

# Energetsko modeliranje zgrade

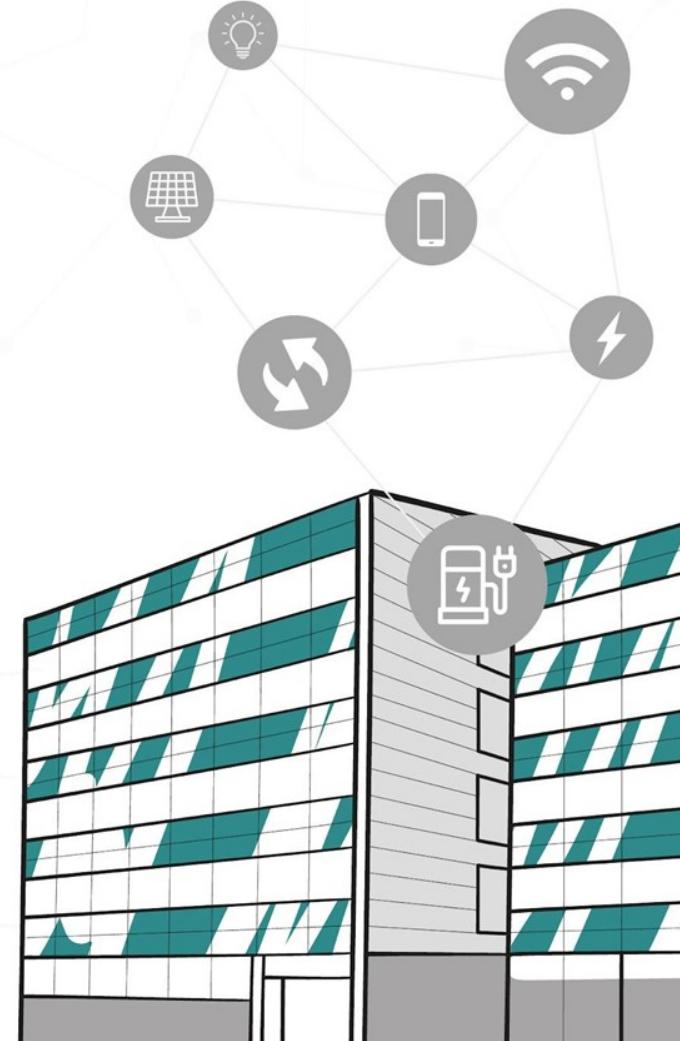
## 1. geometrija

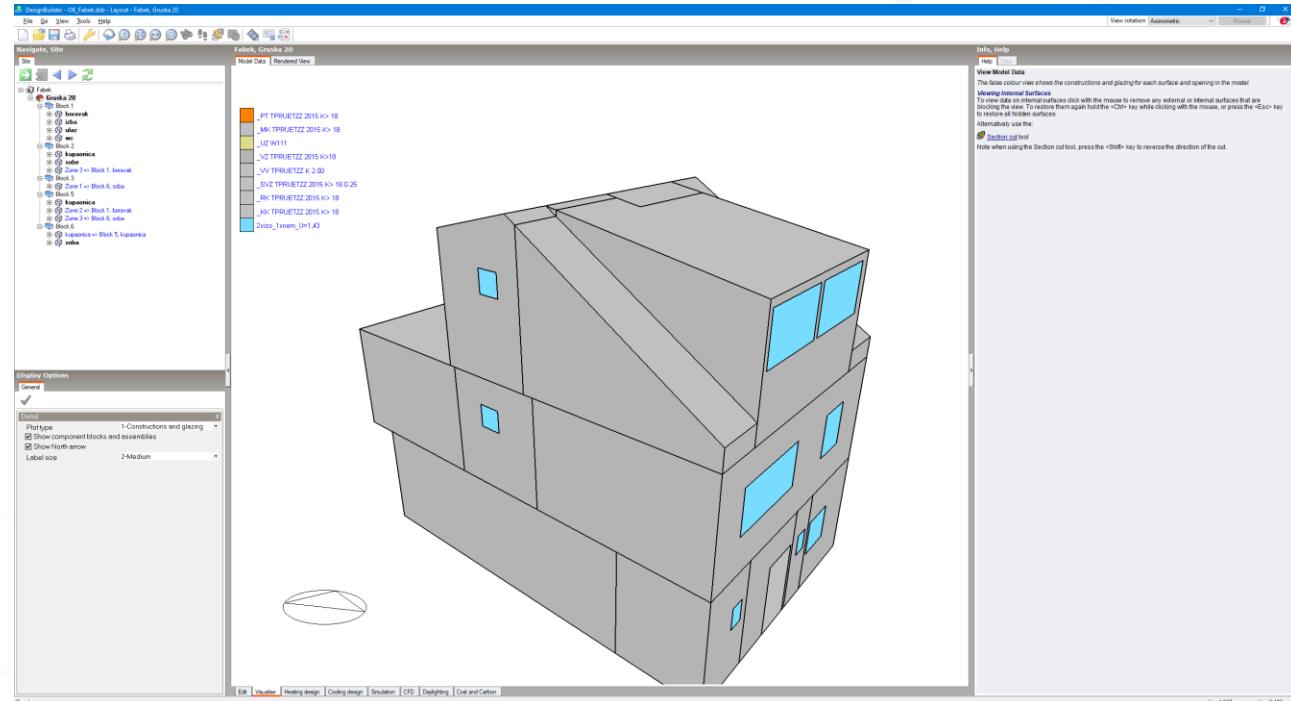
Toni Borković, Margareta Zidar, Denis Dergestin



