

EMPOWER

Energy Monitoring

Easy monitoring for households

Energy and Climate Agency of Podravje
dr. Vlasta Krmelj

Easy monitoring

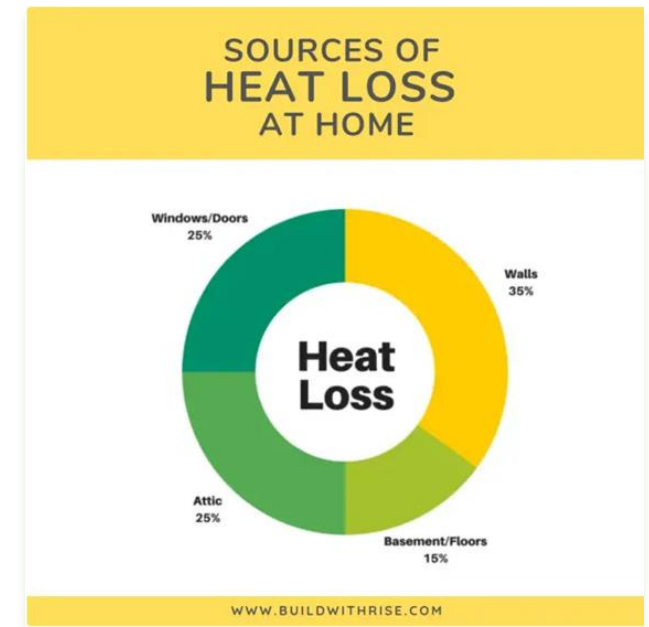
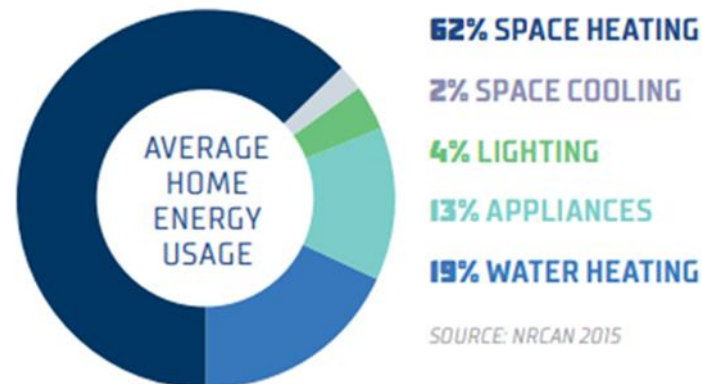
By taking some simple, affordable steps to understand energy use in our homes, we can help to reduce impact on the environment.



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Free personal energy advice

- Paid by the municipalities
- Personal meeting with the advisor
- Checking the current energy status of the household
- Discussion about potential losses and solutions

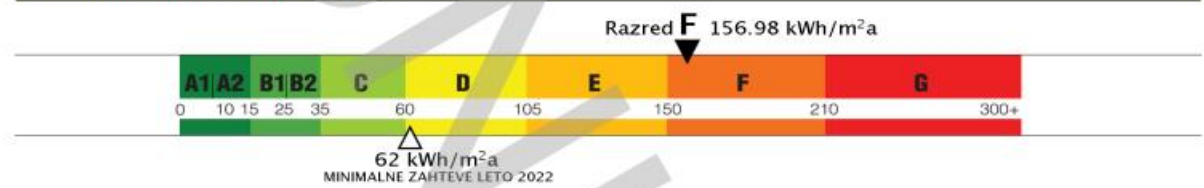


Energy monitoring

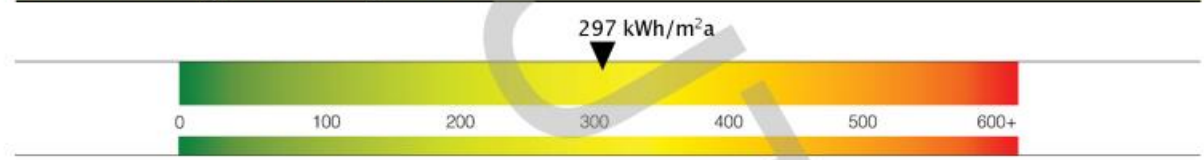
- Reading the energy bills
- Definition of energy use indicators per m² or person

