



Montenegro
Ministry of Energy



ENERGETSKA
EFIKASNOST
U CRNOJ GORI

Energy performance certification & Support for Energy Efficiency

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37th Energy Efficiency Coordination Group Meeting – 20 Mart 2025

Energy performance certification

- In 2022, the Ministry of Energy finalized the software for certification and energy audits of buildings. The software was developed by Fraunhofer Institute supported by PEEPB project;
 - MEEC software supports two modes of operation: **the calculation for certifying the energy characteristics of buildings**, which implies the use of the building under standardized conditions, and the **calculation of energy consumption** in accordance with the actual way the building is used for the purposes of energy audits with the aim of proposing measures to improve energy efficiency. Also, the functionality of economic calculations is built into this software tool with the aim of analyzing the profitability of certain energy efficiency measures. Therefore, MEEC is a comprehensive tool that contains all the functionality required for the analysis of energy consumption in buildings and for the production of energy certificates.
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MEECsoftware






*National libraries
(climate data, usage
profiles, materials,
parameters)*


*Reference buildings
(types of buildings,
periods of construction,
climatic zones)*

*Minimum energy
efficiency requirements*






**Montenegrin Energy
Efficiency Certification**



Powered by Fraunhofer EPC Software

Starting...

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Version
0.8.93.9

MEEEC software

The screenshot displays the MEEEC software interface for 'Example building 3 TASK 1'. The top menu bar includes 'Projekat', 'Opcije i biblioteke', and various tool icons. The main window is titled 'Glavni prozor' and shows calculation settings for ventilation and climate conditioning. A 'Rezultati proračuna' (Calculation Results) window is open, displaying energy consumption data and a bar chart. A 'Pomoć' (Help) window is also visible, providing information on zone descriptions and user profiles.

Types of calculations:

- Calculation for certification
- Calculation of energy consumption

Calculation methodology with annexes

Instructions for use

Useful documents (regulations, supporting documents)

Zone description

Name of zone
Enter the name of the zone.

User Profile
User profiles represent a set of data that characterize certain spaces depending on their use. These data include usage times, indoor space conditions, minimum outdoor air volume flow, internal heat sources, lighting levels, etc.

User profile for zone is selected from the drop-down menu. For zones with a non-residential use, there are 36 user profiles available. These user profiles are considered standard and only these profiles can be used in **Calculation for EPC mode** (i.e. mode used for creating energy performance certificates).

For **Calculation of consumption mode**, standard user profiles can be modified in order to reflect the actual use of the building. These modified user profiles are defined in **Building** screen in **User profile** tab. In case that for this zone the standard user profile is not used for calculation of consumption mode, then this option needs to be selected by clicking in the checkbox **Use different user profile for consumption mode**. After user dropdown menu the adapted to reflect the

Rezultati proračuna

Odabrani mod ENERGETSKI PRORAČUNI/AUDIT: podaci u profilima korišćenja se mogu prilagoditi stvarnom korišćenju zgrade.

Ukupna potrebna energija	112,94 kWh/(m ² g)
Ukupna isporučena energija	60,92 kWh/(m ² g)
Ukupna primarna energija	106,60 kWh/(m ² g)

Bar chart showing energy consumption components: Potrebna energija, Isporučena energija, and Primarna energija.

MEEC software



PODACI O ENERGETSKIM KARAKTERISTIKAMA

A		Energetska klasa zgrade:	C
B		Ukupna primarna energija po jedinici korisne površine grijanog i/ili hlađenog dijela...	68,32 Usporedna zgrada: 110,46
C		Ukupna isporučena energija po jedinici korisne površine grijanog i/ili hlađenog dijela...	39,04 Usporedna zgrada: 63,12
D		Godišnje emisije CO ₂ [kg CO ₂ /m ² a]:	19,13 Usporedna zgrada: 30,93
E		Udio obnovljivih izvora energije	75,57%
F			
G			

ENERGETSKE POTREBE ZGRADE [kWh/m²]