Sveučilište u Zagrebu  
Gradivinski fakultet

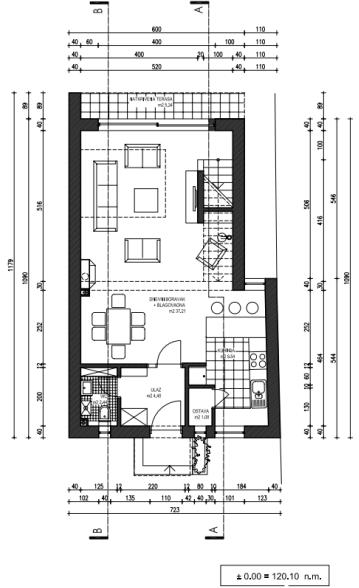
Projekt je financiran iz programa „Energija i klimatske promjene“ u sklopu Financijskog mehanizma Europskog gospodarskog prostora za razdoblje 2014. – 2021. godine.



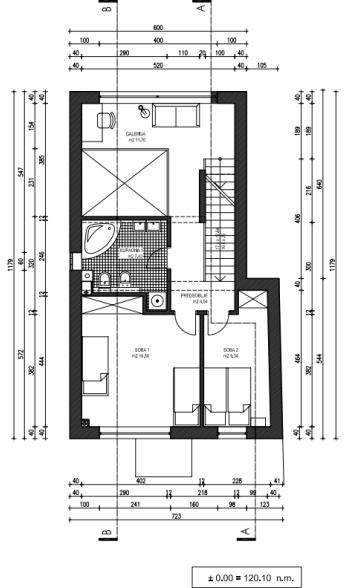




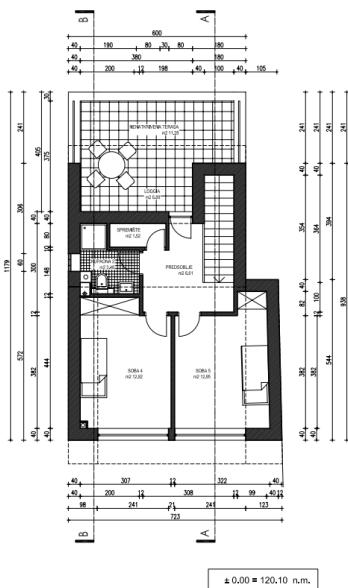
nZEB  
TRENING CENTAR



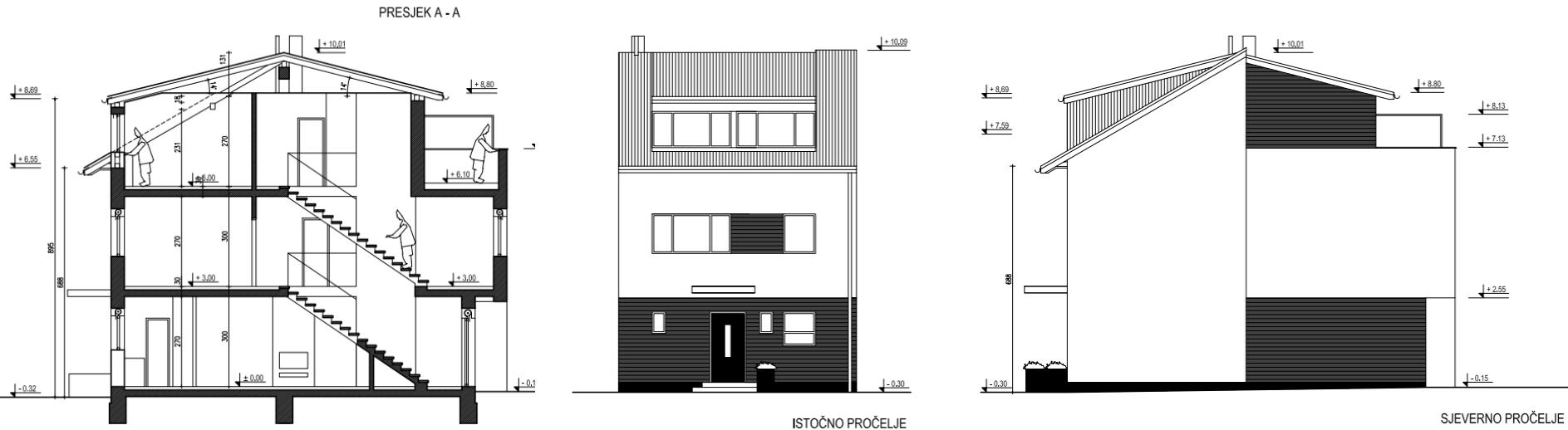
TLOCRT PRZEMIHLJA



TLOCRT 1. KATA



TLOCRT 2. KATA



1. otvaranje nove datoteke
2. odabir lokacije, predloška



Recent Files Component Libraries Template Libraries

Name	Folder /	Size (KB)	Last Modified	Extension /
<b>+ DesignBuilder files</b>				
<b>- DesignBuilder templates</b>				
Model Geometry Example	C:\ProgramData\DesignBuilder\Templates	1081	11.7.2019.10:47:18	DesignBuilder templates
Parametric Simulation Example	C:\ProgramData\DesignBuilder\Templates	1106	11.7.2019.10:47:18	DesignBuilder templates
Mech Vent with Preheat	C:\ProgramData\DesignBuilder\Templates	914	11.7.2019.10:47:18	DesignBuilder templates
IECC Residential Prototype Detached house	C:\ProgramData\DesignBuilder\Templates	1285	11.7.2019.10:47:18	DesignBuilder templates
IECC Residential Prototype Low Rise Apartment	C:\ProgramData\DesignBuilder\Templates	1315	11.7.2019.10:47:18	DesignBuilder templates
Zone Multiplier Example	C:\ProgramData\DesignBuilder\Templates	1111	11.7.2019.10:47:18	DesignBuilder templates
Zone Water To Air Heat Pump Example	C:\ProgramData\DesignBuilder\Templates	1331	11.7.2019.10:47:18	DesignBuilder templates
Underfloor Heating Example	C:\ProgramData\DesignBuilder\Templates	908	11.7.2019.10:47:18	DesignBuilder templates
