



LC Districts

Interreg Europe



European Union
European Regional
Development Fund

Decreasing the heat demand in Uherské Hradiště hospital *with the support from OP Environment*

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Decreasing the heat demand in Uherské Hradiště hospital

- A set of 8 investment projects including insulation of five original buildings, reconstruction of the central boiler room and piping in the hospital and installation of photovoltaic panels on two new buildings with an output of about 100 kW and preparation for recuperation in building No. 14, including installation of other 118 kW PV on the roof of the building.



Decreasing the heat demand in Uherské Hradiště hospital

8 large-scale investment projects were gradually implemented under the **Operational Program Environment 2007-2013** and the **Operational Program Environment 2014-2020**.

1. **Reduction of air pollution in Uherské Hradiště** - reconstruction of the central boiler room and areal heat distribution, including the installation of 2 pieces of solar panels for the preparation of hot water (year 2010)
2. **Implementation of energy saving measures** - insulation of 5 hospital pavilions (year 2010)
3. **Complex insulation of the Malinovského dormitory** - insulation of dormitory for hospital staff (year 2014)
4. **Realization of energy savings in dormitory „Na Nožkách“** - realization of energy savings – heat insulation of the dormitory for hospital staff (year 2018)
5. **Realization of energy savings** - insulation of the pathology pavilion (year 2018)
6. **Photovoltaic power plants on the central object I** - installation of 180 pieces of PV panels on the roof of the central building (year 2019)
7. **Photovoltaic power plants on the central object II** - installation of 123 pieces of PV panels on the roof of the central building II (year 2019)
8. **Installation of 345 PV panels for electricity production and HVAC with recuperation** (year 2021)

1. Reduction of air pollution in Uherské Hradiště

Reconstruction of the central boiler room and areal heat distribution

Actions implemented:

- Reconstruction of the central boiler room and the district heating, including the installation of 2 groups of solar panels for the preparation of hot water (buildings of gynecology and kitchen).



Investment costs
63 313 980 CZK (2,5 mil. EUR)

OP Environment contribution
13 878 518 CZK (555 140 EUR)

Energy savings (natural gas)
32 737 GJ/year

CO2 savings
2 158 tons/year

Year of implementation
2010



1. Reduction of air pollution in Uherské Hradiště

Reconstruction of the central boiler room and areal heat distribution

Central boiler room



1. Reduction of air pollution in Uherské Hradiště

Reconstruction of the central boiler room and areal heat distribution

solar panels – 2 buildings



2. Implementation of energy saving measures

Heat insulation of 5 hospital pavilions

Actions implemented:

- Heat insulations: Fasade – mineral wool 160 mm ($\lambda = 0,037 \text{ W/mK}$)
Roof – ETICS mineral wool 220 mm ($\lambda = 0,037 \text{ W/mK}$)
Ground floor – EPS 220 mm ($\lambda = 0,037 \text{ W/mK}$)
Windows - $U_W < 1,1 \text{ W/(m}^2\text{.K)}$

Investment costs

41 354 424 CZK (1 654 176 EUR)

OP Environment contribution

14 513 908 CZK (580 556 EUR)

Energy savings (natural gas)

9 808 GJ/year

Snížení spotřeby energie	Jednotka	Předpoklad v žádosti	Skutečnost
Objekt č. 11	GJ/rok	3 854	4 671,8
Objekt č. 13	GJ/rok	583	675,7
Objekt č. 14	GJ/rok	3 514	3 533,9
Objekt č. 33	GJ/rok	407	412,8
Objekt č. 34	GJ/rok	405	513,7
Snížení spotřeby energie	GJ/rok	8 764	9 807,9

Expected Real

CO2 savings

2 158 tons/year

Snížení emisí CO ₂	Jednotka	Předpoklad v žádosti	Skutečnost
Objekt č. 11	t/rok	216,0	259,544
Objekt č. 13	t/rok	32,0	37,539
Objekt č. 14	t/rok	196,21	196,328
Objekt č. 33	t/rok	22,61	22,933
Objekt č. 34	t/rok	22,62	28,529
Celkem	t/rok	489,44	544,883

