

Uspostava simulacija i rasprava rezultata

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Kako pokrenuti simulaciju?

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

 Update data

ili **F9**

Edit Calculation Options

Calculation Options

General Options Output Simulation Manager

Calculation Description

Simulation Period

From

Start day

1

Start month

Jan

To

End day

31

End month

Dec

☐ Run simulation for multiple years

Output Intervals for Reporting

☒ Monthly and Run period

☐ Daily

☒ Hourly

☐ Sub-hourly

Help

Info Data

Simulation Options

These options control the simulation and the output produced.

Simulation Period

Select the start and end days for the simulation, or select a typical period:

- [Annual simulation](#)
- [Summer design week](#)
- [Summer typical week](#)
- [All summer](#)
- [Winter design week](#)
- [Winter typical week](#)
- [All winter](#)

Interval

Monthly and run period, daily, hourly and sub-hourly data can be selected by checking the appropriate checkboxes.

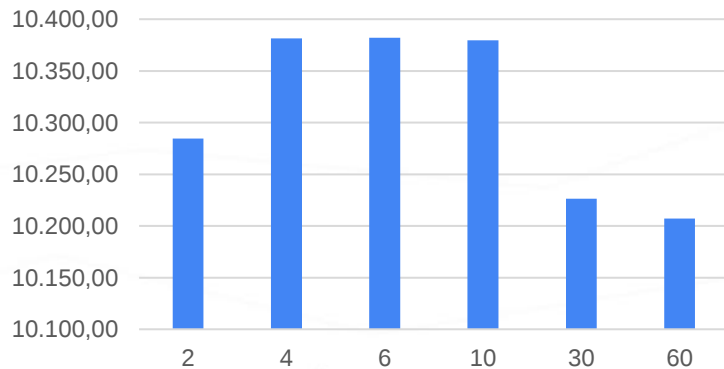
Note that selecting output at hourly or sub-hourly intervals can produce large amounts of data which slows processing and results in large file sizes.

Auto-Update

This dialog is always shown when you select 'Update' and will also be shown before all simulations if 'Don't show this dialog next time' at the bottom is cleared.

Time steps per hour	Run simulation Time	Total Energy [kWh]	10284,5
2	0:00:24	10.284,53	-0,000292%
4	0:00:34	10.381,63	-0,944431%
6	0:00:46	10.382,20	-0,949973%
10	0:01:08	10.379,82	-0,926832%
30	0:02:44	10.226,57	0,563275%
60	0:04:37	10.207,12	0,752394%

Rezultati prema Time steps



Edit Calculation Options

Calculation Options

General

Options

Output

Simulation Manager

Calculation Options

Simulation method

1-EnergyPlus

Time steps per hour

2

Temperature control

1-Air temperature

Solar

☐ Include all buildings in shading calcs

☐ Include shading from excluded zones in simulation

☐ Model all external reflections and shading of ground reflected solar

Solar distribution

2-Full exterior

Shadow calculation method

1-Average over days in frequen

Shadowing interval (days)

20

Sky diffuse modelling algorithm

1-Simple sky diffuse modelling

Detailed HVAC Autosizing

Advanced

General Solution

Solution algorithm

1-Conduction Transfer Function

☒ Allow individual constructions to override solution method

Finite Difference Settings

Finite difference scheme

1-Fully implicit first order

Space discretization constant

3.00

Relaxation factor

1.000

Inside face surface temperature convergence c...