PCM Example	C:\ProgramData\DesignBuilder\Templates	1270	11.7.2019.10:47:18	DesignBuilder templates
Plenum Example Building	C:\ProgramData\DesignBuilder\Templates	1052	11.7.2019.10:47:18	DesignBuilder templates
CFD Internal Analysis Example	C:\ProgramData\DesignBuilder\Templates	1090	11.7.2019.10:47:18	DesignBuilder templates
Courtyard with VAV Example	C:\ProgramData\DesignBuilder\Templates	931	11.7.2019.10:47:18	DesignBuilder templates
CFD External Analysis Example	C:\ProgramData\DesignBuilder\Templates	1088	11.7.2019.10:47:18	DesignBuilder templates
Atrium example base	C:\ProgramData\DesignBuilder\Templates	1158	11.7.2019.10:47:18	DesignBuilder templates
Atrium Example with Calc Nat Vent	C:\ProgramData\DesignBuilder\Templates	938	11.7.2019.10:47:18	DesignBuilder templates
Dehumidification example	C:\ProgramData\DesignBuilder\Templates	1122	11.7.2019.10:47:18	DesignBuilder templates
Double Skin Facade Example	C:\ProgramData\DesignBuilder\Templates	1171	11.7.2019.10:47:18	DesignBuilder templates
Green roof example	C:\ProgramData\DesignBuilder\Templates	1103	11.7.2019.10:47:18	DesignBuilder templates
House Example 1	C:\ProgramData\DesignBuilder\Templates	989	11.7.2019.10:47:18	DesignBuilder templates
DesignBuilder Video Tutorials Example	C:\ProgramData\DesignBuilder\Templates	1186	11.7.2019.10:47:16	DesignBuilder templates
Mixed Mode Example	C:\ProgramData\DesignBuilder\Templates	1093	11.7.2019.10:47:16	DesignBuilder templates
Trombe Wall Example	C:\ProgramData\DesignBuilder\Templates	1045	11.7.2019.10:47:16	DesignBuilder templates