Expected Real

2. Implementation of energy saving measures

Heat insulation of 5 hospital pavilions



Years of implementation
2010



3. Complex insulation of „Malinovského“ dormitory

Actions implemented:

- Heat insulations Facade – EPS 100F 140 mm ($\lambda = 0,037\text{W/mK}$)
Ceiling of the ground floor - ETICS EPS 70F 100 mm ($\lambda = 0,039\text{ W/mK}$)
Roof – ETICS mineral wool 260 mm ($\lambda = 0,038\text{ W/mK}$)
Windows - $U_W < 0,9\text{ W/(m}^2\cdot\text{K)}$

Investment costs

12 190 908 CZK (487 636 EUR)

OP Environment contribution

4 792 181 CZK (191 687 EUR)

Energy savings

850,09 GJ/year from natural gas

CO2 savings

47,227 tons/year

Years of implementation

2014



3. Complex insulation of „Malinovského“ dormitory



4. Realization of energy savings in dormitory

„Na Nožkách“

Actions implemented

- The project implemented thermal insulation of the perimeter walls, the floor above the exterior, the ceilings and the roof. The windows and doors and the roof hatch were replaced as well.

Investment costs

9 272 945 CZK (370 918 EUR)

OP Environment contribution

2 691 856 CZK (107 647 EUR)

Energy savings

499,2 GJ/year

from district heating system

CO2 savings

27,733 tons/year



Years of implementation

2018

4. Realization of energy savings in dormitory „Na Nožkách“



5. Realization of energy savings

Insulation of the pathology pavilion

Actions implemented

- Heat insulation
Fasade - 160 mm mineral wool $\lambda = 0,039 \text{ W/(m.K)}$
Roof - 240 mm mineral wool $\lambda = 0,037 \text{ W/(m.K)}$

Investment

2 495 258 CZK (99 810 EUR)

OP Environment contribution

740 400 CZK (29 616 EUR)

Energy savings

138,4 GJ/year

from district heating system

CO2 savings

7,69 tons/year



Years of implementation

2018

5. Realization of energy savings

Insulation of the pathology pavilion



6. Photovoltaic power plants on the central object I

Installation of 180 pieces of PV panels

Actions implemented

- The PV plant works with **180 PV panels with an output of 330Wp each**, installed on the roof on self-loading structures with an inclination of 15 ° and orientation to the South
- Total installed output **59,40 kWp**
- Efficiency of PV panels is **19.6%**

Investment costs

3 225 872 CZK (129 035 EUR)

OP Environment contribution

1 290 348 CZK (51 614 EUR)

Energy savings

208,21 GJ/year

Real CO2 savings

58,507 tons/year

Years of implementation

2019



6. Photovoltaic power plants on the central object I

Installation of 180 pieces of PV panels



7. Photovoltaic power plants on the central object II

Installation of 123 pieces of PV panels

Actions implemented:

- The PV plant works with **123 PV panels with an output of 330Wp each**, mounted on the roof on self-loading structures with an inclination of 15 ° and orientation to the South
- Total installed output **40,59 kWp**
- **Efficiency of PV panels is 19.6%**

Investment costs

2 212 328 CZK (88 493 EUR)

OP Environment

884 931 CZK (35 397 EUR)

Energy savings

142,27 GJ/year

CO2 savings

39,978 tons/year



Year of implementation

2019

7. Photovoltaic power plants on the central object II

Installation of 123 pieces of PV panels



8. Installation of 345 PV panels for electricity production and HVAC with recuperation

Actions to be implemented in 2021

- The PV plant will work with **345 PV panels with an output of 345Wp each**, installed on the roof on self-loading structures with an inclination of 15° and orientation to the South
- Total installed output will be **119,025 kWp**
- **Efficiency** of PV panels will be **19.6%**.

