A BIM object library for buildings energy efficiency renovation

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stress

BIM-SPEED

Harmonized Building Information Speedway for Energy-Efficient Renovation

What? PROJECT AIM

Enabling all stakeholders to adopt BIM to reduce the time of deep renovation projects by 30%

Removing technological, economic and organisational bottlenecks to increase BIM adoption of all stakeholders

Creating and implementing renovation solutions with guaranteed energy performance

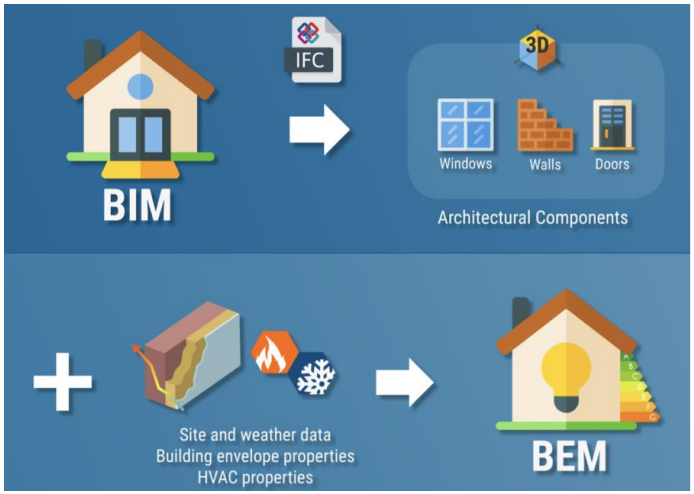
How? Holistic Solution

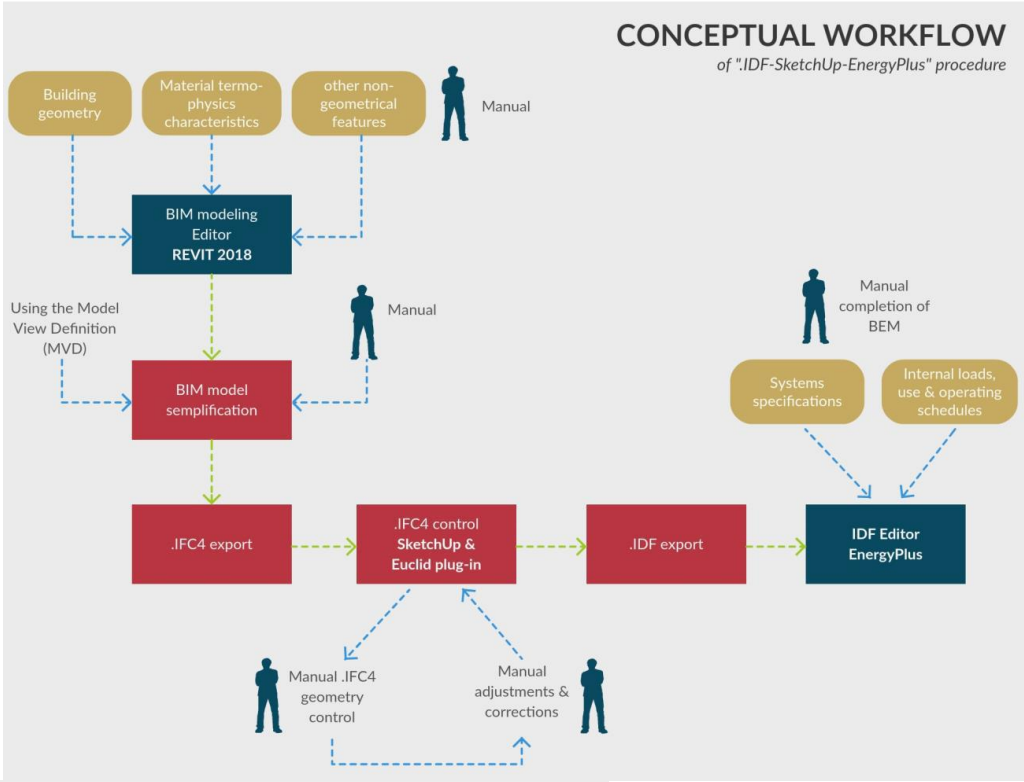
An affordable, open, and user-friendly cloud-based BIM Platform

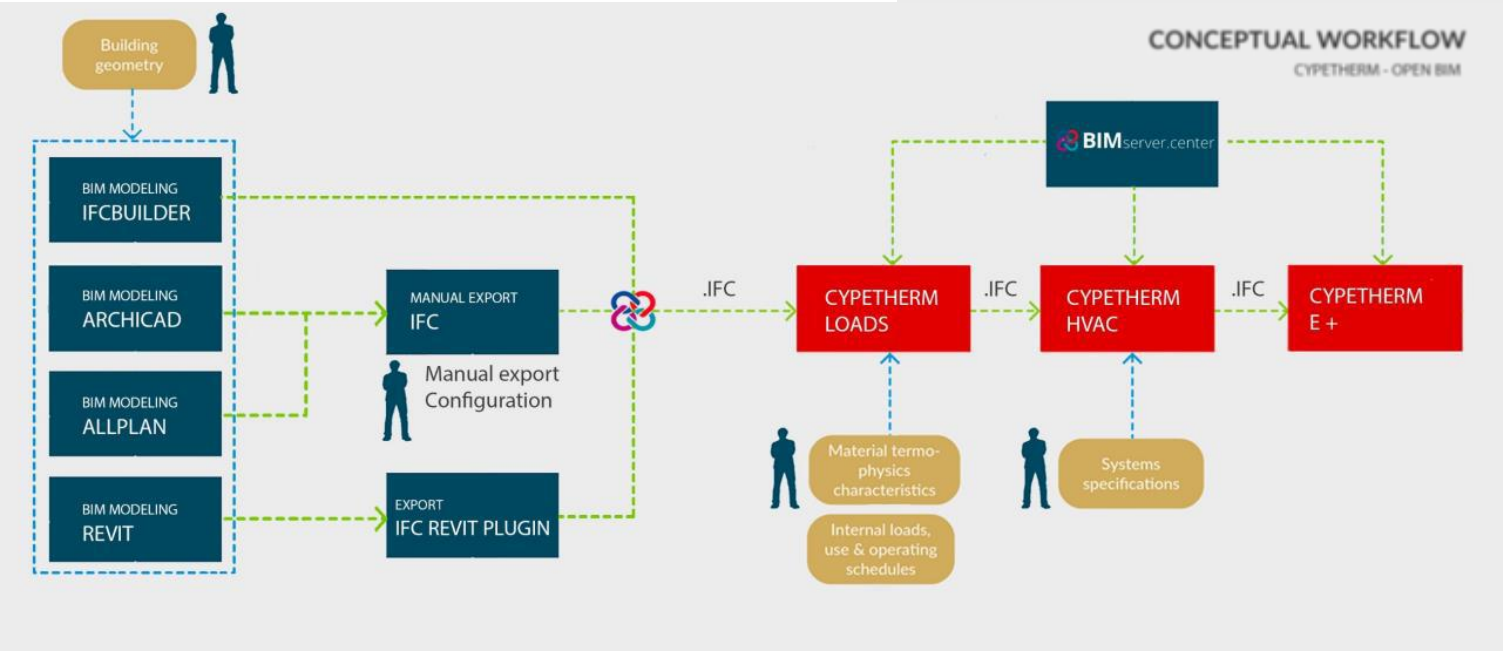
Through a set of inter-operable BIM tools all connected through the BIM cloud platform

