Innovative energy efficiency solutions for the Olympic Swimming Pool – Alba Iulia

Energy, Innovation and Bilateral Cooperation Event
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Bucharest, Romania

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Previous technical situation

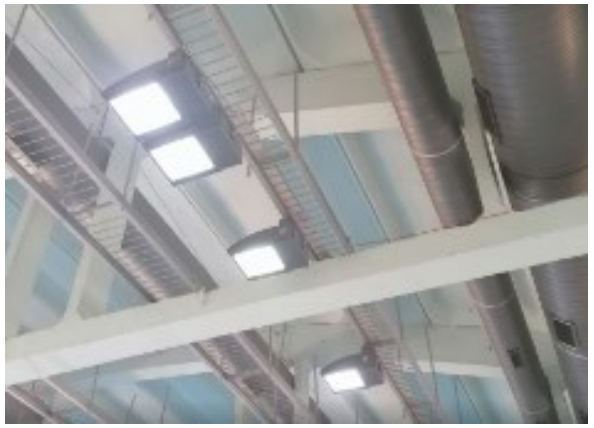
- Building constructed in 1987
- Utilized surface / volume: 2894 m2 / 26630 m3
- Pool capacity: 2500 m3 heated water (28 oC)

- Rehabilitated: 2014 (wall/ windows insulation, interiors, ventilation, pumps, solar panels for hot water)

Challenges/ Improvements needed

IMPROVEMENTS AREAS

- Lights: high-capacity vapor lamps
- Heating: old, conventional boilers 2 x 1400 kW
- Heat exchangers
- Ventilation improvements
- Water filters & pumps efficiency
- Solar system for hot water



ENERGY DATA

- No.1 energy consumption in municipal buildings
- Very high consumption: up to 2407 MWh – natural gas + 680 MWh electricity
- High Operational costs – energy costs > 86.000 EUR/year

Energy efficiency project

- Olympic swimming pools are atypical buildings, and compliance with the standard operating requirements (keeping the 2.5 million liters of water at 28 oC, special filtering of the entire amount of water 4 times a day, maintaining an internal temperature of 28-30 oC, ventilation with humidity limitation, quality lighting) requires complex technical solutions;

- Improving the energy efficiency of the Olympic swimming pool was identified as a priority in the Energy Efficiency Improvement Plan of the city of Alba Iulia;

- Project proposed for EEA & Norway Grants - “Innovative energy efficiency solutions for the Olympic Swimming Pool – Alba Iulia” included 7 innovative solutions for increasing building energy efficiency;

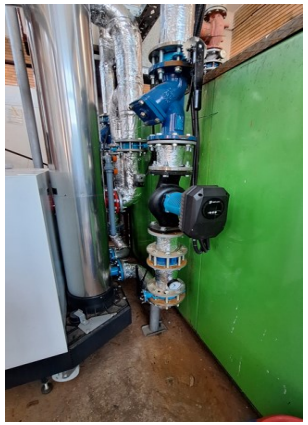
- Project Contract/ Grant Offer Letter Ref. 2020/ 516129, Program Energy in Romania/ Energy Efficiency

- Objectives: reduction > 65% of energy consumption and emissions (> 334 t CO2/y);

- Project budget: 603.875 EUR (513.000 EUR Grant, coordination Innovation Norway)

Implemented solutions (1)

1. Cogeneration unit

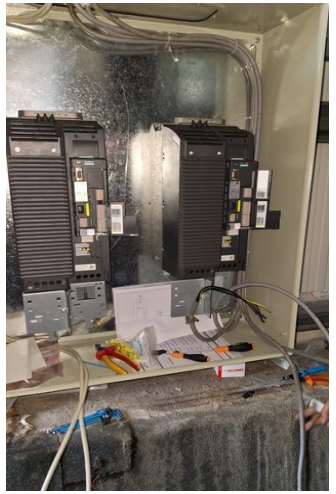


2. Condensing boilers with digital control and accessories (pumps, storage tanks, expansion vessels, gas valves, automated valves, heat exchangers)

