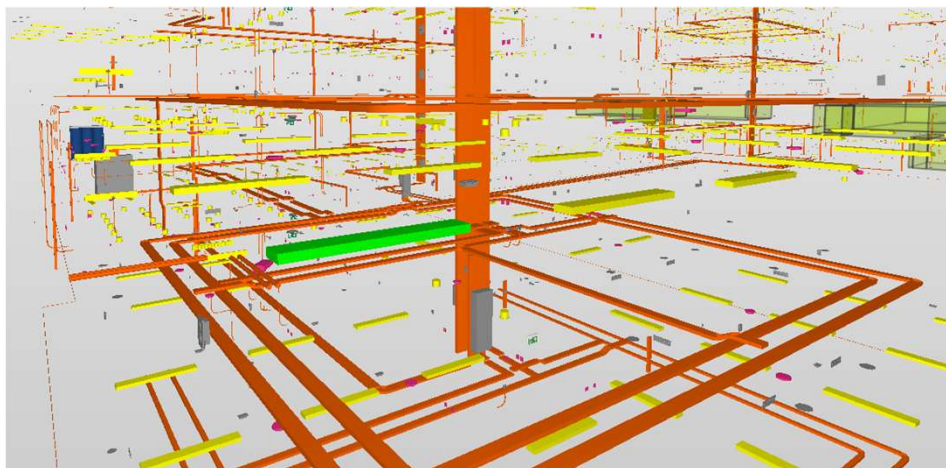| Object	Objectname	Material	Color	Manufacturer	Unique number
	Front Wall	Brickwork	‖ Red	Wienerberger type 023345	VG.A.00.N.01

Geometry: length, width, height

So make agreements!

There is no prescription
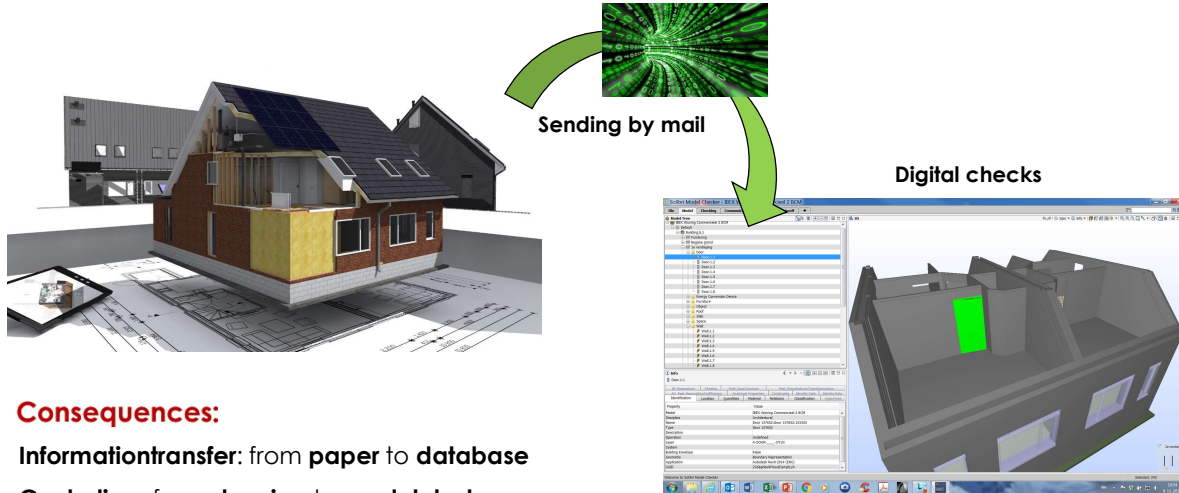
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How will it be done

So **every object** has to be found by an **unique** number

Required: also **no more available objects** have to be found (no same numbers!!