Help Data

## Recent and Example Files

To open one of the recently opened files, select the file in the main screen and click on 'Open selected file' below.

If the file you want to open does not appear in the list of recently used files you can also:

 Create new file Open existing file

## Learning mode is ON

Learning mode provides relevant information and easy access to typical commands. New users often find Learning mode particularly helpful. You can switch it off from the [Program Options dialog](#)

## Other tools:

 [Web Tutorials](#)

1. 3D prozor, pomoć (Learning Mode), hijerarhijski popis
2. uvoz podloge za crtanje
3. konvencija za modeliranje dimenzija – vanjske, unutarnje, propis
4. crtanje bloka
5. pregrađivanje blokova – zoniranje
6. orijentacija u 3D prozoru
7. 3D prozor, pomoć (Learning Mode), hijerarhijski popis

1. uvoz podloge za crtanje
2. konvencija za modeliranje dimenzija – vanjske, unutarnje, propis
3. crtanje bloka
4. pregrađivanje blokova – zoniranje
5. manipulacija podlogama
6. rezanje, pomicanje poligona
7. unos otvora

DesignBuilder - Untitled 1.dsbs - Layout - Untitled

File Edit Go View Tools Help

View rotation Axometric Normal

Info, Help  
Help Data

Edit Site Layout  
Use this screen to create new buildings and change the layout of existing buildings on the site.

Add building to the site  
Import 2-D drawing file  
Import BIM model

Edit Site Layout  
You can edit the location and associated weather data for the site by clicking on the Location tab.

Load location from template  
Save to new template

Untitled

Layout Location Region

Site

Untitled

Navigation icons: Back, Forward, Home, Stop, Refresh, etc.

Toolbars: Site, Layout, Location, Region.

Main Drawing Area: Shows a 2D site plan with a vertical dashed line and a green dashed line forming a triangle. A small oval shape is located near the bottom left.

Bottom Navigation Bar: Edit, Visualise, Heating design, Cooling design, Simulation, CFD, Daylighting, Cost and Carbon.

Ready.....

1. zoniranje
2. unos otvora



Navigate, Site

Site



## Untitled, Building 1

Model Data | Rendered View

View rotation Axonometric

Normal



Info, Help

Help Data

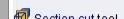
## View Model Data

The false colour view shows the constructions and glazing for each surface and opening in the model.

## Viewing Internal Surfaces

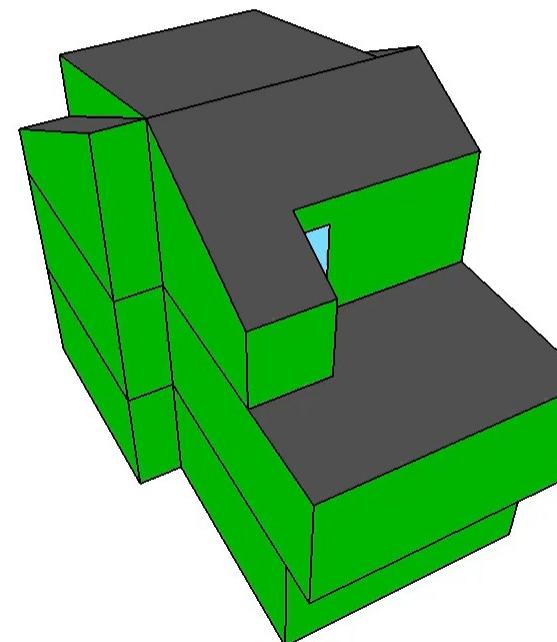
To view data on internal surfaces click with the mouse to remove any external or internal surfaces that are blocking the view. To restore them again hold the <Ctrl> key while clicking with the mouse, or press the <Esc> key to restore all hidden surfaces.