Podatki o stavbi		Vrsta izkaznice: računska
Št. izkaznice: 2022-570-61-96439	Velja do: /	Vrsta stavbe: stanovanjska
Identifikacijska oznaka stavbe, posameznega dela ali delov		Naziv stavbe: Areška cesta 11
Klasifikacija stavbe: 1122100		
Leto izgradnje: 1962		
Naslov stavbe: AREŠKA CESTA 11, 2342 Ruše		
Kondicionirana površina stavbe A _k (m ²): 40		
Parcelna št.: 672/1		
Katastrska občina: RUŠE		

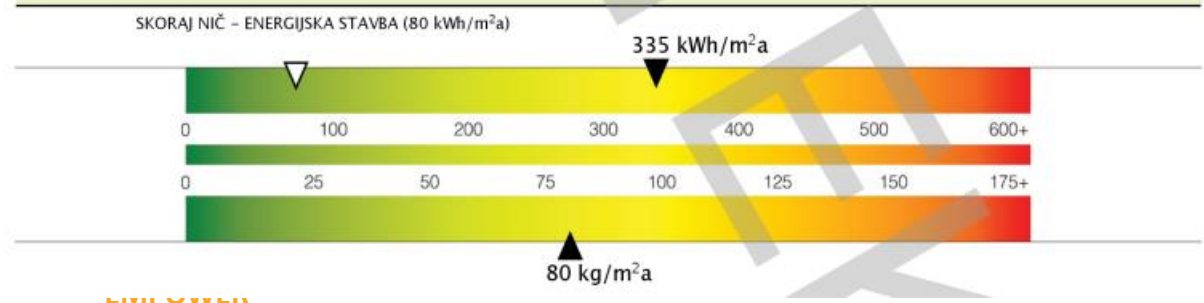
Potrebna toplota za ogrevanje



Dovedena energija za delovanje stavbe



Primarna energija in Emisije CO₂



“Carbon reduction suitcase” – tool kit

Energap has decided to offer to the citizens easy monitoring of their homes with the help of an “Carbon reduction suitcase” – tool kit.



EMPOWER

More carbon reduction by dynamically monitoring energy efficiency

Easy monitoring of homes

People can borrow the suitcase for free (instructions included).
Monitoring of the indoor conditions and potential energy losses in
easy and understandable way



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Tool kit is equipped with equipment to detect conditions of energy losses in homes:



key for venting radiators



stopwatch



liquid thermometer



infrared camera



electricity meter



luminance meter



room thermometer /
hygrometer



Refrigerator
thermometer

Explaining the measurements

- Advisor explains the measurements and results



Paris, 11 MAY 2022

EMPOWER More carbon reduction by dynamic energy efficiency

TOO DRY
LESS THAN
15%
HUMIDITY

You may notice you're getting zapped by door-knobs and light switches.

TOO HUMID
GREATER THAN
50%
HUMIDITY

You may notice that your hair is frizzier than usual.

A humidifier will help increase humidity.

Air conditioning will help lower humidity.

Energy advice

Energap offers advice and information on:

- soft measures how to save energy (closing windows, ventilation, turning off lights ...),
- restoration of heating systems,
- possibilities of co-financing and obtaining loans for the implementation of measures in the field of RES and EE,
- investments in heating systems,
- installations or the replacement of joinery,
- installation of wood biomass central heating combustion plants,
- installation of solar heated systems,
- purchases of economical white goods, etc.



Benefits

- understanding energy use in your home,
- see the energy losses
- comparison with the neighbours
- low cost reduction measures