Validated & standardised procedures for BIM-based activities throughout the whole renovation process

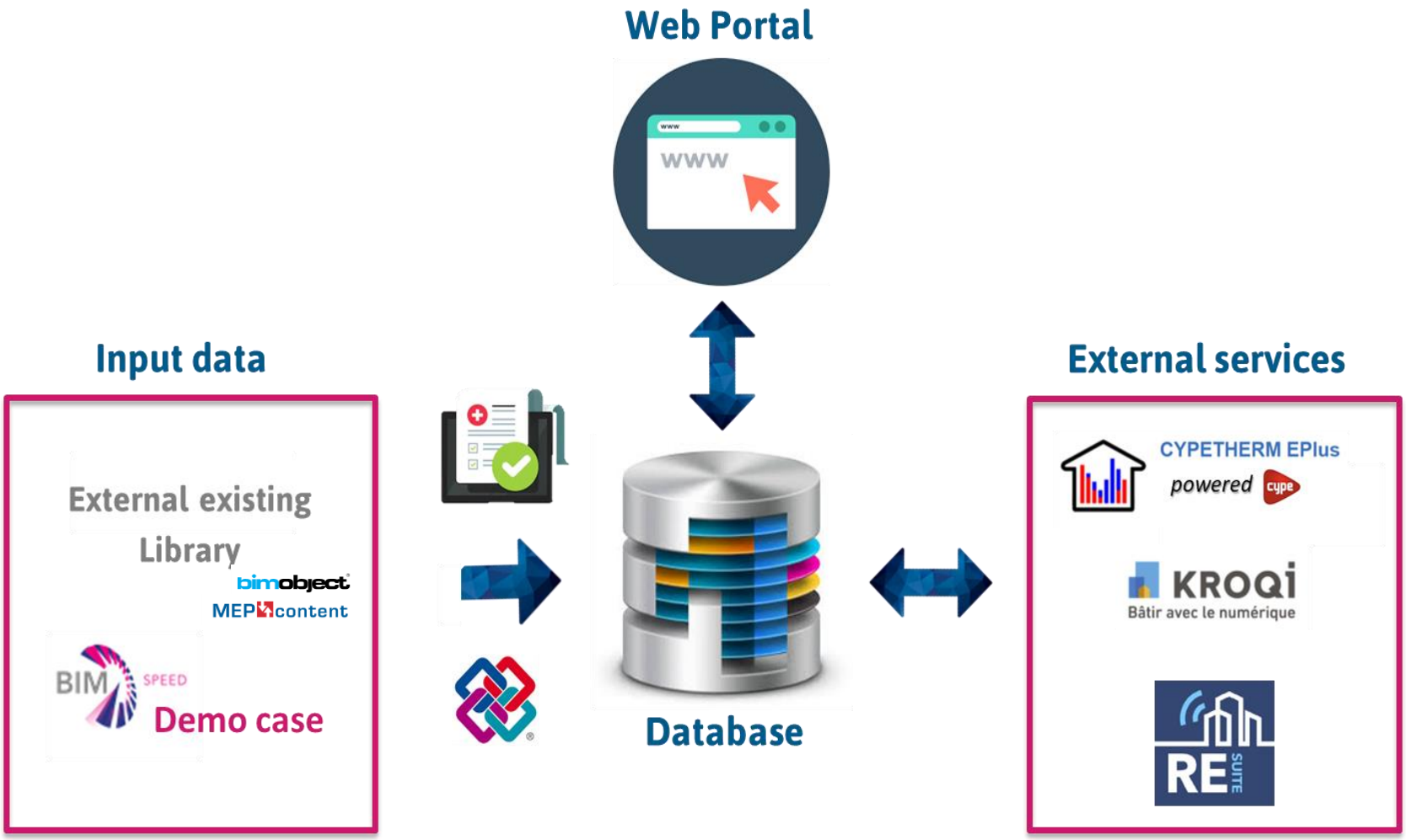
BIM to BEM PROCEDURE

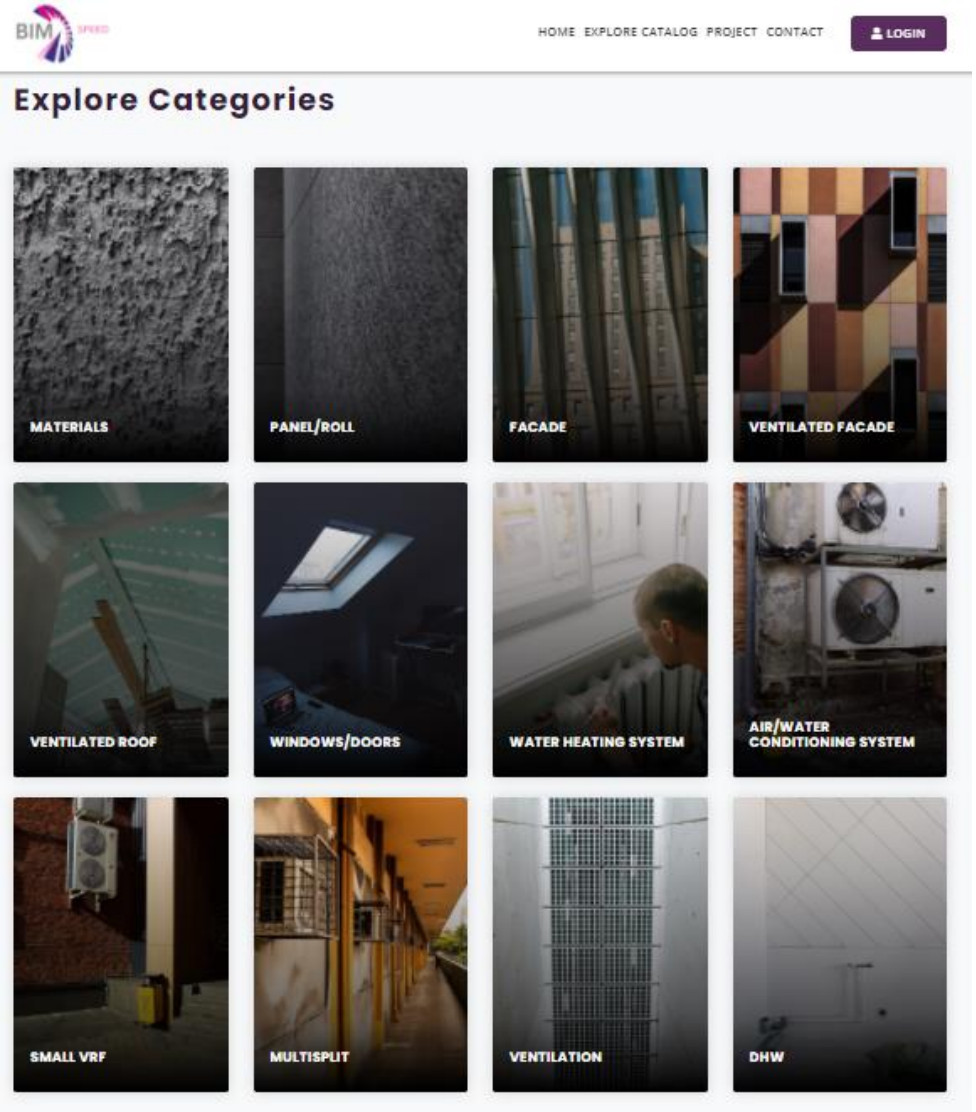






WHAT IS THE BIM SPEED DATABASE?





BIM SPEED

Category	Energy Performance parameters
Material Panel/Roll Façade Ventilated façade Ventilated roof	Vapour resistance (μ) Conductivity of materials [W/(mK)] Thermal resistance of unit area of materials [(m² K)/W] Thermal transmittance of unit area of materials [W/(m² K)] Thickness [m] Density of materials [kg/m³] Specific Heat of materials [J/(kgK)]
Windows/Doors	Heat transfer of transparent elements [W/(m² K)] Air permeability of transparent elements [m³ /(hm²)] Percentage of opaque elements [%/100] Heat transfer of opaque elements [W/(m² K)] Solar absorptivity opaque elements [%/100] Transmittance of solar energy [-] Window Thermal transmittance (W/m²K)
Water Heating System	Boiler type Nominal Power [kW] Fuel type Rated Efficiency at 75°C [%] Operating temperature [°C] Design delta temperature [°C] Terminal unit type

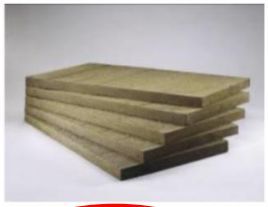
Category	LCA parameters	LCC parameters