Alternatively use the:



Note when using the Section cut tool, press the <Shift> key to reverse the direction of the cut.

- Project ground floor
- Project internal floor
- Project partition
- Project wall
- Project external floor
- Project flat roof
- Project pitched roof
- Project external glazing



## Display Options



Plot type 1-Constructions and gla.

 Show component blocks and assemblies Show North arrow

Label size 2-Medium

1. uređivanje sastava konstrukcija
2. pregled konstrukcija u prozoru za vizualizaciju



DesignBuilder - Untitled 1.dsb - Layout - Untitled, Building 1

File Go View Tools Help

View rotation Axonometric Normal

Info, Help

Help Data

View Model Data  
The false colour view shows the constructions and glazing for each surface and opening in the model.

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Alternatively use the:

Section cut tool  
Note when using the Section cut tool, press the <Shift> key to reverse the direction of the cut.

Visualise Model Data...

Untitled, Building 1

Model Data | Rendered View

Site

Project ground floor  
Project internal floor  
Project partition  
Project wall  
Project external door  
Project external floor  
Project flat roof  
Project pitched roof  
Project external glazing

Building 1

- Block 1
  - Zone 1
  - Zone 2
  - Zone 3
  - Zone 4
- Block 2
  - Zone 1
  - Zone 2
- Zone 3
  - External/internal floor - 34,255 m<sup>2</sup>
  - Ceiling/roof - 34,255 m<sup>2</sup>
  - Wall - 19,050 m<sup>2</sup> - 90.0°
  - Wall - 18,000 m<sup>2</sup> - 0.0°
  - Wall - 12,930 m<sup>2</sup> - 270.0°
  - Partition - 10,080 m<sup>2</sup> (Block 2, Zone 2)
  - Partition - 9,540 m<sup>2</sup> (Block 2, Zone 2)
  - Partition - 3,360 m<sup>2</sup> (Block 2, Zone 4)
  - Partition - 4,560 m<sup>2</sup> (Block 2, Zone 1)
  - Partition - 3,420 m<sup>2</sup> (Block 2, Zone 1)
- Zone 4
- Block 3
- Zone 1
- Block 5

Display Options

General

Detail

Plot type 1-Constructions and gla.

Show component blocks and assemblies

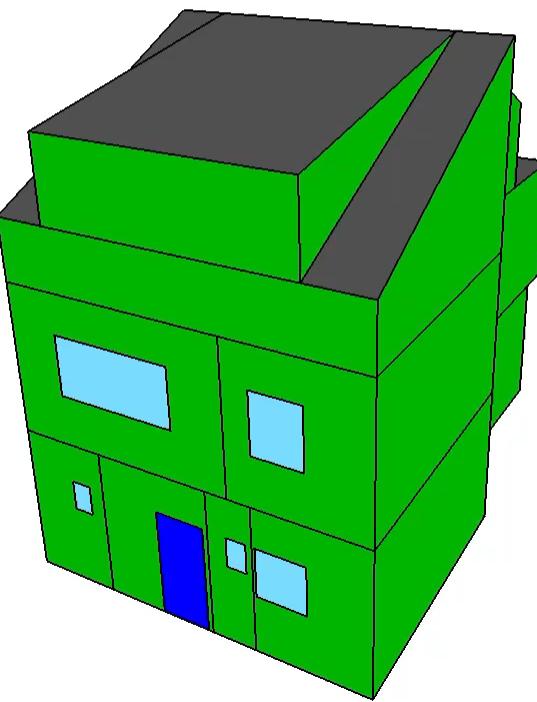
Show North arrow

Label size 2-Medium

Visualise

Edit Visualise Heating design Cooling design Simulation CFD Daylighting Cost and Carbon

