



EMIS

Energy Management Information System

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EMIS

Data acquisition and data overview

ENERGY MANAGEMENT INFORMATION SYSTEM

- **Internet application** – main tool for continuous data gathering, monitoring and analysis of energy and water consumption in buildings
- **Data source** for different strategic and action plans on local, regional and national level
- Allows easy **analysis and interpretation of energy and water consumption** from one centralized place
- www.isge.hr



ISGE



DIFFERENT ROLES FOR ACCESSING EMIS

Depending on user role there are different EMIS interfaces:

1. **Guest (G)** – low level of authorization, data overview
2. **Energy Manager (EM)** – low level of authorization, data overview, data export
3. **User (U)** – medium level of authorization, **data input**, data overview, data export
– most common role
4. **Energy Administrator (EA)** – high level of authorization, data input, data overview, data export, data analysis
5. **System Administrator (SA)** – highest level of authorization, data input, data overview, data export, data analysis, granting privileges

EMIS STATISTICS

- ECC – Energy consumption center
- Introduces scalability into reporting on energy consumption

EMIS database statistics (02.03.2021.)						
ECC type	Number of objects	Number of metering points	Automatic Meters Count	Energy bill count	Number of readings	Number of automatic readings
Complex	1.022	3.348	436	478.230	15.461.406	14.964.702
Building in complex	4.050	3.691	461	503.133	12.921.623	12.367.155
Free-standing building	10.539	26.190	834	3.880.506	21.075.842	19.247.179
Part	3.688	6.981	76	900.443	1.690.778	1.471.435
Sum - Building stock	19.299 (14.589)	40.210	1.807	5.762.312	51.149.649	48.050.471
Public lighting	24.174	23.279	2	3.730.908	1.172	0
Sum	43.473	63.489	1.809	9.493.220	51.150.821	48.050.471

DATA ACQUISITION

- Energy consumption data – energy and water vendor bills (monthly based):
 - Manually entered bills by EMIS users
 - Automatic bills – EMIS is connected to different vendor billing data bases
- Energy consumption data from meter readings
 - Manual readings by EMIS users
 - Remote readings (hourly based) – EMIS connected to automatic reading systems installed on metering points
- General data
- ECC's energy systems data
 - Heating, cooling, air-conditioning and ventilation systems, water supply system
- ECC's Construction data
- Energy certificates and audits module (energy efficiency measures)
- Energy reconstruction module
- Action plan module – undergoing implementation

ENERGY CONSUMPTION ENTRY – BILLS

- Data in columns (mainly Consumption column) is used for the reports and analysis of energy consumption

ISGE - Informacijski sustav za gospodarenje energijom

Update

Energy bill Locked

Number of energy bills in current month.: 4

Object: Istarski domovi zdravlja - Ispostava Rovinj - DZ Rovinj
 Metering point: 1122302905
 Energy carrier: Električna energija
 Energy vendor: HEP - Opskrba d.o.o.
 Tariff / Bill Group: HEP - Opskrba d.o.o. - HEP Opskrba PRO (+) (28)
 Month: 6.2020.
 Amount: 12927,73 + 1680,61 (PDV) = 14608,34
 Bill serial number: 0010195031-200625-6
 Comment:
 Date from - to: 01.06.2020. - 30.06.2020.

Bill items

	Consumption	Unit price	(Range)	Tax	(Range)
Električna energija iz obnovljivih izvora	13113	kWh	0,105	kn/kWh	13 0 - 25 %
[Opskrba] RVT	10052	kWh	0,5072	kn/kWh	13 0 - 25 %
[Opskrba] RNT	3061	kWh	0,2791	kn/kWh	13 0 - 25 %
Trošarine za poslovnu uporabu električne energije	13113	kWh	0,0075	kn/kWh	13 0 - 25 %
Opšrbna naknada	1	mjesec	41,3	kn/mjesec	13 0 - 25 %
[Distribucija] Viša tarifa (RVT)	10052	kWh	0,21	kn/kWh	13 0 - 25 %
[Distribucija] Niža tarifa (RNT)	3061	kWh	0,1	kn/kWh	13 0 - 25 %
[Distribucija] Angažirana radna snaga (SN)	79	kW	38,5	kn/kW	13 0 - 25 %