Investment costs

15 620 209 CZK (624 808 EUR)

OP Environment contribution

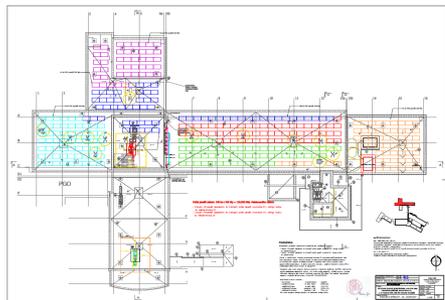
9 838 490 CZK (393 539 EUR)

Estimated energy savings

470 GJ/year

Estimated CO2 savings

116,729 tons/year



Currently the public procurement is ongoing and the instalation is planned in Spring 2021.

Total implementation costs including projects preparation:

CZK 142.630.574,- (app. 5.486.000 EUR)

OP Environment contribution:

CZK 48.823.436,- (app. 1.878.000 EUR)

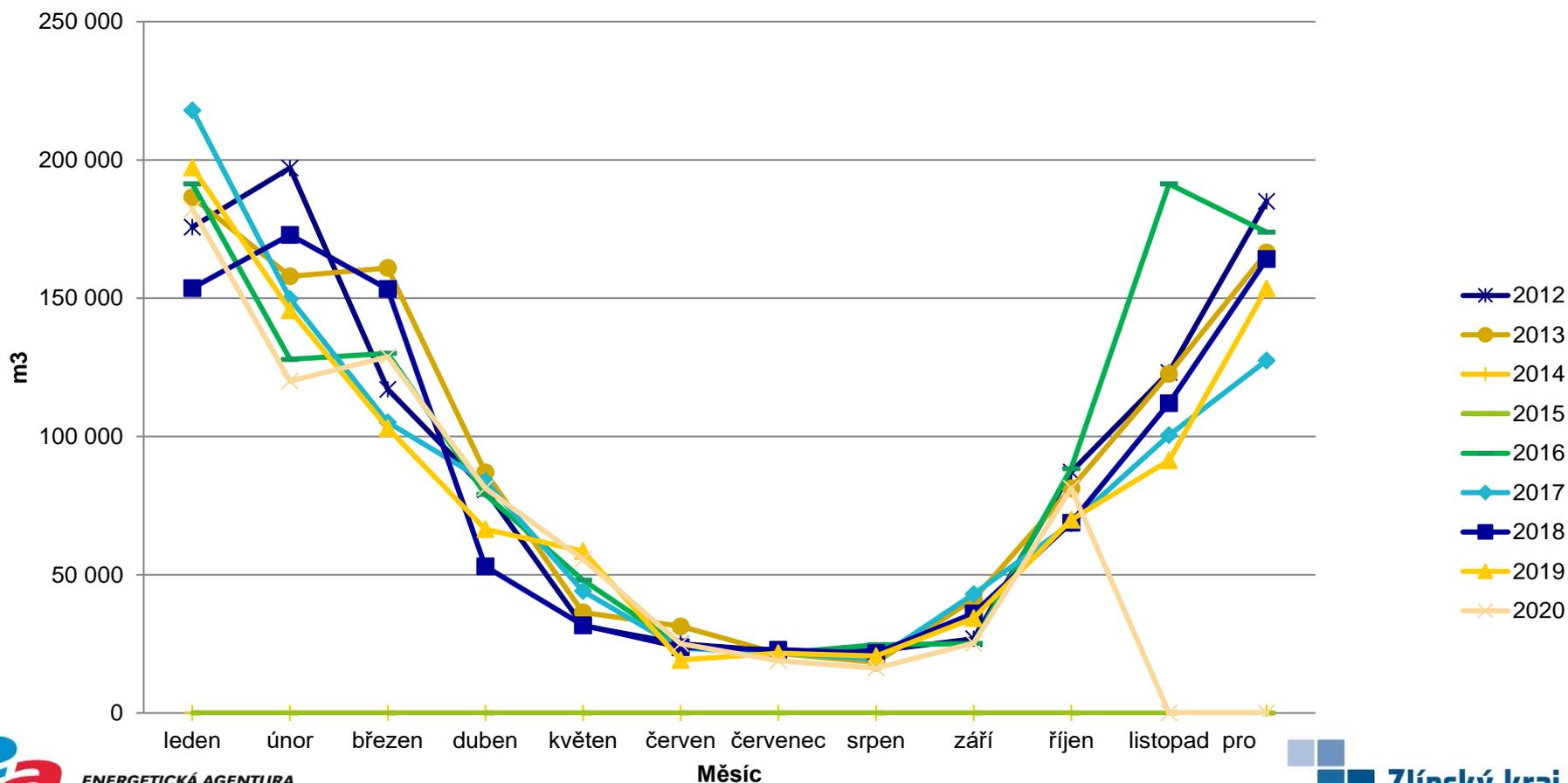
- Energy Agency of the Zlín Region initiated and ensured the submission of applications for subsidies to the calls of the **Ministry of the Environment** within the **OP Environment** 2007 - 2013 and 2014 - 2020 and is helpful with the administration of these projects.
- Stakeholders:
 - Zlín Region
 - Uherskohradišťská Hospital a.s.
 - Energy Agency of the Zlín Region, o.p.s. (EAZK)
 - Ministry of the Environment and the State Environmental Fund
- Recipient:
 - Zlín Region
 - Uherskohradišťská Hospital a.s.