Material Panel/Roll Façade Ventilated façade Ventilated roof	Functional Unit Global Warming (kg $CO_{2,eq}$) Acidification (kg $SO_{2,eq}$) Eutrophication (kg $PO_{4,eq}$) Ozone Layer Depletion (kg CFC 11 eq) Photochemical Oxidation (kg) Abiotic Depletion, elements (kg Sb_{eq}) Abiotic Depletion, fossil fuels (MJ)	Functional Unit Price Construction/ Installation Costs Maintenance Costs in RSL
Water Heating System Air/Water Conditioning System Small VRF Multisplit Ventilation Domestic Hot Water		Functional Unit Price Construction/ Installation Costs Maintenance Costs in RSL Operational Energy Costs

BIM SPEED

HOME EXPLORE CATALOG PROJECT CONTACT LOGIN

23/06/2021 Envelope

ISOVER TF Profi



Category: Panel/Roll
Type: Thermo-acoustic insulation
Application area: External wall,

Mineral insulation from stone wool .

INFO | EP ✔ | LCA ✔ | LCC ✔

FILE DOWNLOAD
IFC original file
Download .ifc file

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Main Materials
rock wool

Dimensions

Length (m)	1.000
Width (m)	0.600
Depth (m)	0.10

Standard Reference

EuroClass Fire	A1
Reference Service Life (years)	10

BIM SPEED

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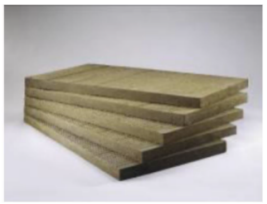