0.0020

Airflow Network

Maximum iterations

1000

Absolute airflow convergence tolerance (kg/s)

0.000001000

Relative airflow convergence tolerance

0.000100000

Convection

Inside convection algorithm

6-TARP

Outside convection algorithm

6-DOE-2

Warmup

Minimum number of iterations per day

6

Edit Calculation Options

Calculation Options
 General Options Output Simulation Manager

Output Data

- ☒ Building and block output of zone data
- ☐ Include unoccupied zones in block and building totals and averages
- ☐ Allow custom outputs

 Graphable Outputs

Energy

- ☐ Surface heat transfer
- ☒ Internal gains including solar
- ☒ Energy, HVAC etc
- ☒ Latent loads

Building Surface and Opening Outputs

- ☐ Store surface output

 Comfort and Environmental

Reporting period 1-All periods

- ☒ Environmental
- ☒ Fresh air supply
- ☐ Simple ASHRAE Standard 55
- ☐ Adaptive ASHRAE Standard 55
- ☐ Adaptive CEN Standard 15251
- ☐ CIBSE TM52
- ☐ CIBSE TM59 Adaptive CEN Standard 15251
- ☐ Fanger
- ☐ Pierce two-node
- ☐ Kansas State University two-node
- ☒ Temperature distribution

 Reporting period 1-All periods

Summary Tables

Summary output units (SI) 1-kWh

- Summary Annual Reports
- Summary Monthly Reports
 - ☐ All Monthly
 - ☒ Zone Cooling Summary Monthly
 - ☒ Zone Heating Summary Monthly
 - ☒ Zone Electric Summary Monthly
 - ☐ Space Gains Monthly
 - ☐ Peak Space Gains Monthly
 - ☐ Space Gain Components At Cooling Peak Monthly
 - ☐ Energy Consumption Electricity Natural Gas Monthly
 - ☐ Energy Consumption Electricity Generated Propane Monthly
 - ☐ Energy Consumption Diesel Fuel Oil Monthly
 - ☐ Energy Consumption District Heating Cooling Monthly
 - ☐ Energy Consumption Coal Gasoline Monthly
 - ☒ End Use Energy Consumption Electricity Monthly
 - ☐ End Use Energy Consumption Natural Gas Monthly
 - ☐ End Use Energy Consumption Diesel Monthly
 - ☐ End Use Energy Consumption Fuel Oil Monthly
 - ☐ End Use Energy Consumption Coal Monthly
 - ☐ End Use Energy Consumption Propane Monthly
 - ☐ End Use Energy Consumption Gasoline Monthly
 - ☐ End Use Energy Consumption Other Fuels Monthly
 - ☐ Peak Energy End Use Electricity Part1 Monthly
 - ☐ Peak Energy End Use Electricity Part2 Monthly
 - ☐ Electric Components Of Peak Demand Monthly
 - ☐ Peak Energy End Use Natural Gas Monthly
 - ☐ Peak Energy End Use Diesel Monthly

- ☐ Peak Energy End Use Other Fuels Monthly
- ☒ Setpoints Not Met With Temperatures Monthly
- ☒ Comfort Report Simple 55 Monthly
- ☐ Unglazed Transpired Solar Collector Summary Monthly
- ☐ Occupant Comfort Data Summary Monthly
- ☐ Chiller Report Monthly
- ☐ Tower Report Monthly
- ☐ Boiler Report Monthly
- ☐ DX Report Monthly
- ☐ Window Report Monthly
- ☐ Window Energy Report Monthly
- ☐ Window Zone Summary Monthly
- ☐ Window Energy Zone Summary Monthly
- ☒ Average Outdoor Conditions Monthly
- ☐ Outdoor Conditions Maximum Dry Bulb Monthly
- ☐ Outdoor Conditions Minimum Dry Bulb Monthly
- ☐ Outdoor Conditions Maximum Wet Bulb Monthly
- ☐ Outdoor Conditions Maximum Dew Point Monthly
- ☐ Outdoor Ground Conditions Monthly
- ☐ Window AC Report Monthly
- ☐ Water Heater Report Monthly
- ☐ Generator Report Monthly
- ☐ Daylighting Report Monthly
- ☐ Coil Report Monthly
- ☐ Plant Loop Demand Report Monthly
- ☐ Fan Report Monthly
- ☐ Pump Report Monthly
- ☐ Cond Loop Demand Report Monthly
- ☒ Zone Temperature Oscillation Report Monthly
- ☐ Air Loop System Energy And Water Use Monthly

Edit Calculation Options

Calculation Options

General Options Output **Simulation Manager**

Simulation Manager Options

☒ Use Simulation Manager

Server localhost

EnergyPlus server method EnergyPlus

Please wait

Generating EnergyPlus IDF data for 'OK'...