Decreasing the heat demand in Uherské Hradiště hospital

Energy management

In order for these measures to be fully operational, a proper implementation of **energy management** is important. Methodical management of energy management is provided by EAZK.

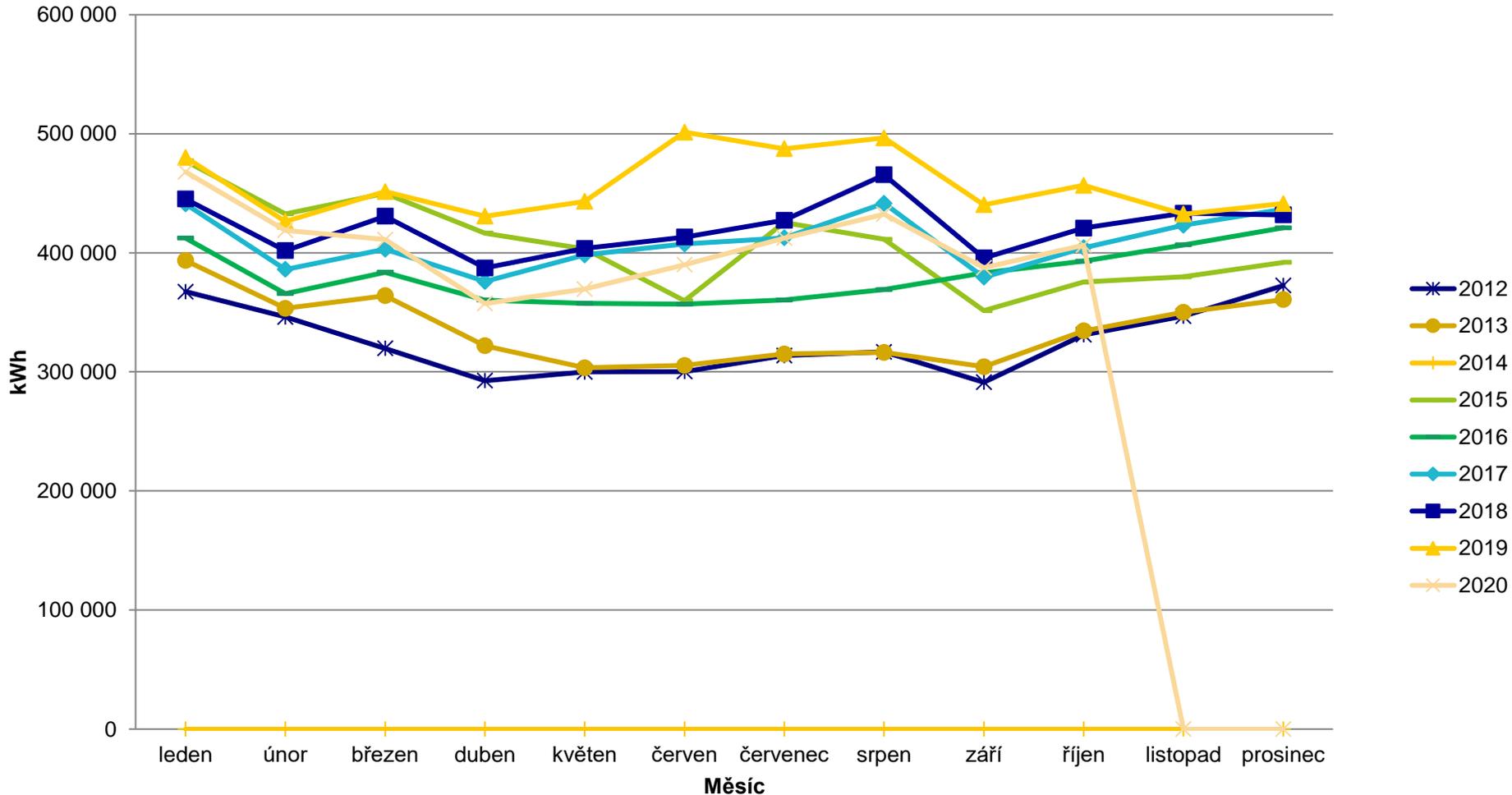
Natural gas consumption in m3



Decreasing the heat demand in Uherské Hradiště hospital

Energy management

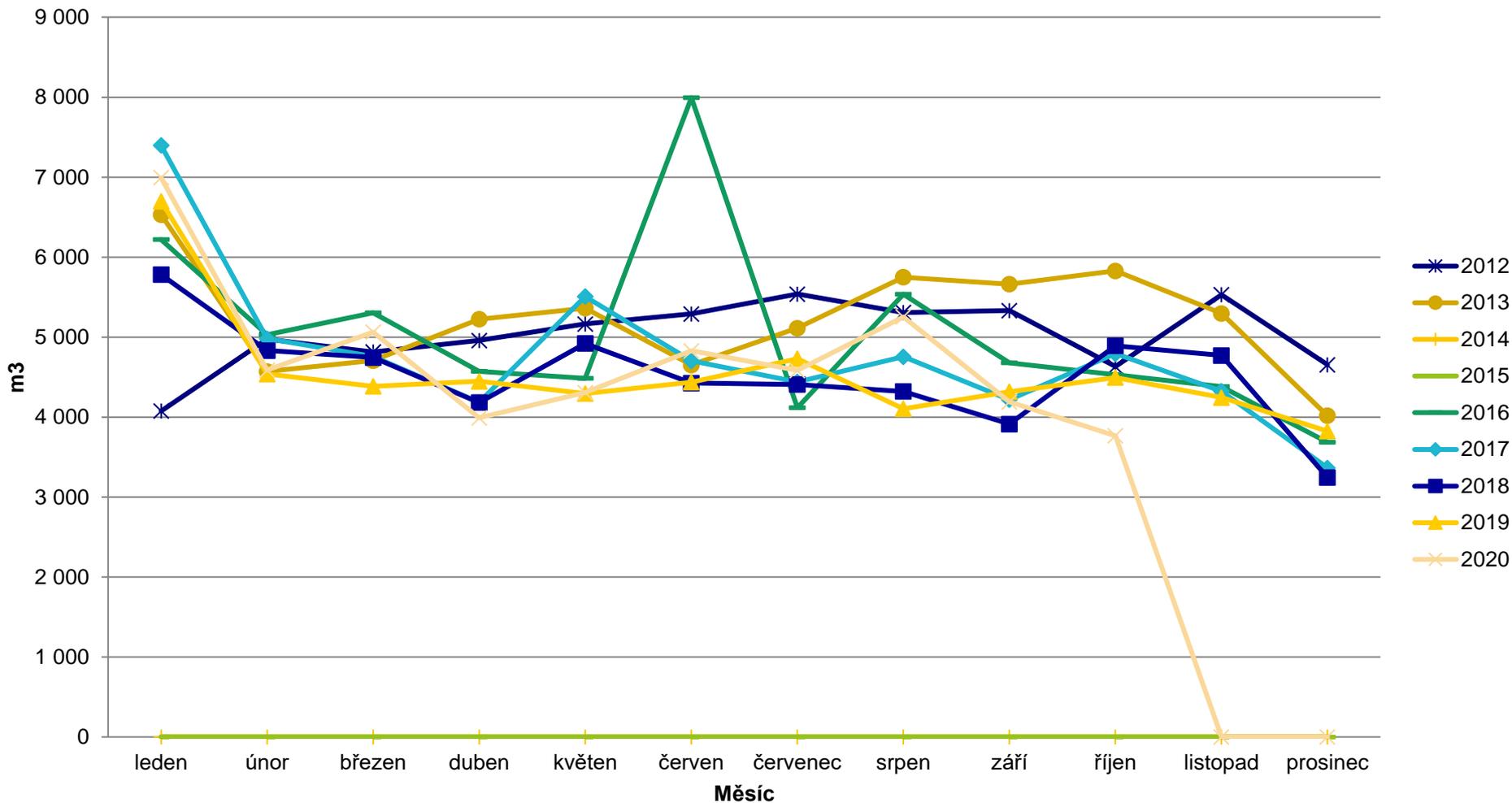
Electricity consumption in kWh



Decreasing the heat demand in Uherské Hradiště hospital

Energy management

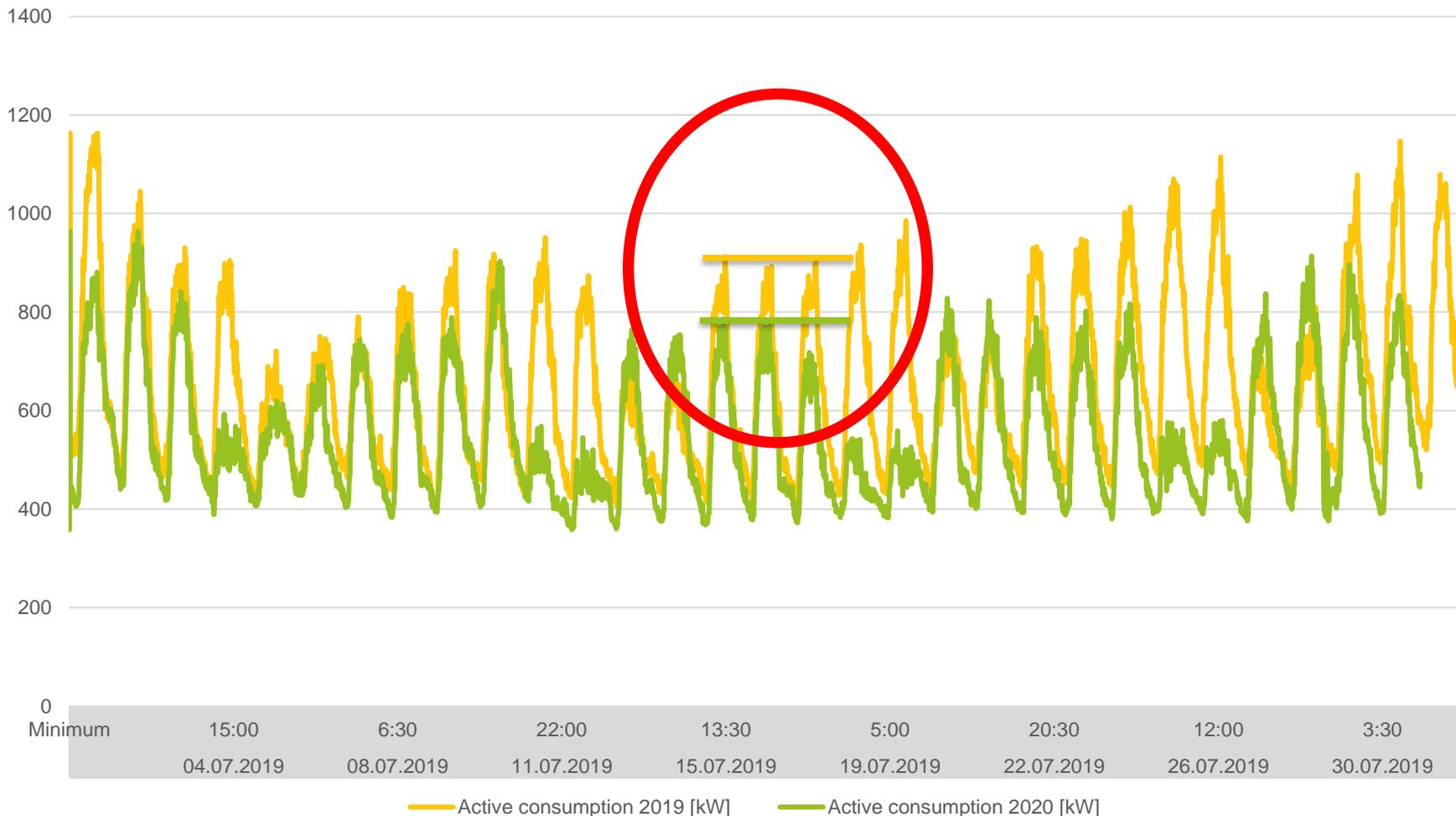
Water consumption in m3