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FILE DOWNLOAD
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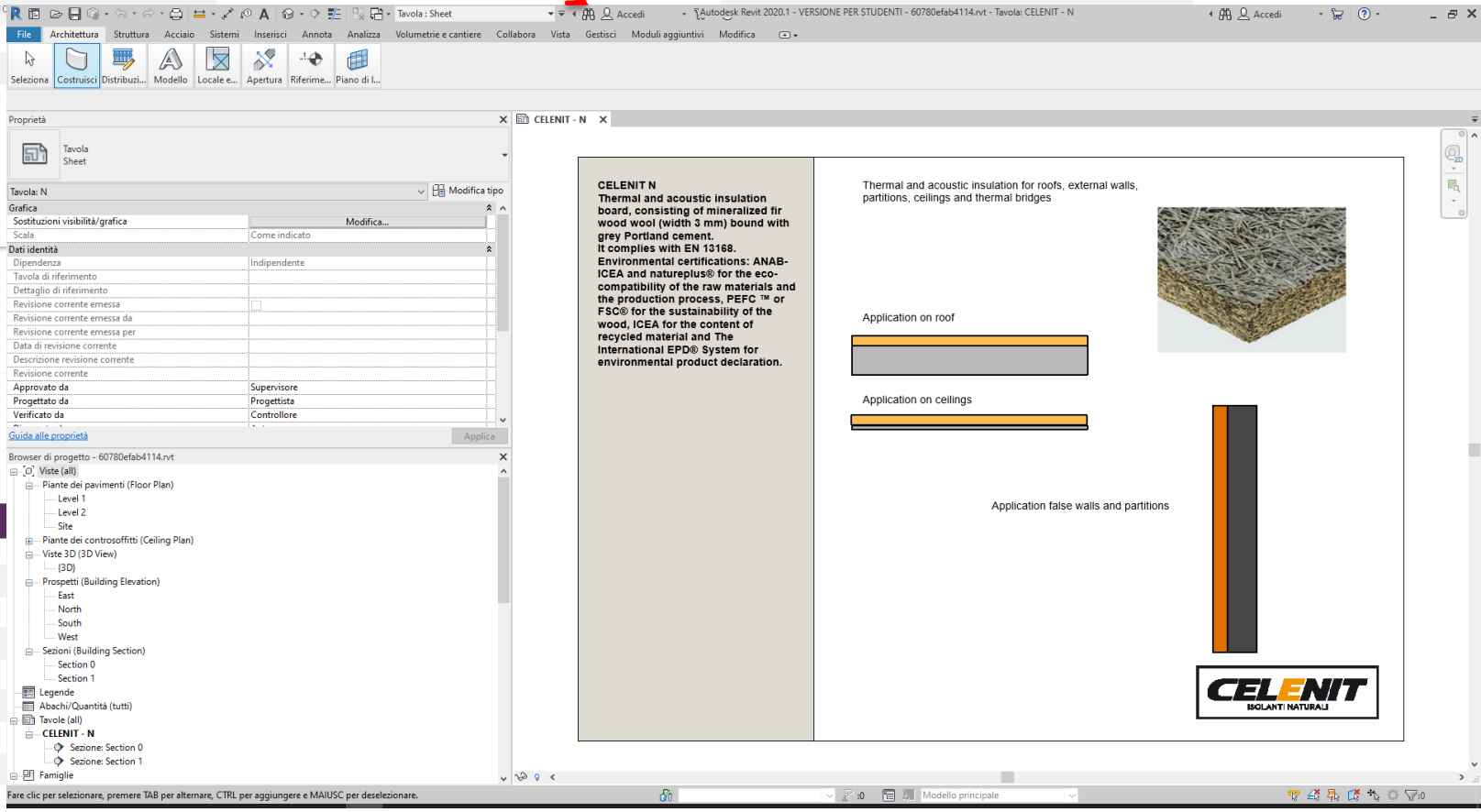
Thermal Transmittance $(W/(m^2K))$: 0.350

Layer: Single layer

Vapour resistance (μ)	1.0
Conductivity of materials (W/(mK))	0.035
Thermal resistance of materials (m^2K)/W	2.850



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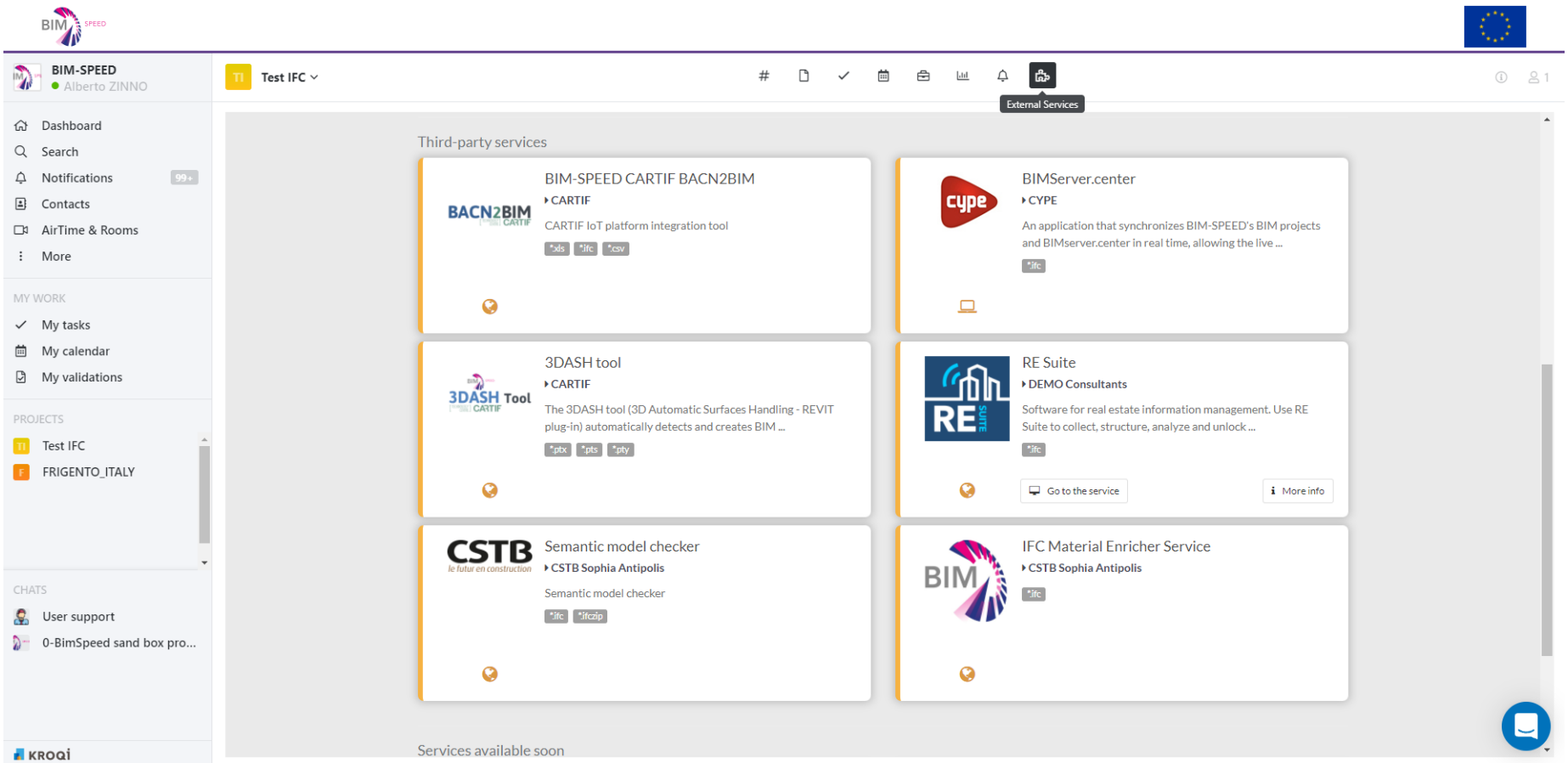
Category: Panel/Roll
Type: Thermo-acoustic insulation
Application area: External wall,