Rename energy bill items Cancel

Show all Hide empty Energy bill overview

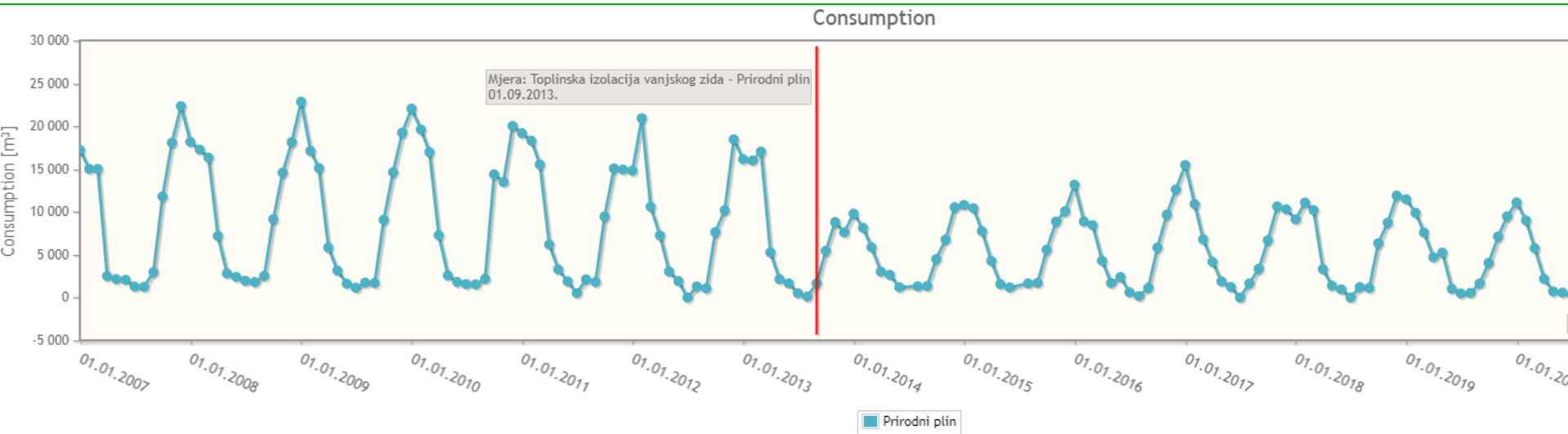
2020 Info

Legend:

- Consumption - [Distribucija] Niža tarifa (RNT) - kWh
- Consumption - [Distribucija] Viša tarifa (RVT) - kWh
- Cost - [Distribucija] Niža tarifa (RNT) - kn
- Cost - [Distribucija] Viša tarifa (RVT) - kn

ENERGY AUDITS MODULE – ENERGY MEASURES

- For entry of energy audits and energy certificates
- Under energy audit or certificate, users can create entry of different energy efficiency measures that have been done on their building
- Thermal insulation of the outside walls in September 2013. (can be seen on natural gas charts as red line) – significant decrease in natural gas consumption in following years