Vrsta potrošnje energije	Potrebna energija	Isporučena energija	Primarna energija
Grijanje	52,84	16,69	29,20
Hlađenje	56,86	13,85	56,86
Sanitarna topla voda	3,87	0,88	1,54
Rasvjeta	4,14	6,59	11,54
Ventilacija	0,00	0,00	0,00
Pomoćna energija	0,00	1,03	1,79
UKUPNO	117,70	39,04	68,32

PODACI O SERTIFIKATU

Ovlašćeno lice:		Datum izdavanja ovlašć...	
		Registarski broj ovlašć...	
Odgovorno kvalifikovano lice:		Ostala kvalifikovana lica:	

STAMP

Datum / Mjesto Potpis

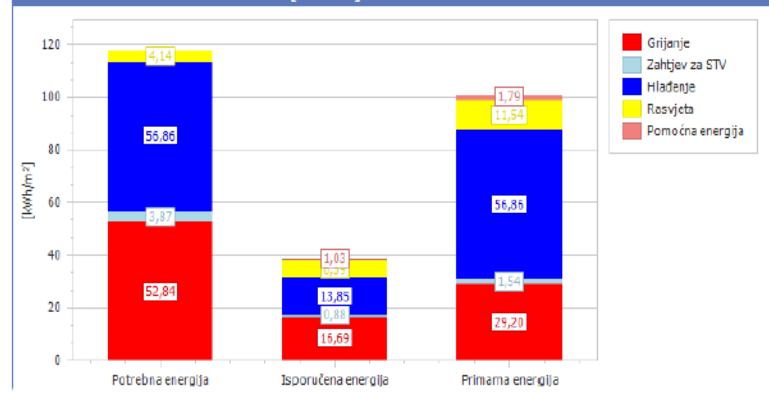
SERTIFIKAT O ENERGETSKIM KARAKTERISTIKAMA...

Registarski broj sertifikata: Datum važenj... 25.08.34 2

TERMIČKI OMOTAČ ZGRADE

Koeficijent prolaza toplote (U-vrijednost)	srednja U-vrijednost [W/m ² ·K]	dozvoljena U-vrijednost [W/m ² ·K]
Spoljni zidovi, zidovi prema garaži, tavanu	0,24	0,35
Prozori, balkonska vrata, krovni prozori, providni elementi fasade	1,59	2,00
Ravni i kosi krovovi iznad grijanog prostora, tavanice prema tavanu	0,15	0,37
Tavanice iznad spoljnog vazduha, tavanice iznad garaže	0,00	0,40
Zidovi i tavanice prema negrijanim prostorijama, negrijanom stepeništu temperature više od 0°C, prostorijama koje se povremeno koriste i prostoru druge namjene	0,00	0,50
Zidovi prema tu, podovi na tu	0,45	0,50
Spoljna vrata, vrata prema negrijanom stepeništu, vrata sa neprozirnim krilom	0,00	2,90
Srednji koeficijent transmisionog gubitka toplote	Vrijednost [W/K]	Dozvoljeno [W/K]
	1,56	2,23

ENERGETSKE POTREBE ZGRADE [kWh/m²]



MEEC software Final step



Navigation

OK

- Project
 - Energy auditor
 - Building
 - Energy efficiency measures
 - Certificates
 - Evaluation and Administration of EPCs
 - Quality control of EPCs
 - Administration of energy auditors

Main

Energy efficiency certificates

Include deleted EPCs Export EPCs as Excel table

Drag a column header here to group by that column

Case number	Submitted	Energy auditor	Energy class	Primary Energy kWh/m ²	Net floor area...	Level 1	Level 2	Level 3	Approved	Rejected	Reason
2025-02-19-111222_delet...	19/02/2025	Ministry	D	96.73	3245.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2025-03-14-123457	14/03/2025	Upload	D	83.25	3245.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2025-02-21-445566_delet...	21/02/2025	Ministry	B	85.39	122.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	gdfdsf
2025-02-21-111111_delet...	21/02/2025	Ministry	B	85.39	122.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2025-03-12-562 KO Lipci	12/03/2025	Ministry	D	119.47	2747.6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Roof missing
2025-01-22-123456	22/01/2025	Upload	D	83.25	3245.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2025-02-19-111222_delet...	19/02/2025	Ministry	D	96.73	3245.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Quality control for Energy Performance Certificates