Mineral insulation from stone wool .

INFO | EP ✔

Functional Unit	
Global Warming (kg CO_2, eq)	
Acidification (kg SO_2, eq)	
Eutrophication (kg PO_4--- eq)	
Ozone Layer Depletion (kg CFC-11 eq)	
Photochemical Oxidation (kg NMVOC)	
Abiotic Depletion, elements (kg Sb eq)	
Abiotic Depletion, fossil fuels (MJ)	

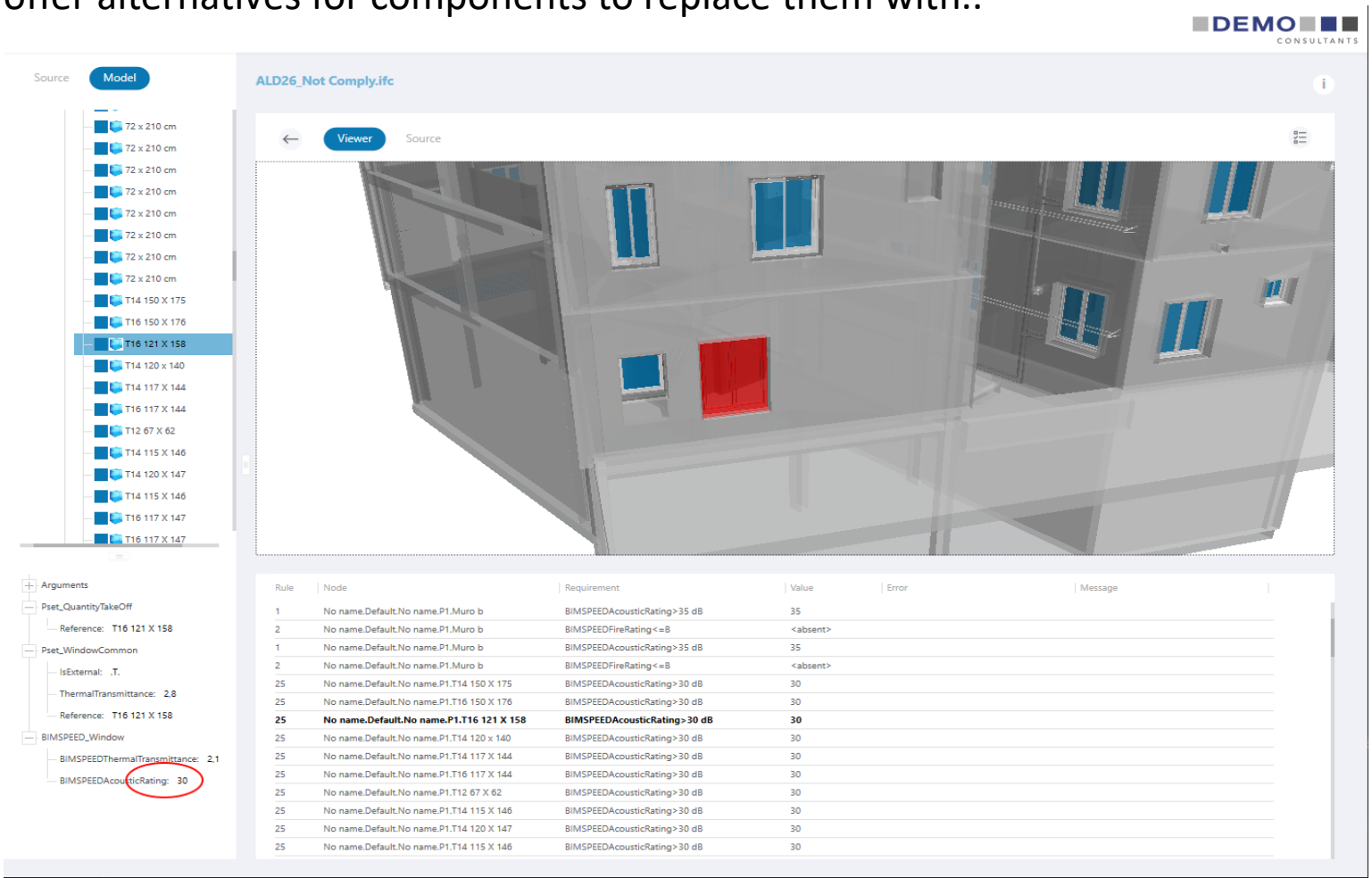
EXTERNAL SERVICE - BIM SPEED PLATFORM