GENERAL DATA

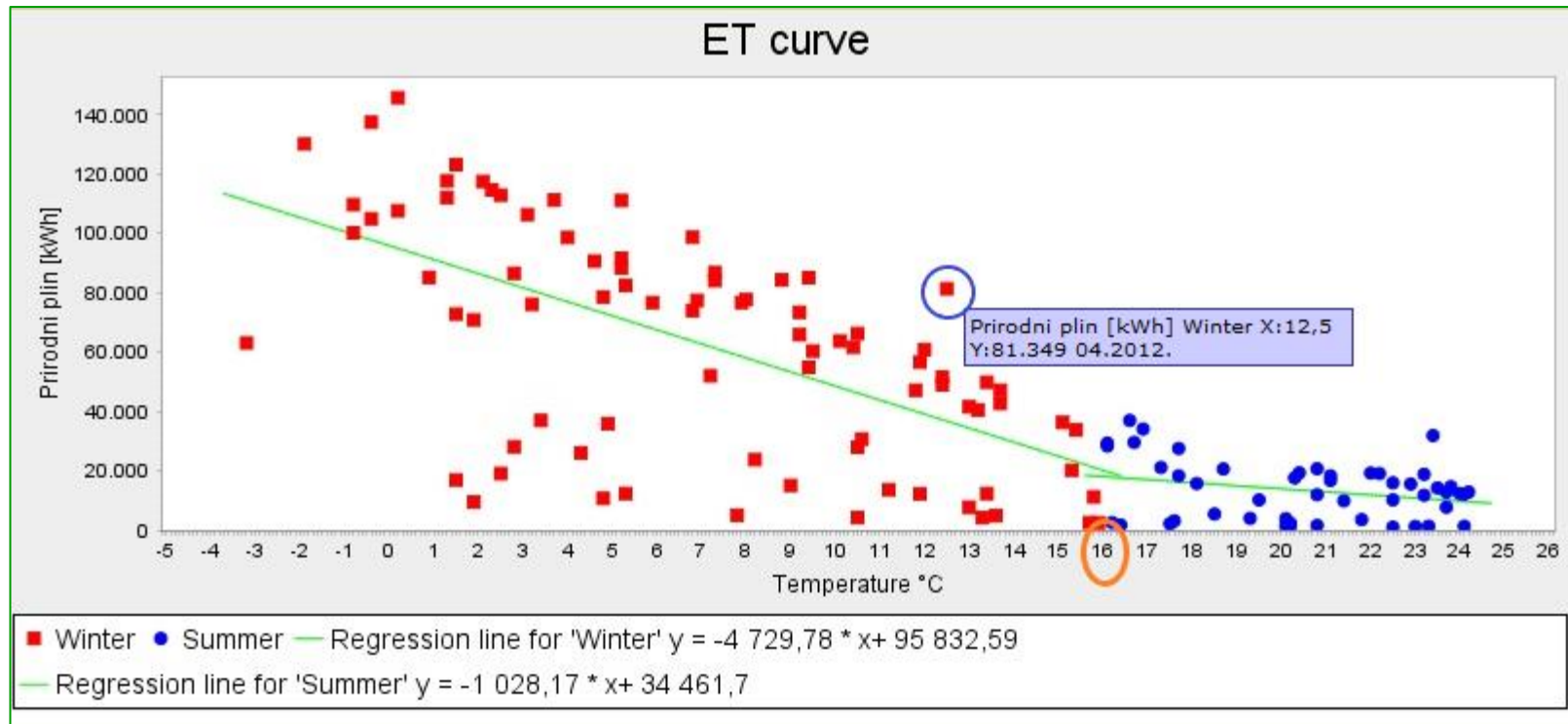
- Institutional user (Ministry, County, City, Municipality)
 - 16 Ministries
 - 21 Counties
 - 128 Cities
 - 428 Municipalities
- ECC type (Office, Elementary school, Hospital, etc.)
- Geographical data (county and city where ECC is located)
- This additional information about ECC makes it easier to generate targeted reports
- Introduces flexibility into reporting

EMIS

Analytical tools for verification of
savings and for reporting

E-T CURVE

- E-T curve shows correlation between energy consumption and:
 - outdoor temperature
 - degree-day heating*
- If the dots are closer grouped around regression curve, energy management is better
- Croatian Meteorological and Hydrological Service sends data to EMIS