X = 16,504m Y = 5,895m



1. uvoz biblioteka
2. primjena predložaka
3. povezivanje zona prođorima (otvorima)
4. opcije modela – povezivanje zona prođorima
5. imenovanje zona



Navigate, Site

Untitled, Building 1

Layout Activity Construction Openings Lighting HVAC Generation CFD

View rotation Axonometric

Normal



Site



Untitled



Building 1



Block 1



Zone 1



Zone 2



Zone 2



Zone 3



Zone 4



Block 2



Zone 1



Zone 2



Zone 3



Zone 4



Block 3



Zone 1



Block 4



Zone 1



Block 5



Zone 1



Layout Activity Construction Openings Lighting HVAC Generation CFD

Info, Help

Help Data

**Edit Building Layout**

Use this screen to add, edit or delete blocks in the current building. You can also copy, move or delete openings.

Import 2-D drawing file

Import BIM model

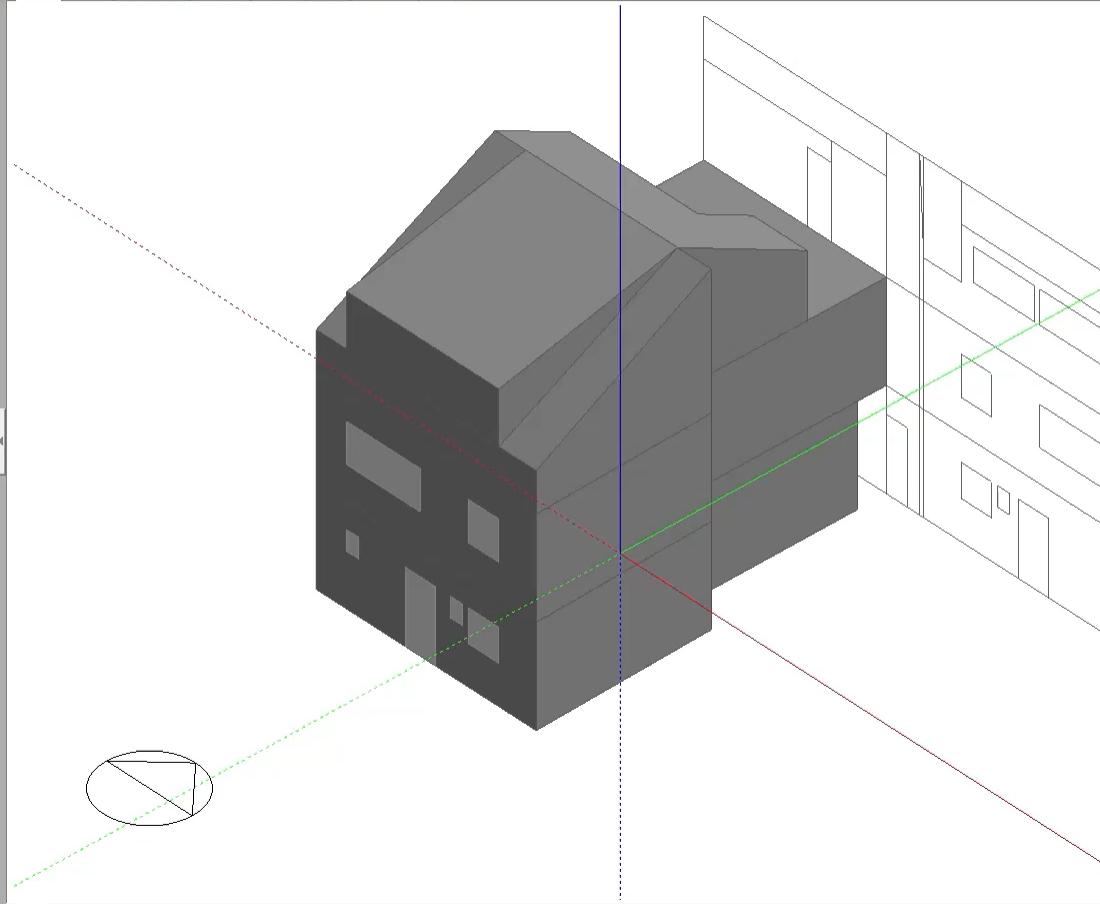
Add block to draw a new block

Add surfaces to add a new surface to the block

 Drag face to change the dimensions of a block in the current building  
To add or edit partitions or to draw void perimeters such as courtyards you should go to the block first by double-clicking on it.**Navigation**

Go to block level by double-clicking on the appropriate block in the Model view or single-clicking on the block in the Navigator list.