Select EPC for level 2 control Open project file for the selected Energy Performance Certificate Approve selected EPC

Select EPC for level 3 control Open EPC file as pdf for the selected Energy Performance Certificate Reject selected EPC

Open proof of payment for the selected Energy Performance Certificate Reset selected EPC

Energy performance certificate

EPC mode: Energy demand calculated with standardised user profiles

Class	Primary energy [kWh/(m ² a)]
G	
A	
B	
C	
D	
E	
F	

Building as is [kWh/(m²a)] **92.64**

Notional Building [kWh/(m²a)] **45.25**

Difference [%] **204.8%**

Energy need

Delivered energy

Primary Energy

Heating

DHW demand

Auxiliary energy

Status Calculation results Energy performance certificate Calculation results for variants

Control of Issued certificates - Levels



MEEEC software: Final step - Control of Issued Certificates

*Level 3: Detailed control -
only certain certificates will be
controlled in detail*

Level 2: More detailed control

*Level 1: Formal data control -
It is checked whether all
required data have been
entered*

The Ministry of Energy is still considering the most suitable options for the implementation of this process. Negotiations with the EBRD bank are ongoing, and probably the University of Montenegro - Faculty of Mechanical Engineering will be involved in the process of detailed control of issued certificates.

EE in Montenegro - Support

1 Promotion of Energy Efficiency in Public Buildings (*PEEPB*)

the project is financed by KfW Bank. The aim of this project is the application of energy efficiency measures in selected educational buildings, public institutions and administrative facilities.

Project value - loan from KfW Bank in the amount of 45 million euros, 4.5 million euros a donation from the European Union (WBIF_Reep Plus), 10 million euros own contribution.

The goal of the project is to improve energy efficiency in selected administrative buildings, educational and social institutions, as well as to provide support in fulfilling the obligations prescribed by the Law on the Efficient Use of Energy, which resulted from EU directives.

EE in Montenegro - Support

2 Montenegro Energy Efficiency Project (MEEP2) is financed from a loan from the International Bank for Reconstruction and Development (IBRD). As part of the first phase of the project (MEEP 1), which ended in March 2018, 25 public facilities (9 educational and 16 healthcare buildings) were upgraded with energy efficiency measures. The implementation of the second phase of the project (MEEP 2) started on September 1, 2018, and the deadline for completion of the project is June 30, 2025

EE in Montenegro - Support

3 Decarbonization of the Energy Sector of Montenegro

- The goal of the Project is to improve the energy efficiency of public facilities (University of Montenegro facilities and other public facilities) and increase the operational efficiency of the electricity distribution network in Montenegro.
 - The project consists of 3 components:
 - Improving the energy efficiency of public buildings
 - Increasing the operational efficiency of the electrical distribution network
 - Technical assistance and support for project implementation
 - The total value of the project is €33.8 million. Financing will be provided from two sources: €31 million from loans from the World Bank, and €2.8 million as the state's own participation. Within Component 1 of the project, improvement of energy efficiency in 23 facilities is foreseen (16 facilities of the University of Montenegro, 6 administrative facilities and 1 health facility). The Ministry of Energy will be responsible for the implementation of this component.
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EE in Montenegro - Support

4 Support for energy efficiency improvement for other sectors -

As a part of the 30 million € support by European Commission (EC) - package for overcoming the energy crisis, Resulted in implementation of 3 programs: 1) citizens/households – Eco fond, 2) tourism sector – Eco Fund and 3) industry – Innovation Fund and Ministries.

- Priority was given to these sectors because energy efficiency is recognized as an economical and fast way to increase the security of energy supply and to reduce greenhouse gas emissions responsible for climate change.
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THANK YOU FOR YOUR ATTENTION!

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