Implemented solutions (2)

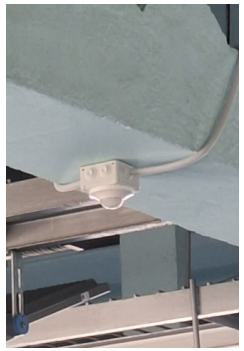
3. Heat pumps system

4. Ventilation variable speed control



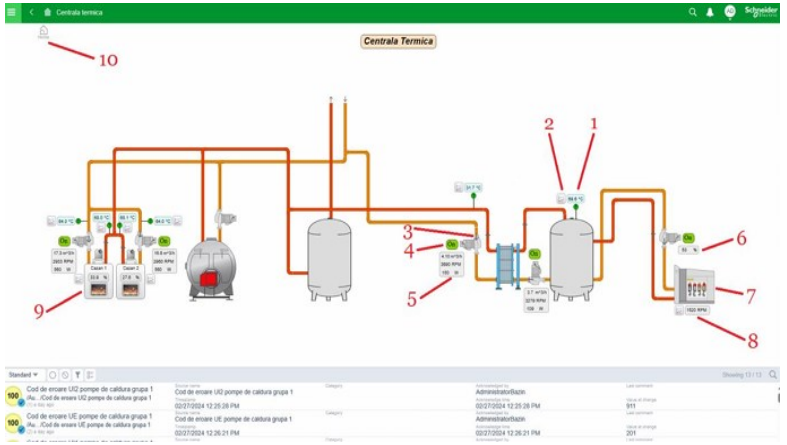
5. Main, auxiliary and safety LED lighting