Cancel

Simulation Manager

File Help



Drop column H View results in DesignBuilder Results Viewer

	Description	File Name	Message	Started	Duration	Server
OK	OK_modeliran termotehni		EnergyPlus Completed Successfully	2023-10-26 00:28:43	00:00:23	localhost

Koristeći Simulation Manager, rezultate je
poželjno promatrati pomoću Results Viewer-a!

Site and Source Energy

Računi	
Mjesec	Električna energija
1	1.764,62
2	1.451,94
3	1.021,26
4	585,89
5	406,45
6	406,56
7	488,26
8	445,94
9	381,99
10	656,79
11	1.037,92
12	1.636,88
Ukupno	10.284,50

	Total Energy [kWh]	Energy Per Total Building Area [kWh/m2]	Energy Per Conditioned Building Area [kWh/m2]
Total Site Energy	10624.92	55.35	55.35
Net Site Energy	10624.92	55.35	55.35

Uslijed razlike u rezultatima simulacija i računa te varijabilnosti mogućih parametara, pokušavamo fiksirati i odrediti neke poznate parametere, kao postavne temperature kod grijanja i hlađenja.

Activity Construction Openings Lighting HVAC Generation Economics CFD

Activity Template

Template **stanovi**

Sector Copy of Residential spaces

Zone multiplier 1

☒ Include zone in thermal calculations

☒ Include zone in Radiance daylighting calculations

Floor Areas and Volumes

Occupancy

Occupancy density (people/m2) **0.0208**

Schedule **_Obiteljska_okupiranost**

Metabolic

Clothing

Comfort Radiant Temperature Weighting

Contaminant Generation and Removal

Holidays

DHW

Environmental Control

Heating Setpoint Temperatures

Heating (°C) **21.5**

Heating set back (°C) **12.0**

Cooling Setpoint Temperatures

Cooling (°C) **25.0**

Cooling set back (°C) **28.0**

Site and Source Energy

Računi	
Mjesec	Električna energija
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6	406,56
7	488,26
8	445,94
9	381,99
10	656,79
11	1.037,92
12	1.636,88
Ukupno	10.284,50

	Total Energy [kWh]	Energy Per Total Building Area [kWh/m ²]	Energy Per Conditioned Building Area [kWh/m ²]
Total Site Energy	11842.29	61.69	61.69
Net Site Energy	11842.29	61.69	61.69

Nakon toga pokušavamo djelovati na same schedule korištenja, u ovom slučaju samo grijanja i hlađenja, jer smo sustav rasvjete i korištenje opreme već korigirali.

Edit schedule - OK_heating

Schedules

General

Name	OK_heating		
Description	stambena namjena		
Source	Algoritam		
Category	<General>		
Region	CROATIA (local name: Hrvatska)		
Schedule type	2-Compact Schedule		

Profiles

Schedule: Compact,
 stambena_korisnici,
 Fraction,
 Through: 31 Dec,
 For: Weekdays SummerDesignDay,
 Until: 06:00, 0,
 Until: 17:00, 1,
 Until: 24:00, 0,
 For: Weekends,
 Until: 06:00, 0,
 Until: 17:00, 1,
 Until: 24:00, 0,
 For: Holidays,
 Until: 06:00, 0,
 Until: 17:00, 1,
 Until: 24:00, 0,
 For: WinterDesignDay AllOtherDays,
 Until: 06:00, 0,
 Until: 17:00, 1,
 Until: 24:00, 0,;

Edit schedule - OK_cooling

Schedules

General

Name	OK_cooling		
Description	stambena namjena		
Source	Algoritam		
Category	<General>		
Region	CROATIA (local name: Hrvatska)		
Schedule type	2-Compact Schedule		