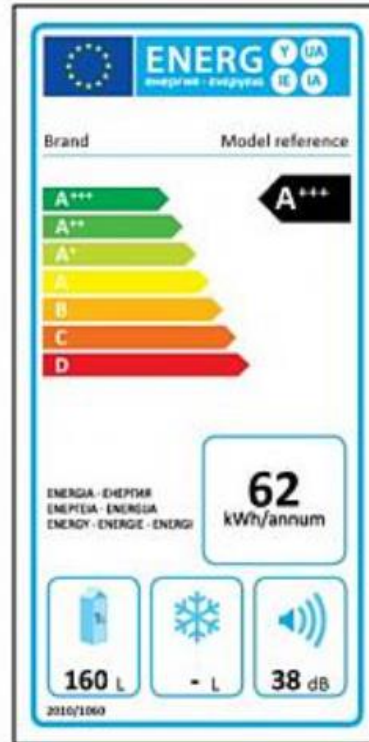


EMPOWER
More carbon reduction by dynamically monitoring energy
efficiency

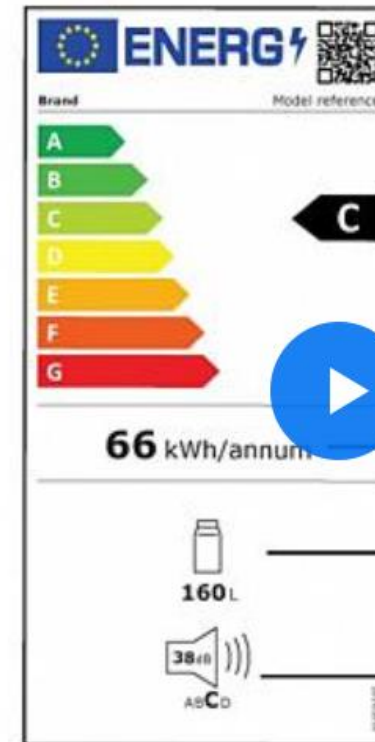
Next steps

- The tool will be available in schools and libraries.
- Easy online calculation and explanation tool to plan the measures.

Current energy label



New energy label



The **QR code** gives access to more information on the model

The **rescaled energy efficiency class** for this fridge, an A+++ in the previous label

The **annual energy consumption** of this fridge is calculated with refined methods

The **volume** of the fridge expressed in liters (L)

The **noise level** measured in decibels (dB) and using a four classes scale

The energy labels for a fridge without freezer

SISMA PLUS SET Tool - Calculation tool for the calculation of investment indicators

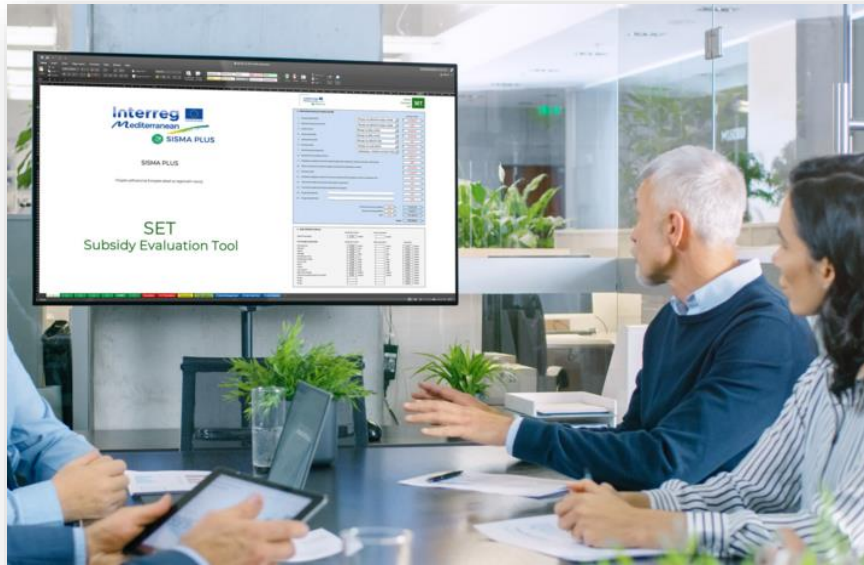


Dr Vlasta KRMELJ,
ENERGAP

EMPOWER Technical Workshop
Paris, 11.5.2022



Effective planning is the key to successful energy renovation



With the SISMA SET Tool the Municipalities can overcome the challenges they face when financing investment projects in the field of energy renovation.

A dedicated training program with individual mentoring.

The SET package provides ready-to-use spreadsheets & guidelines that can be used different public buildings (schools, gyms, office buildings and health care facilities).



<https://sisma.interreg-med.eu/>

- The SET methodology provides a mature and standardized tool for local municipalities.
- The calculation is a simplified method for a preliminary assessment of energy and financial aspects related to energy efficiency investments in public buildings.