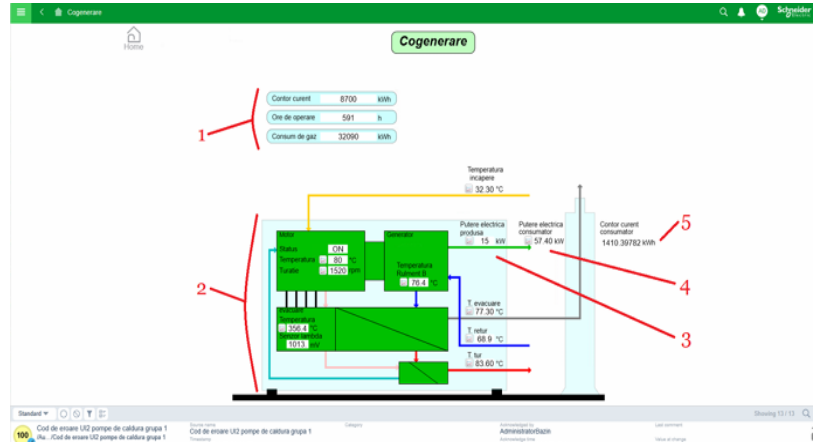
6. Automatic aluminum shades

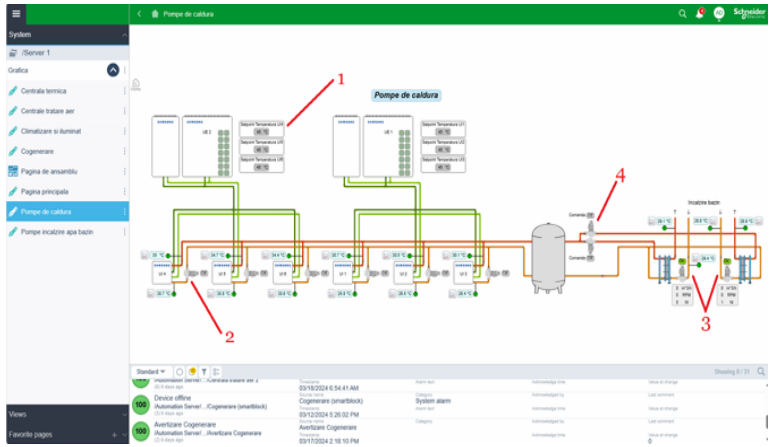


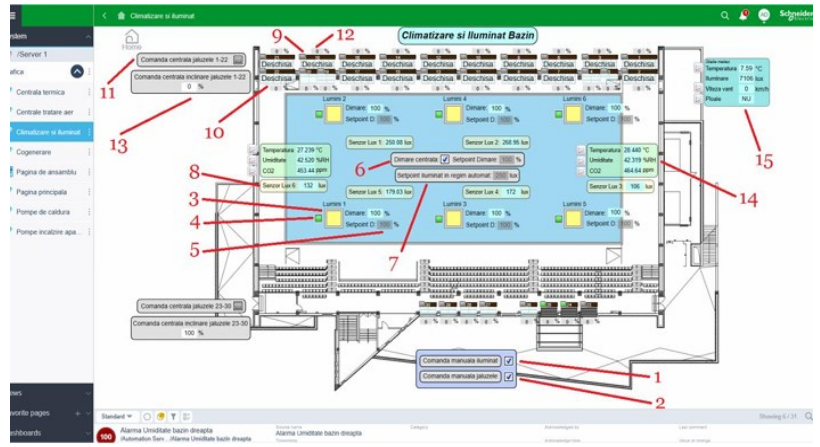
Implemented solutions (3)

7. Building Energy Management System









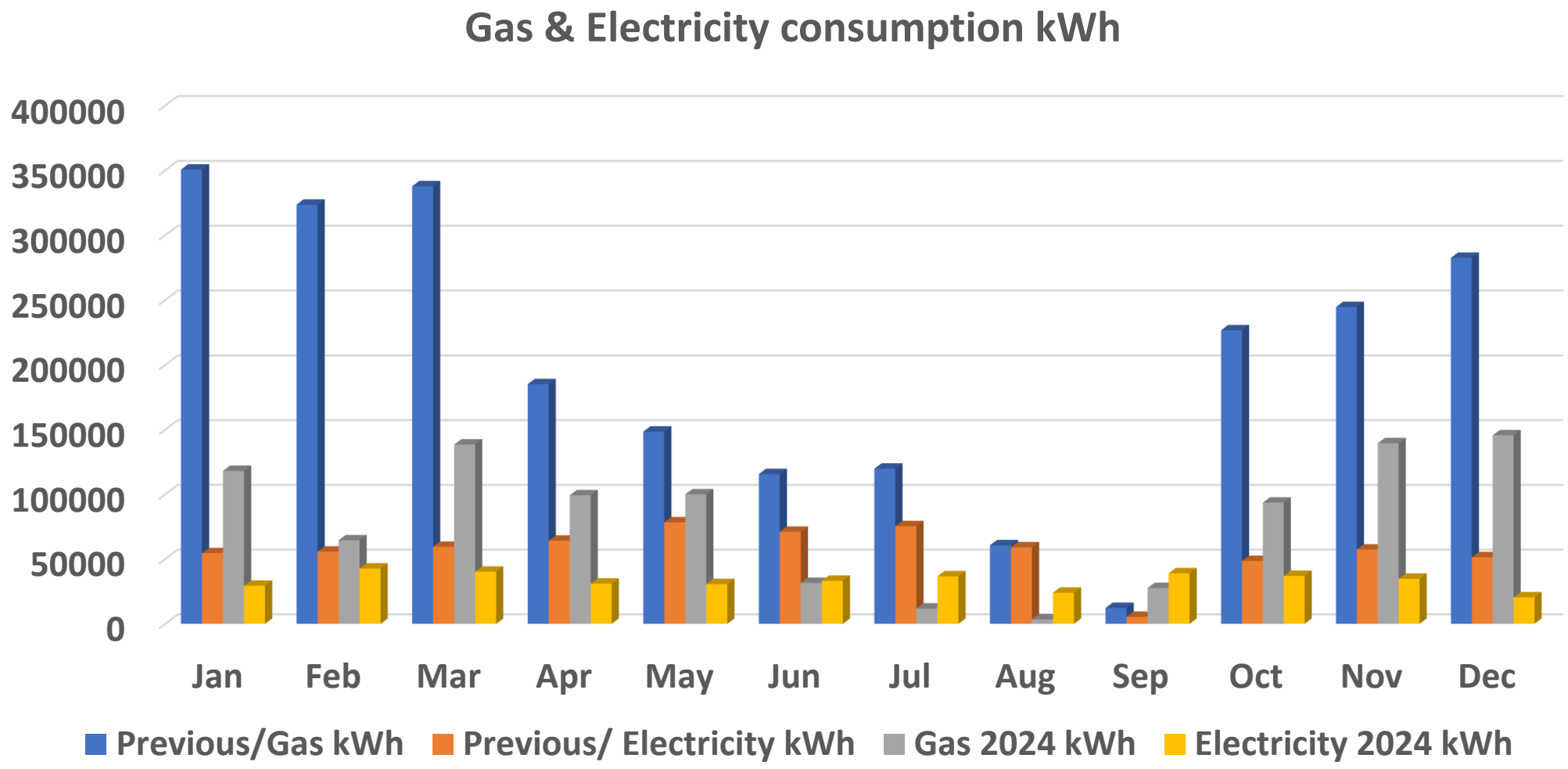
Supplementary works (not included in project)