Profiles

Schedule: Compact,
 stambena_korisnici,
 Fraction,
 Through: 31 Dec,
 For: Weekdays SummerDesignDay,
 Until: 12:00, 0,
 Until: 21:00, 0.85,
 Until: 24:00, 0,
 For: Weekends,
 Until: 12:00, 0,
 Until: 21:00, 0.85,
 Until: 24:00, 0,
 For: Holidays,
 Until: 12:00, 0,
 Until: 21:00, 0,
 Until: 24:00, 0,
 For: WinterDesignDay AllOtherDays,
 Until: 24:00, 0,;

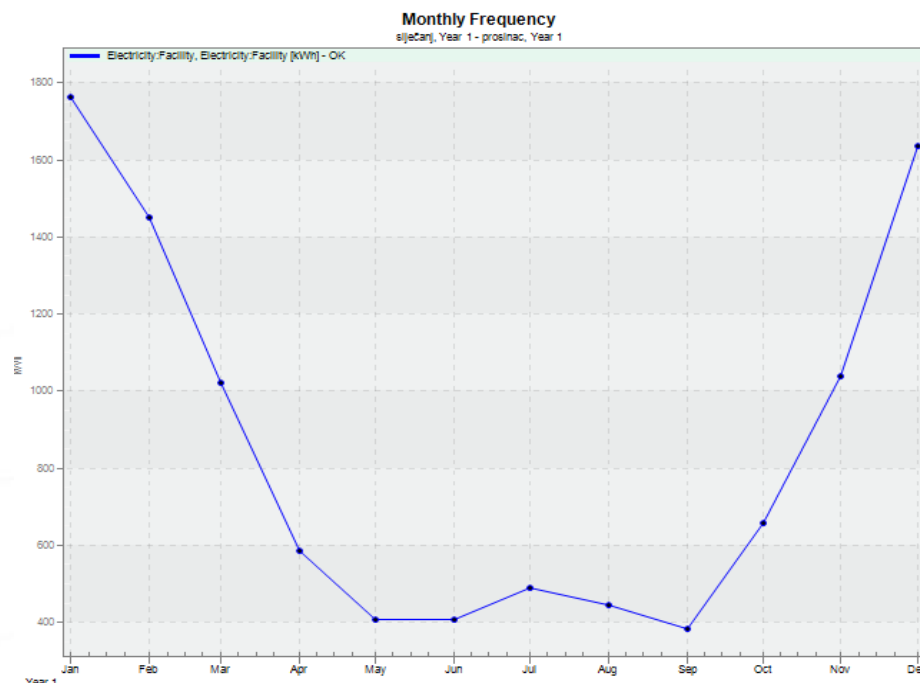
Site and Source Energy

	Total Energy [kWh]	Energy Per Total Building Area [kWh/m ²]	Energy Per Conditioned Building Area [kWh/m ²]
Total Site Energy	10284.53	53.58	53.58
Net Site Energy	10284.53	53.58	53.58

Računi	
Mjesec	Električna energija
1	1.764,62
2	1.451,94
3	1.021,26
4	585,89
5	406,45
6	406,56
7	488,26
8	445,94
9	381,99
10	656,79
11	1.037,92
12	1.636,88
Ukupno	10.284,50

	Electricity:Facility [kWh]
► 1.1.2002.	1764,786453825...
1.2.2002.	1452,080366383...
1.3.2002.	1020,9 1452,080366...
1.4.2002.	585,5654421211...
1.5.2002.	407,0412116571...
1.6.2002.	406,1833166437...
1.7.2002.	488,3591048499...
1.8.2002.	446,0310008304...
1.9.2002.	382,0774352439...
1.10.2002.	656,8678450816...
1.11.2002.	1037,571552067...
1.12.2002.	1637,018868785...

Postignuto zadovoljavajuće poklapanje rezultata i moguće je proglasiti model kalibriranim!



Hvala na pažnji!



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