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How will it be done

Sending by mail

Digital checks

Consequences:

Informationtransfer: from **paper** to **database**

Controling: from **drawing** to **modelclash**

To Built: from **drawing** to **digital aid** (like machines & robots)

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Transferring data is the GOAL

Party 1 — Party 2
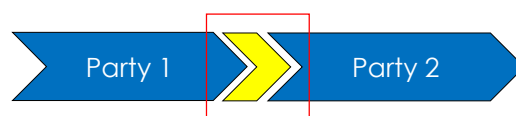
Transfer = **moment of checking**

Both, sender and receiver, has to check!
Sender: is model and information correct?
Receiver: did I get where I asked for?

Checking means:
- Check reliability;
- Correct communication of imperfections.

Information transfer means:
- Generating the desired data;
- Export to further on use.

Do not forget this step!
You can be supported by software

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Basic Rules

BIMmodelling is making a **database**: so use the **rules** for making a database.

Put **only** into the database what you really need / **is asked for**.

Use **standards**.

Think about who puts the information into the database, when it have to be done en where you can find it → make appointments at the start of a project
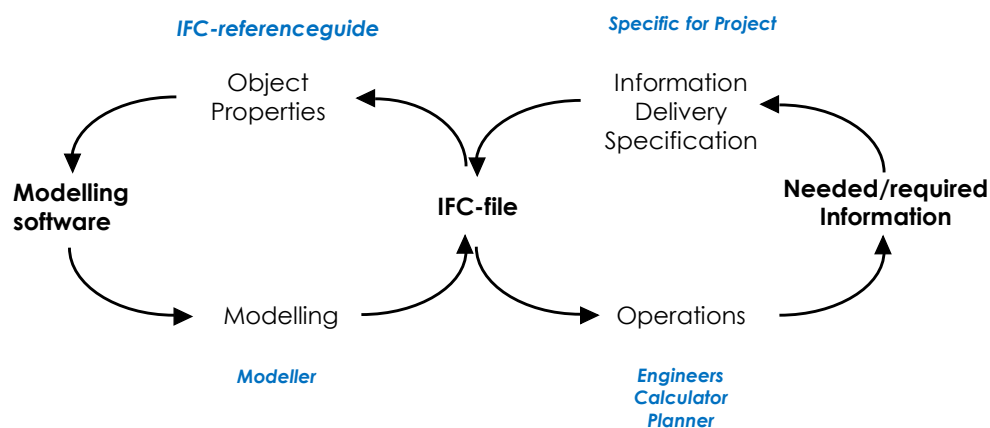(for dutch people: BIM Uitvoeringsplan)

BIMmodelling is about managing data.
So **Building Information Management** is a better name!

Basic Rules

IFC = Industrial Foundation Classes, owned by buildingSMART Benelux subchapter Nederland
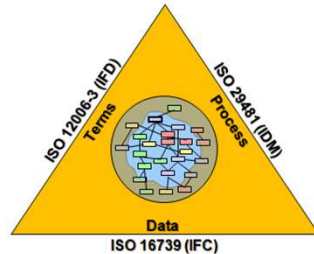
Basic Rules

buildingSMART.
International home of openBIM

Site Map   Accessibility   Contact

Model Support Group
Implementation Support Group

Home | About Us | Specifications | Certification | Implementation | Infrastructure | Future | Downloads | Blogs

Log in   Register

You are here: Home

ISO 12006-3 (IFD) — Terms
ISO 29481 (IDM) — Process
Data
ISO 16739 (IFC)

About Us

This site is the only official website maintained by buildingSMART to publish IFC and related buildingSMART data model standards.

The buildingSMART data model standards are developed by the Model Support Group [MSG], the implementation activities are coordinated by the Implementation Support Group [ISG]. Together both groups organize the IFC software certification process [Certification].

buildingSMART-tech.org is the home of the Industry Foundation Classes [IFC].