Rehabilitation of solar system for hot water

New water filters

New circulating pumps

Results


Gas & Electricity consumption kWh
400000
350000
300000
250000
200000
150000
100000
50000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Previous/Gas kWh
Previous/ Electricity kWh
Gas 2024 kWh
Electricity 2024 kWh

An excellent collaboration (1)

No.	Project	In brief	Programme	Implemented	Grant, EUR
1	**CRESC**	Development of climate change adaptation and mitigation capacity	Environment, Climate Change Adaptation and Ecosystems	2022	69.856
2	**IRIS**	Integration of Roma through innovative skills	Local Development and Poverty Reduction, Enhanced Roma Inclusion/ Social	2022	214.769
3	**CREATE**	The City of Arts – Art in the Heart of the City	Cultural and creative industries	2023	37.800
4	DOITSMARTER https://entrec.utcluj.ro/doitsmarter/	Design and development of an Energy Efficiency Management and Control System with cost effective solutions for residential and educational buildings	Renewable Energy, Energy Efficiency, Energy Security/ R&D	2024	57.000
5	GREENER NORSK ENERGI	Supporting increased knowledge on renewable energy and energy efficiency	Energy in Romania	2024	81.660

An excellent collaboration (2)

No.	Project	In brief	Programme	Implemented	Grant, EUR
6	**Photovoltaic park and photovoltaic power plants at the level of 5 public buildings**	778 + 216 kW PV systems	Energy in Romania/ Renewables/ PV	2024	611.262
7	Căminul Bunicilor https://seniori-albaiulia.ro/	Energy efficiency and increased comfort in the residential home for the elderly in Alba Iulia	Energy in Romania/ Renewables/ Geothermal	2024	1.033.063
8	BAZINUL OLIMPIC ALBA IULIA https://bazinolimpicalba.ro/	Innovative energy efficiency solutions for the Olympic Swimming Pool	Energy Efficiency	2024	513.000
9	SMART INNOVATION NORWAY **EMERGE**	EMpowering Communities for EneRGy Transition towards Carbon NEutrality	R&I, IMM	2025	35.500

Iceland Liechtenstein Norway grants

Norway grants

Innovation Norway

THANK YOU!
QUESTIONS?

theother capital

ALBA IULIA

WELCOME TO THE LARGEST CITADEL IN ROMANIA