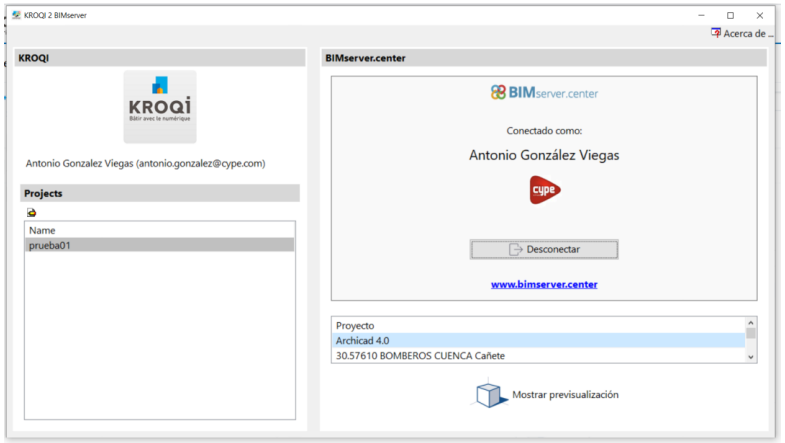
EXTERNAL SERVICE – RE MODEL CHECKER

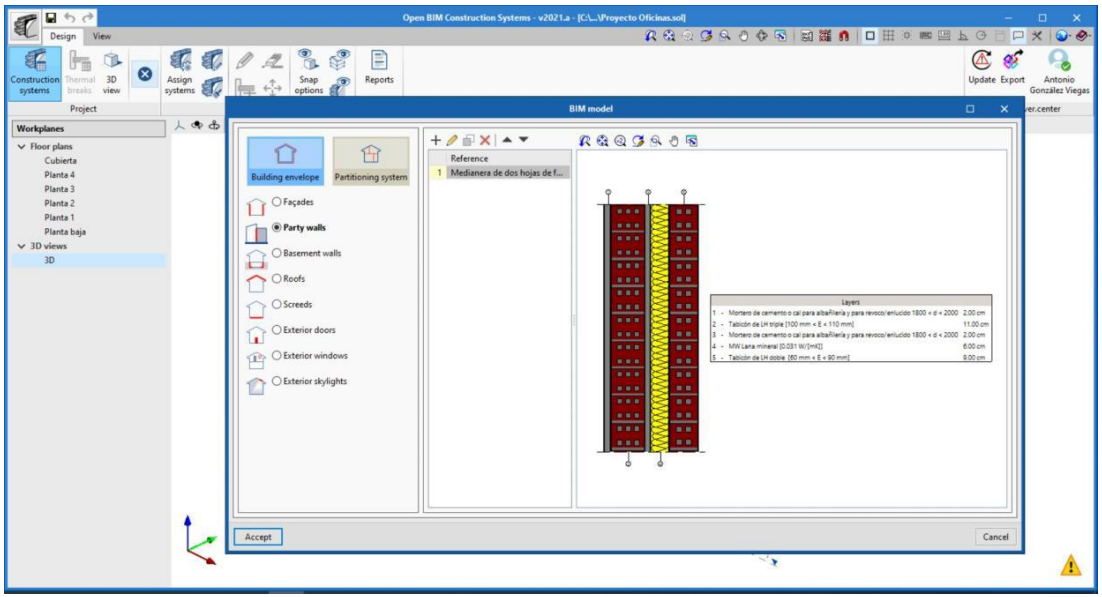
It allows specifying a set of rules and conditions with which a model should comply.

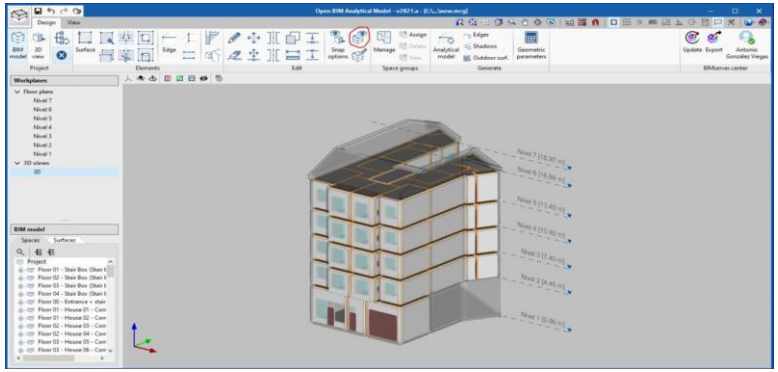
Upon finding elements that do not comply with one of more rules the intent is to offer alternatives for components to replace them with..