Discuss with us on in

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Registration

This site contains content which is only available to registered users. To get access to the content, you must be a registered user. Please log in or register if not already a member.

buildingSMART Standards

buildingSMART defines a family of corresponding standards that interact :

Data Model Standards [IFC], and related specifications [MVD] are officially published at this website. related standards, such as [BCF] and affiliated standards are hosted here as well.
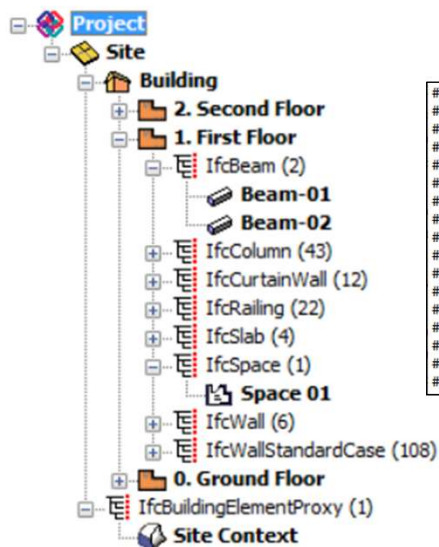
Data Dictionary Standard - International Framework for Dictionaries [IFD] and Process Definition Standard - Information Delivery Manual [IDM] are linked.

My Software and IFC

IFC is the complete and fully stable open and international standard for exchanging BIM data.

IFC is supported by about 150 software applications worldwide to enable better work flows for the AEC industry.

buildingSMART has a software certification process to support software developers quality assurance for IFC and to provide confidence to end users using IFC.

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Basic Rules

buildingSMART.
Benelux | subchapter Nederland

An IFC-file is a textfile: you can read it (some words .....)

```
#90= IFCRELAGGREGATES('0Du7$nzQXCktK1PUTLFSAT',#32,$,$,#65,(#84));
#96= IFCPOSTALADDRESS($,$,$,$,('Straat locatie'),$,'Stad locatie',$,$,$);
#98= IFCDIRECTION((1.,0.,0.));
#100= IFCDIRECTION((0.,0.,1.));
#102= IFCCARTESIANPOINT((0.,0.,0.));
#104= IFCAXIS2PLACEMENT3D(#102,#100,#98);
#105= IFCLOCALPLACEMENT(#81,#104);
#107= IFCBUILDING('00tMo7QcxqWdIGvc4sMN2A',#32,'2-onder-1-kap',$,$,#105,$,$,.ELEMENT.,$,$,#96);
#109= IFCRELAGGREGATES('2b_h_mYcGArd6g1JG2Fmbt',#32,$,$,#84,(#107));
#113= IFCPROPERTYSINGLEVALUE('MarketCategory',$,IFCLABEL('Woningbouw'),$);
#117= IFCPROPERTYSET('2c2jVbsx6ZACpTG_p4y2wX',#32,'Pset_BuildingUse',$,(#113));
#122= IFCRELDEFINESBYPROPERTIES('0Gxztc6aXk2kYNc98VQH$s',#32,$,$,(#107),#117);
#126= IFCPROPERTYSINGLEVALUE('YearOfConstruction',$,IFCLABEL('2024'),$);
#127= IFCPROPERTYSINGLEVALUE('NumberOfStoreys',$,IFCINTEGER(1),$);
#128= IFCPROPERTYSINGLEVALUE('ConstructionMethod',$,IFCLABEL('Traditional'),$);
#129= IFCPROPERTYSET('0JXEbi4icseI_7ZoA0UdHJ',#32,'Pset_BuildingCommon',$,(#126,#127,#128));
#131= IFCRELDEFINESBYPROPERTIES('228masnR9YqqgtMW$Nz9y_',#32,$,$,(#107),#129);
```

Project
- Site
  - Building
    - 2. Second Floor
    - 1. First Floor
      - IfcBeam (2)
        - Beam-01
        - Beam-02
      - IfcColumn (43)
      - IfcCurtainWall (12)
      - IfcRailing (22)
      - IfcSlab (4)
      - IfcSpace (1)
        - Space 01
      - IfcWall (6)
      - IfcWallStandardCase (108)
    - 0. Ground Floor
  - IfcBuildingElementProxy (1)
    - Site Context

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IDS Energietransition

How does a building lose energy?