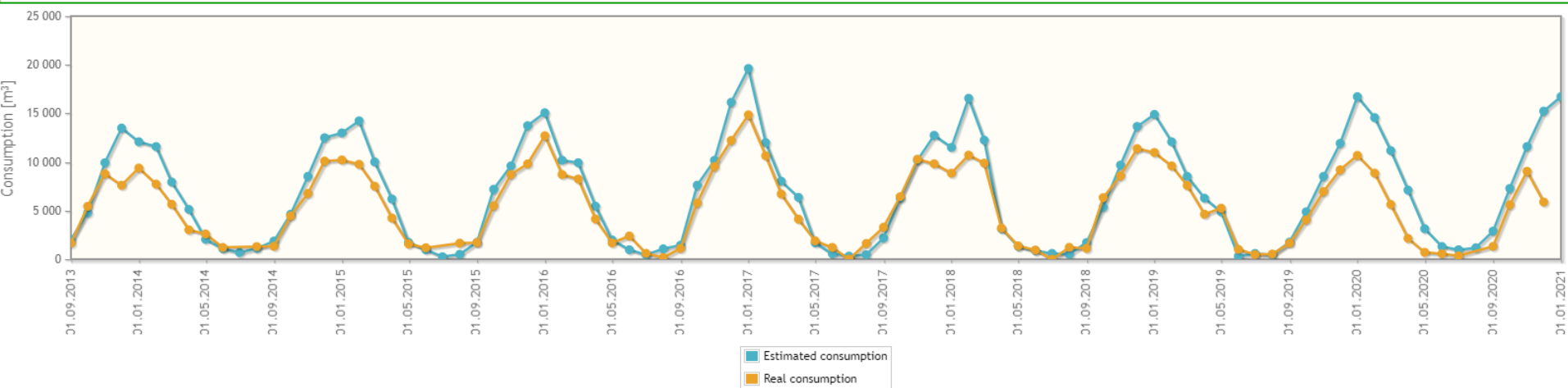
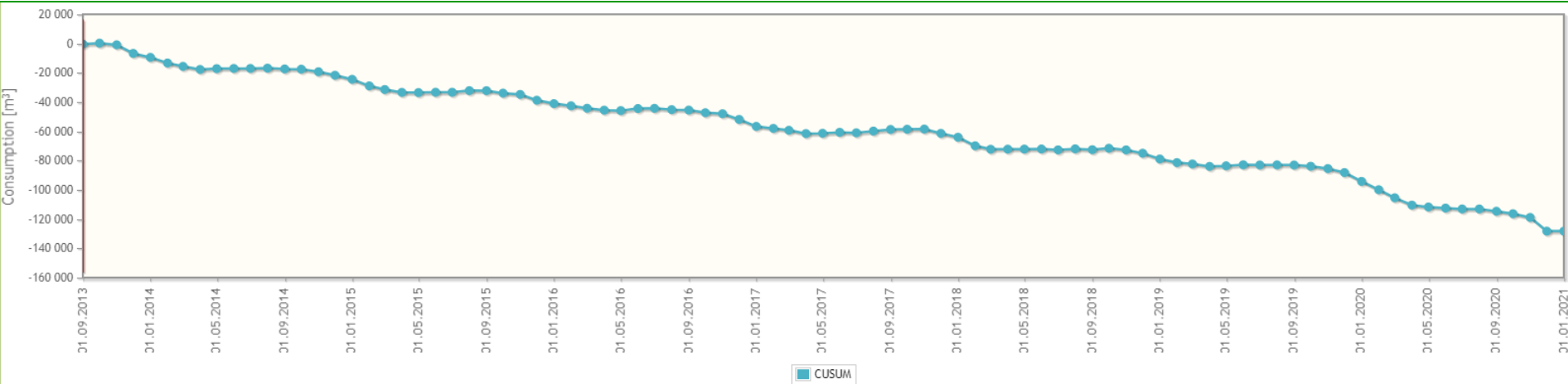


*Degree-day is a measure of heating or cooling. It represents sum of temperature differences between the indoor air temperature (by convention 20 °C) and the mean daily outdoor temperature. Only days with outdoor temperature lower than 12 °C enter calculation.

CUSUM ANALYSIS



- Shows the total savings achieved by certain energy efficiency improvement measure
- If graph drops toward negative values then savings are achieved



ADVANCED ANALYZER

- Export of data on consumption of all or only selected energy carrier by:
 - quantity (in unit of measure)
 - energy (in kWh)
 - cost (kn)
 - cost plus VAT (kn)
 - CO₂ emission (t)
 - primary energy (kWh)
- In tabular or chart form by selected parameters (grouping)
- For one selected ECC, for many selected ECCs, only for public lighting, or for all data in EMIS
- Calculation of achieved savings in selected year compared to selected base period.
 - Base period can be one year, or several years