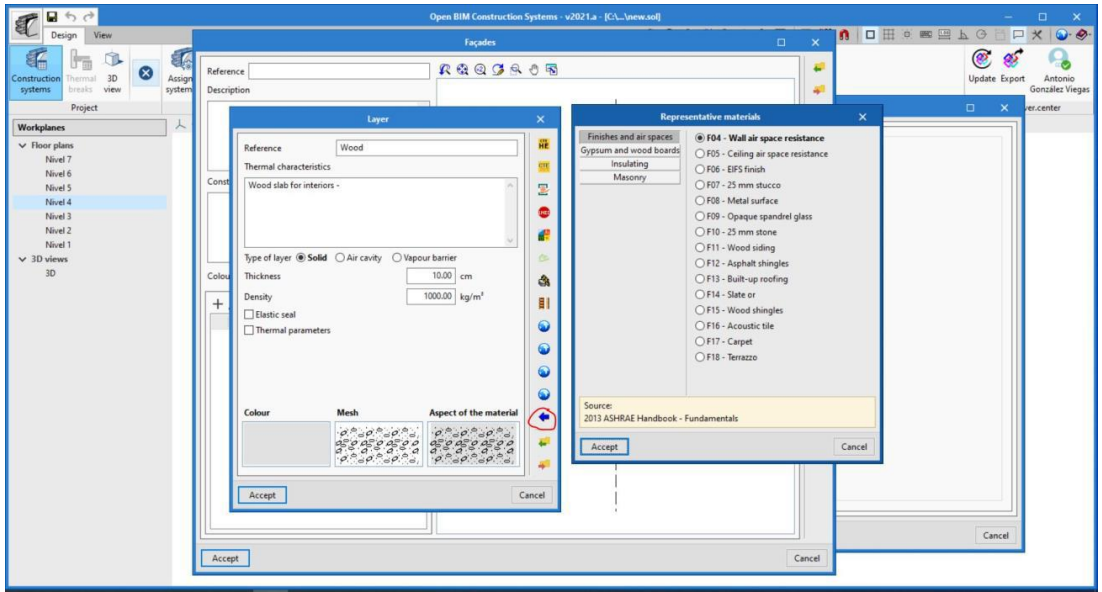


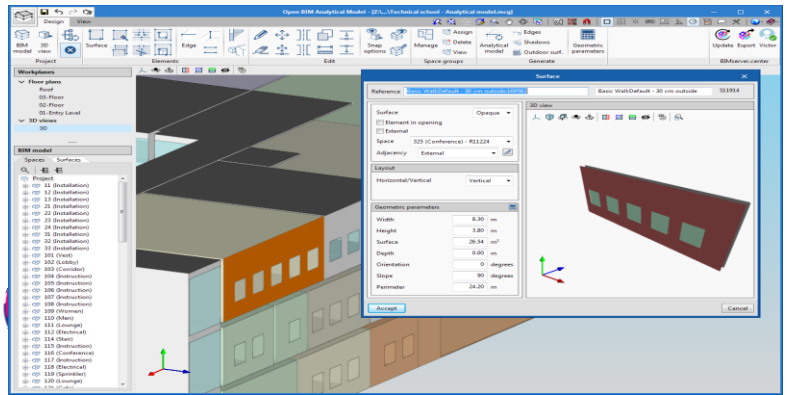
EXTERNAL SERVICE – CYPE Eplus











http://www.stress-scarl.com/it/

alberto.zinno@stress-scarl.it

DATASETS

LCA info from the company

LCA info from Environmental Product Declarations*

**Environdec, IBU, LCA Italy, …*

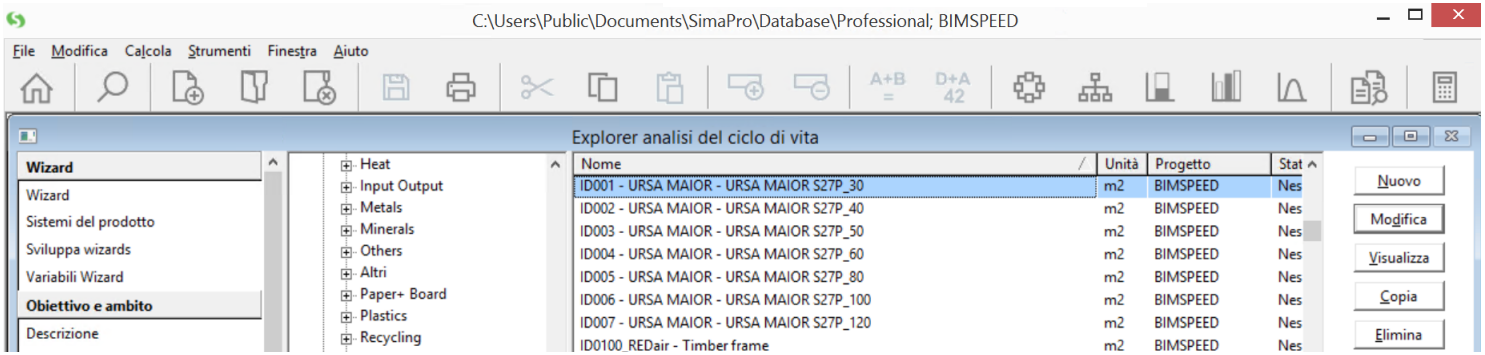
DATASETS

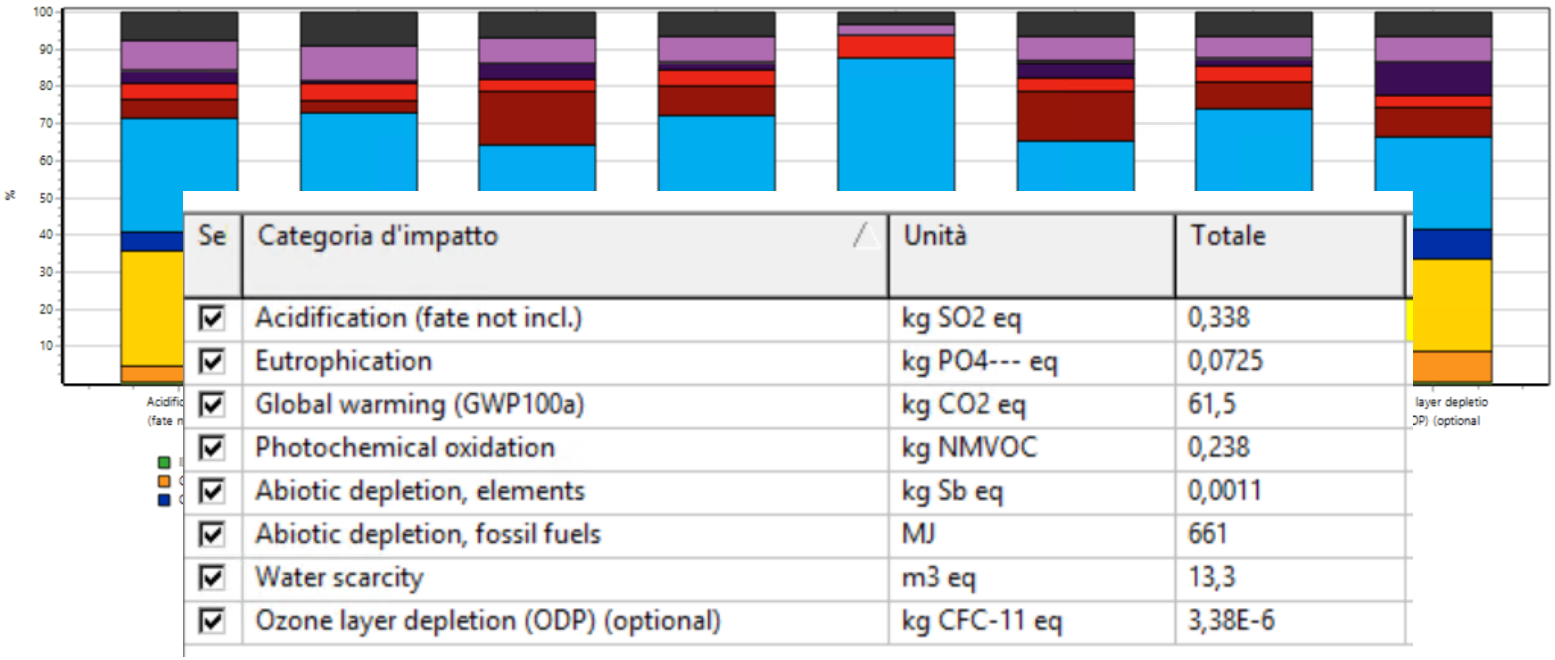
In case of missing existing data

SimaPro

BIM SPEED

- LCA
- Element
- Functional Unit
- Global Warming
- Acidification
- Eutrophication
- Ozone Layer Depletion
- Photochemical Oxidation
- Abiotic Depletion, elements



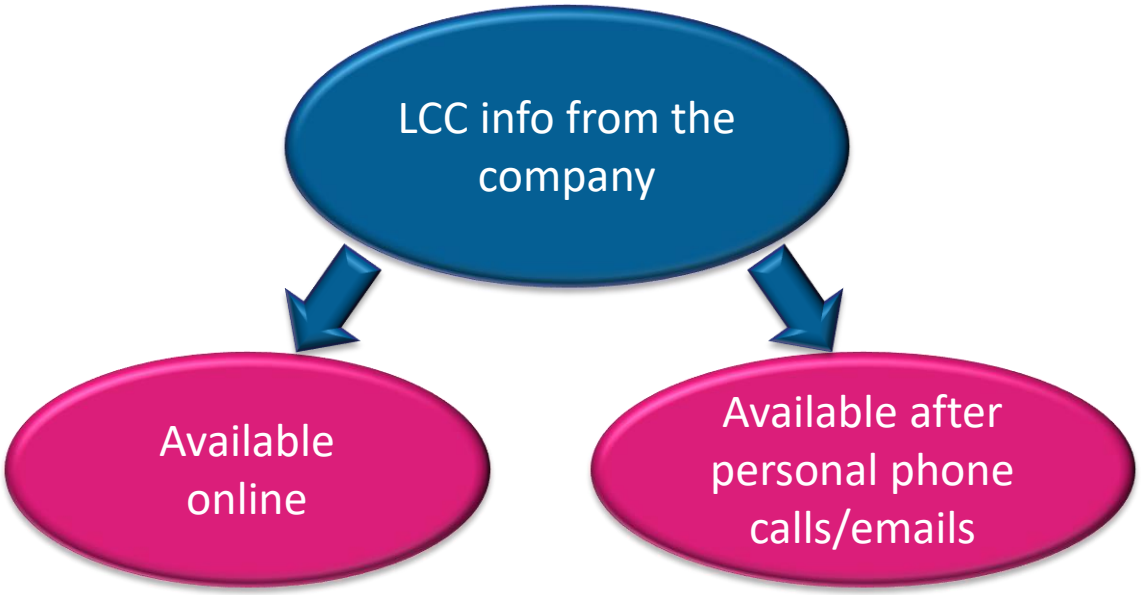


Se	Categoria d'impatto	Unità	Totale
☑	Acidification (fate not incl.)	kg SO2 eq	0,338
☑	Eutrophication	kg PO4--- eq	0,0725
☑	Global warming (GWP100a)	kg CO2 eq	61,5
☑	Photochemical oxidation	kg NMVOC	0,238
☑	Abiotic depletion, elements	kg Sb eq	0,0011
☑	Abiotic depletion, fossil fuels	MJ	661
☑	Water scarcity	m3 eq	13,3
☑	Ozone layer depletion (ODP) (optional)	kg CFC-11 eq	3,38E-6

EPD 2018 Methodology

DATASETS


LCC
Materials/ Windows
HVAC System
Functional Unit
Functional Unit
Selling Price
Price
UoM Selling Price
UoM Selling Price
Construction/ Installation Costs
Construction/ Installation Costs
UoM Construction/Installation Costs
UoM Construction/Installation Costs
Maintenance Costs in RSL
Maintenance Costs in RSL
UoM Maintenance Costs in RSL
UoM Maintenance Costs in RSL
Yearly Energy costs