Energy loss by:

- Transmission through boundaries

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IDS Energietransition

How does a building lose energy?

Energy loss by:

- Transmission through boundaries
- Infiltration through seams and cracks
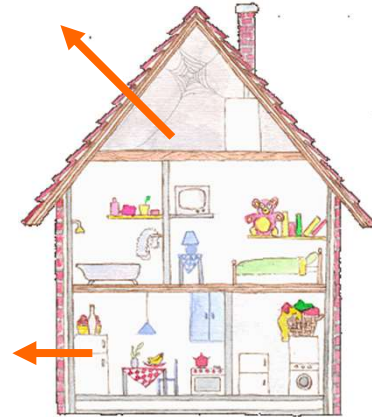
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IDS Energietransition

How does a building lose energy?

Energy loss by:

- Transmission through boundaries

- Infiltration through seams and cracks
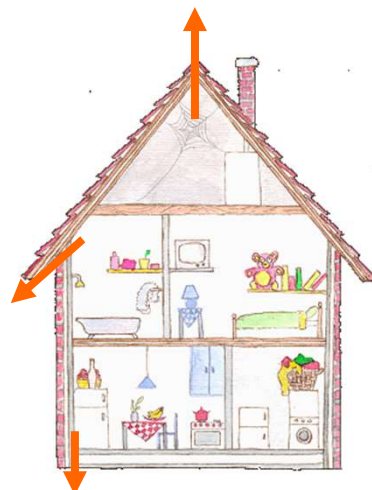
- Ventilation

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IDS Energietransition

How does a building lose energy?

Energy loss by:

- Transmission through boundaries
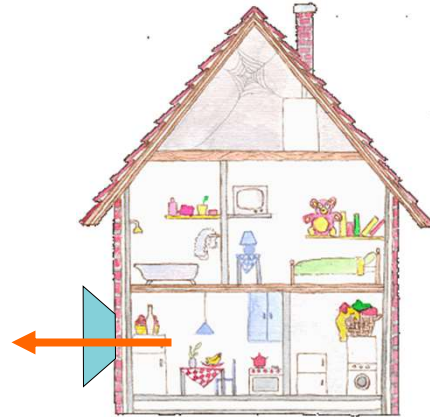
- Infiltration through seams and cracks

- Ventilation

- Efficiency of heating equipment

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IDS Energietransition

Subject

- Transmission through boundaries
- Infiltration through seams and cracks
- Ventilation
- Efficiency of heating equipment

Connection with the model

→properties of materials

→ connection of objects

→ equipment & behaviour

→ property of this equipment

What is in the model?
- Building objects
- Mechanical equipment
- And …. properties of the building itself

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IDS Energietransition

In the models there is data about the whole building in accordance with the method of

buildingSMART
BENELUX

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IDS Energietransition

Properties of materials:

• Thermal Conductivity (λ)

• Mass Density (d)

• Specific Heat Capacity (c)