Calculation parameters

Energy assessment implemented in the SET with option A, implies two simplification levels:

- simplification of the building geometry, so as to define dispersion areas starting from a minimum input data, in order to allow a general energy assessment even in the absence of a project or detailed geometric details that the public authority or the ESCO may not have;
- simplification of the building energy calculation through the use of a series of predetermined coefficients defining the climatic context and building utilization.

Energy Calculations

The SET performs simplified energy calculations according to the 4 phases

- Phase 1. Building geometry calculations
- Phase 2. Building thermal dispersions
- Phase 3. Plant losses and savings on the thermal energy supplied
- Phase 4. electricity savings calculation

1. GENERAL INFORMATION

Building: _____
 Address: _____
 Owner: _____
 Author: _____
 Institution / Company: _____
 Phone number / Email: _____

2. GENERAL BUILDING INFORMATION

Location: Udine Building type: Health care structure
 Position: isolated building
 Latitude: 46°

Heating Degree Days (HDD): 2.488,00 Kd Construction year: 1964
 Net Internal Area: 1.300,00 m² Gross Floor Area: m² (*) Medium thickness outer walls: cm (*)
 Heated volume: 6.300,00 m³ N. of floors with heating: 3,00 (*) Optional, if the Net Internal Area value is not available

3.A CONSUMPTION MEASURES - THERMAL ENERGY

Fuel 1:	heat consumption	year	annual expense
<u>Natural gas</u>	<u>8.410,00</u> STDm ³	<u>2013</u>	<u>6.904,00</u> €
Unit of measurement:	<u>6.762,00</u> STDm ³	<u>2014</u>	<u>5.445,00</u> €
	<u>7.686,00</u> STDm ³	<u>2015</u>	<u>6.059,00</u> €

Including hot water: both/none Thermal energy cost (2015): 0,081 €/kWh

Fuel 2 (optional):	heat consumption	year	annual expense
<u>Natural gas</u>	STDm ³		€
Unit of measurement:	STDm ³		€
	STDm ³		€

Thermal energy cost (0): €/kWh

3.B CONSUMPTION MEASURES - ELECTRICITY

electrical consumption	year	annual expense
<u>19.575,00</u> kWh	<u>2014</u>	<u>4.341,00</u> €
<u>18.262,00</u> kWh	<u>2015</u>	<u>3.918,00</u> €
<u>16.065,00</u> kWh	<u>2016</u>	<u>3.590,00</u> €

6. SAVINGS CALCULATION - SELECT OPTION:

Option B

Option A: simplified estimation of savings in relation to specific ECMs Energy Conservation Measures (a suitable way to preliminarily evaluate the general potential in the absence of detailed energy audit)

Option B: tailored and calibrated calculation of savings (savings data is obtained from a detailed energy diagnosis or from an ICP or equivalent protocol baseline-> savings process leading to an IRSE or similar certification)

6.A OPTION A (simplified estimation of savings in relation to specific ECMs Energy Conservation Measures)

<input checked="" type="checkbox"/> External insulation of walls (ETICS)	<u>intervention on all the building envelope</u>	affected dispersion surface: <u>950</u> m ²
<input type="checkbox"/> Internal insulation of walls	<u>intervention on a part of the wall</u>	affected dispersion surface: <u> </u> m ²
<input type="checkbox"/> Roof insulation	<u>intervention on all the roof</u>	affected dispersion surface: <u> </u> m ²
<input checked="" type="checkbox"/> Attic insulation	<u>intervention on all the roof</u>	affected dispersion surface: <u>600</u> m ²
<input checked="" type="checkbox"/> Basement floor insulation	<u>intervention on all the floor</u>	affected dispersion surface: <u>600</u> m ²
<input checked="" type="checkbox"/> Replacement of windows	<u>intervention on all the building windows</u>	affected dispersion surface: <u>150</u> m ²
<input type="checkbox"/> Boiler replacement	<u>Heat pump</u>	
<input checked="" type="checkbox"/> Installation of thermostatic valves	Quantity <u>15</u>	
<input type="checkbox"/> Heating system efficiency improvement (regulation, emission, distribution)		
<input type="checkbox"/> Thermal recovery system on existing AHU or MCV		
<input type="checkbox"/> Replacement of lamps	Quantity <u> </u>	portion of building concerned: <u> </u> %
<input type="checkbox"/> Lighting system energy efficiency improvement (presence detection, sensors, brightness, etc)		portion of building concerned: <u> </u> %
<input type="checkbox"/> Photovoltaic installation (to cover thermal consumption)		installed power: <u> </u> kWp
<input checked="" type="checkbox"/> Photovoltaic installation (to cover electricity consumption)		installed power: <u>10,0</u> kWp
<input type="checkbox"/> Other		further savings on thermal consumption: <u> </u> %
<input type="checkbox"/> Other		further savings on electricity consumption: <u> </u> %