Time interval

Year range

Range: All One Value: ▼

2003 ▲▼ 2003-2021 2021 ▲▼

Sampling Year Month

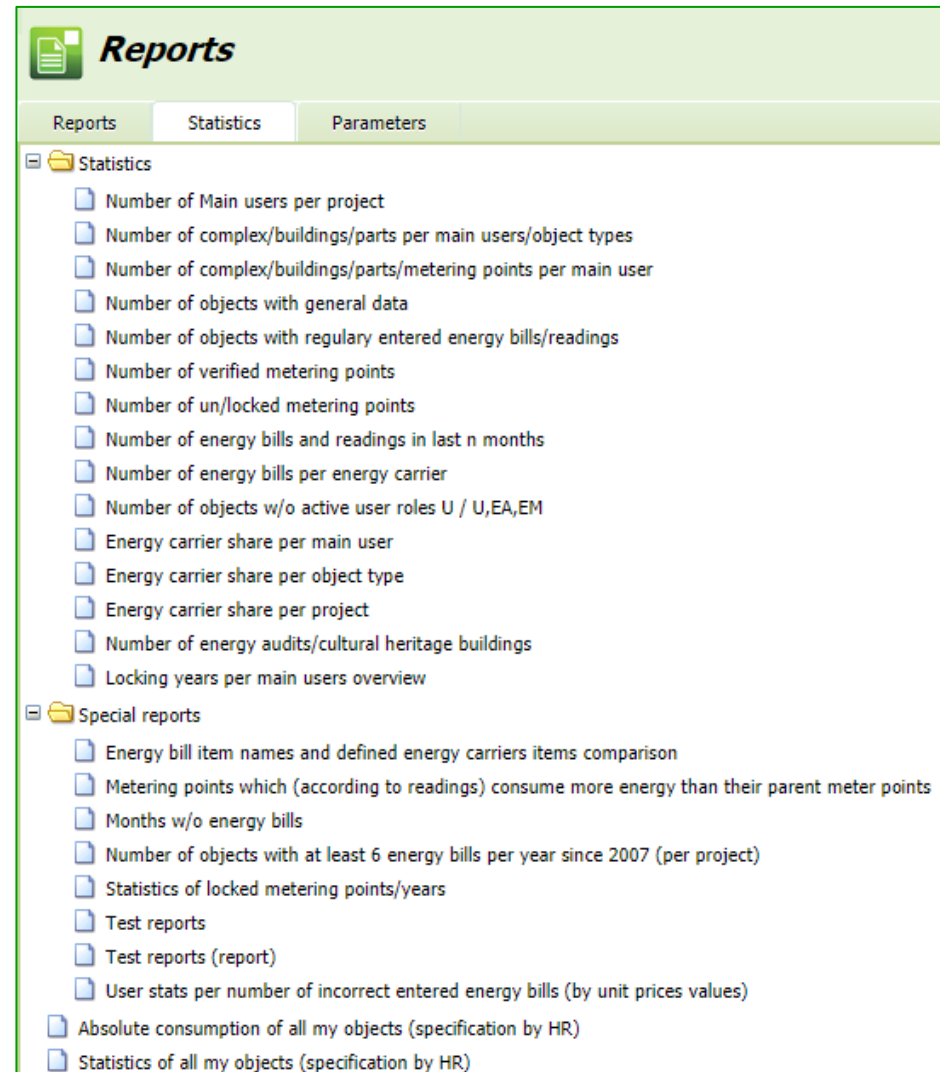
Locked years All Show only locked

Grouping

by energy carrier	Series	Chart
by energy group	Series	Chart
by base energy group	Series	Chart
by project	Series	Chart
by object type group	Series	Chart
by object type	Series	Chart
by public lighting	Series	Chart
by object	Series	Chart
by city	Series	Chart
by county	Series	Chart
by region	Series	Chart
by complex	Series	Chart
by meter	Series	Chart
by building user	Series	Chart
by locked state	Series	Chart

REPORTS

- EMIS can generate various pre-set reports – exportable in Excel
- Mostly used are reports on Absolute energy consumption:
 - Sum of absolute consumption for each year of specified period
 - Yearly consumption of energy and water
 - Monthly consumption of energy and water
 - Energy and water consumption by building types
 - Energy and water consumption by ECC and by user
 - Charts of summary consumption by years
 - Exportable in PDF or Excel



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Conclusion

CONCLUSION

- All data on energy and water consumption gathered in one centralized data base – easy access
- It is easy to make customized reports due to flexibility and scalability when it comes to sorting of gathered data in EMIS
- Huge amount and variety of data collected in EMIS makes it great tool for analysing and planning future energy efficiency measures, for creating plans and strategies on local, regional and national level.



Thank you!

THANK YOU!

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