An air space is not a material → it will not be modelled

But it does something with heat → responsibility of the building physician
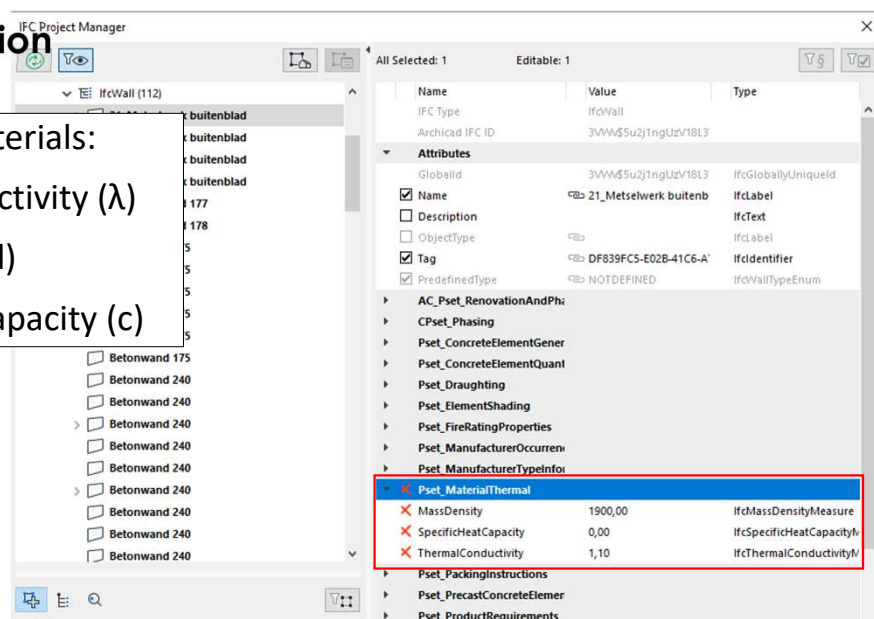

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IDS Energietransition

Properties of materials:

• Thermal Conductivity (λ)

• Mass Density (d)

• Specific Heat Capacity (c)

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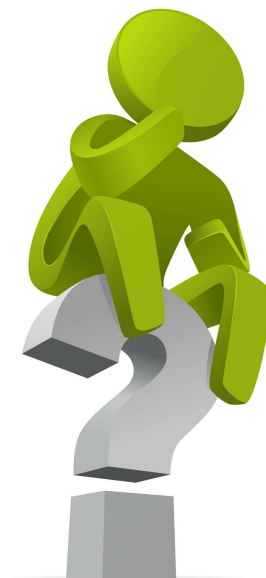
IDS Energietransition

		eenheid	Propertieset	Parameter
Algemene informatie				
	Bouwjaar		Pset_BuildingCommon	YearOfConstruction
	Type gebouw		Pset_BuildingUse	MarketCategorie
	Soort bouw		Pset_BuildingCommon	ConstructionMethod
	Aantal bouwlagen		Pset_BuildingCommon	NumberOfStoreys
	Vertrekhoogte	m^1	volgt uit geometrie	
	Binnenluchttemperatuur (winter)	°C	Pset_SpaceThermalRequirements	SpaceTemperatureMin
	Binnenluchttemperatuur (zomer)	°C	Pset_SpaceThermalRequirements	SpaceTemperatureMax
	Kruipruimteventilatie		Pset_SpaceThermalRequirements	NaturalVentilation
Gevel				
Algemene informatie	Oppervlakte (binnenzijde)	m²	volgt uit geometrie	
	Oriëntatie	graden tov N	Pset_ElementShading	Azimuth
Gevel materiaal	materiaal van elke laag		n.v.t.	Material
	warmtegeleidingscoëfficiënt λ	W/(m.K)	Pset_MaterialThermal	ThermalConductivity
	soortelijk gewicht d	kg/m³	Pset_MaterialThermal	MassDensity
	soortelijke warmte c	J/(K·kg)	Pset_MaterialThermal	SpecificHeatCapacity
Transparante constructies	Afmeting	m²	volgt uit geometrie	
	Oppervlakte transparantie constructie	%	Pset_WindowCommon	GlazingAreaFraction
	Oriëntatie	graden tov N	Pset_ElementShading	Azimuth
	zontoetredingsfactor g	fractie	Pset_ElementShading	AverageSolarTransmittance
	Warmtedoorgangscoëfficiënt Uw/Ud	W/(m².K)	Pset_WindowCommon	ThermalTransmittance

Questions?