Load data (new building defaults)



Edit Visualise Heating design Cooling design Simulation CFD Daylighting Cost and Carbon



Navigate, Site

Untitled, Building 1, Block 2, Zone 3

Layout Construction Openings

Info, Help

Help Data

**Edit zone layout**

Use this screen to view the layout of the current zone.

**This zone is merged with boravak**

Click here to edit/view Activity, Lighting and HVAC model data for the zone.

**Navigating**

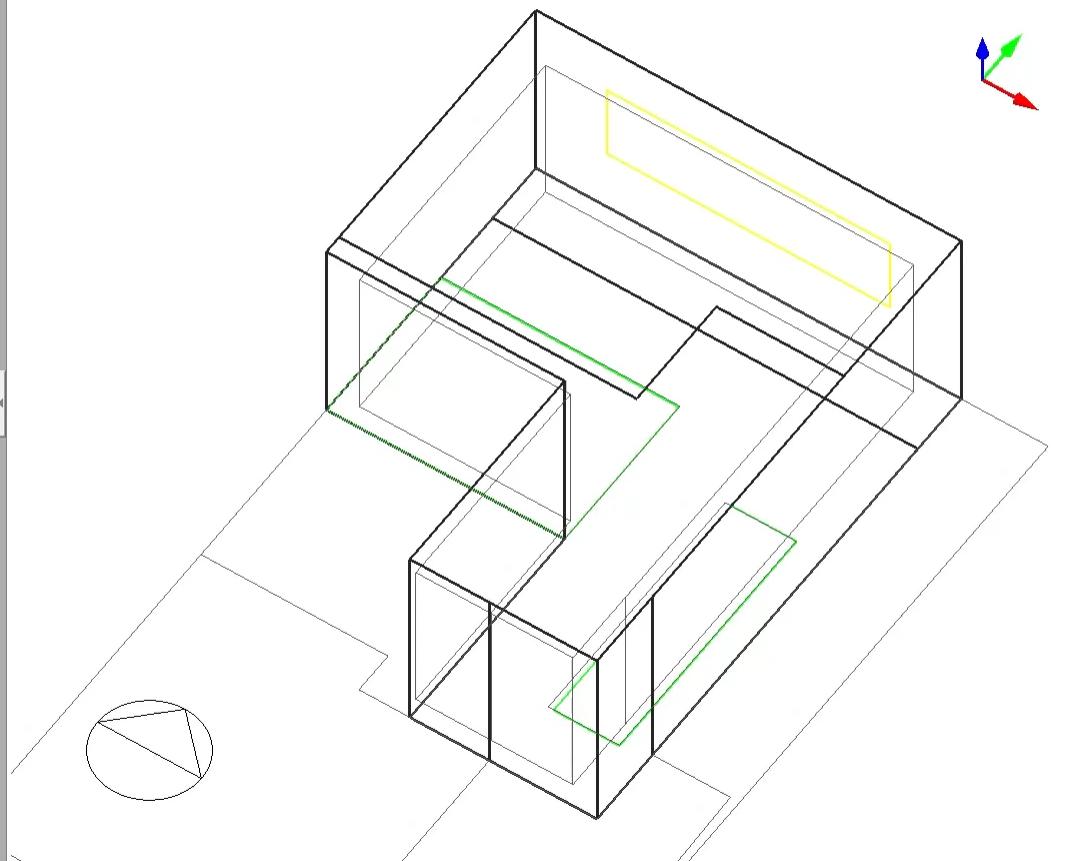
To be sure of navigating to the required surface, click once to select the surface and if it is the correct one, double-click without moving the mouse.

**Note that the most reliable way to select a particular surface is to click near its geometric centre.**

Go to surface level by double-clicking on the appropriate surface in the Model view or single-clicking on the surface in the Navigator list.

Clear to defaults

Load data



# Hvala na pažnji!

 Toni Borković, [tborkovic@eihp.hr](mailto:tborkovic@eihp.hr)



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