Decreasing the heat demand in Uherské Hradiště hospital

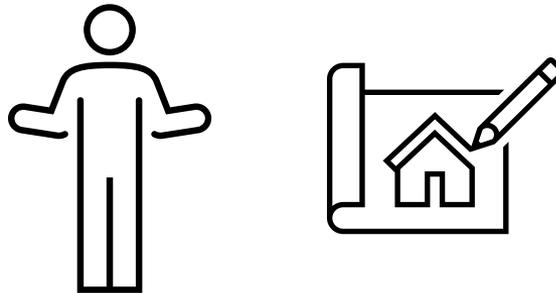
Energy management

Actual power consumption in 07/2019 and 07/2020 (kW)- effect of photovoltaics



Challenges

- Public opposition to the waste combustion
- Economic barriers - high financial investment demands
- Insufficient knowledge of designers in the field of low energy standards
- Obstacles on investors' side in the willingness to build beyond the minimum standards set by legislation.
- Administrative complexity and the issue of combining and coordinating all professions necessary to submit a project application for funding to the OP



Decreasing the heat demand in Uherské Hradiště hospital

- The implementation of these projects is in accordance with the Energy Action Plan and the Energy Efficiency Financing Plan of the Zlín Region.
- Their implementation significantly reduces the costs of heating and the operational costs of the hospital, and thus saves public funds spent on operations in health care.
- The installation of PV panels increases the hospital's self-sufficiency and reduces electricity consumption from non-renewable sources. Thanks to the insulation and installation of air conditioning with recuperation, the internal microclimate of the building is improved.
- The OP Environment subsidy program enables the implementation of such diverse projects, which in addition to quantifiable financial and energy savings and reduction of greenhouse gas emissions bring another significant element - a pleasant environment is created in the hospital contributing to the well-being of all users, which is so important in their treatment process.



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Thank you for Your Attention!



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Project smedia