Estimated savings on heat consumption: 29,18 % 1.752,72 €/y

Estimated cost savings on electric power: 20,5 % 821,24 €/y

6.B OPTION B (tailored and calibrated calculation of savings)

Heat consumption baseline: 19.575,00 kWh/y HDD baseline: Kd

Electricity consumption baseline: 85.000,00 kWh/y

Estimated savings on heat consumption: 10,0 % 1.957,50 kWh/y €/y

Estimated cost savings on electric power: 15,0 % 12.750,00 kWh/y €/y

Financial calculations

7. PARAMETERS FOR THE FINANCIAL CALCULATION

Energy savings calculation method: Option B

Investment:	<input type="text" value="544.313"/>	€		
Estimated savings on heat consumption:	<input type="text" value="0,00"/>	€/y	<input type="text" value="10,0"/>	%
Estimated cost savings on electric power:	<input type="text" value="0,00"/>	€/y	<input type="text" value="15,0"/>	%
Total savings:	<input type="text" value="0,00"/>	€/y		
Duration of the Financial Plan	<input type="text" value="20"/>	years		
General inflation rate	<input type="text" value="2,00"/>	%		
Inflation rate of electricity prices	<input type="text" value="2,00"/>	%		
Inflation rate of eating energy source	<input type="text" value="2,00"/>	%		
IRR *	<input type="text" value="5,00"/>	%		

Tot. Subsidy equivalent to % of total investment

8. COMPANY FINANCIAL DATA

	Net amount	V.A.T.	Total:
Investment:	<input type="text" value="446.158,00"/>	<input type="text" value="98.154,76"/>	<input type="text" value="544.312,76"/>
	<input type="text" value="#VREDN!"/>	<input type="text" value="#VREDN!"/>	<input type="text" value="#VREDN!"/>
Own capital:	<input type="text" value="#VREDN!"/>	<input type="text" value="#VREDN!"/>	<input type="text" value="#VREDN!"/>
	<input type="text" value="#VREDN!"/>	<input type="text" value="#VREDN!"/>	<input type="text" value="#VREDN!"/>
Total bank debt:	<input type="text" value="32.786,89"/>	<input type="text" value="7.213,11"/>	<input type="text" value="40.000,00"/>
	<input type="text" value="32.786,89"/>	<input type="text" value="7.213,11"/>	<input type="text" value="40.000,00"/>
Loan period	<input type="text" value="20"/> years	<input type="text" value="5"/> years	<input type="text" value="#VREDN!"/>
Annual Interest Rate	<input type="text" value="3,50"/> %	<input type="text" value="4,00"/> %	

Once all the data has been inserted, the Financial Plan of the project is automatically available with the following information:

- CASH FLOWS (on a yearly basis over the entire project period);
- FINANCIAL INDICATORS addressing loan coverage capacity:
 - ✓ DSCR-Debt Service Cover Ratio
 - ✓ LLCR-Loan Life Coverage Ratio

CASH FLOWS

9. CASH FLOW STATEMENT BEFORE TAX																					
CASH FLOW STATEMENT BEFORE TAX																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Sales revenue - concession fee		#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!
Incentives																					
Operating cash flow		#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!
Investing cash flow -VAT recovery from initial investment		#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!															
Financing cash flow		-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307	-2.307
Cash flows for VAT bridge loan		-1.620	-1.620	-1.620	-1.620	-1.620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net cash flow before tax	#VREDN!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!
DSCR (DEBT SERVICE COVER RATIO)		#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!	#DEL/0!
LLCR (LOAN LIFE COVER RATIO)		#DEL/0!																			

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Thank You!