UoM Yearly Energy Costs


LCC info from the company
Available online
Available after personal phone calls/emails

DATASETS

In case of missing existing data

LCC	
Materials/ Windows	HVAC System
Functional Unit	Functional Unit
Selling Price	Price
UoM Selling Price	UoM Selling Price
Construction/ Installation Costs	Construction/ Installation Costs
UoM Construction/Installation Costs	UoM Construction/Installation Costs
Maintenance Costs in RSL	Maintenance Costs in RSL
UoM Maintenance Costs in RSL	UoM Maintenance Costs in RSL
	Yearly Energy costs
	UoM Yearly Energy Costs

For production and installation costs

Info from Italian Regional Price Lists

For maintenance costs

Info from existing standards (e.g. EN 15459-1-2017)

Info from Energy Labelling*

For Operational Energy Costs

**can be related to the Reference Service Life*

DATASETS

In case of missing existing data

Durability package

Reference Service life (RSL)

Years	Renovation Object Category
30	Insulation panels for external walls
30	Insulation panels for internal walls
35	Insulation panels for floors
35	Insulation panels for roofs
40	Insulation panels for ground
40	Facades
50	Ventilated facade and roof
30	Windows
30	Doors
15	Gas boilers
20	Electric boilers
20	Heat Pumps
25	Solar thermal
25	Geothermal
20	Biomass boiler

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34 Methodology for Cost-Effective Energy and Carbon Emissions Optimization in Building Renovation (Annex 56)