BOOSTEE-CE
PILOT ACTION
PA3 - CZECH REPUBLIC

Interreg
CENTRAL EUROPE
European Union
European Regional Development Fund

BOOSTEE-CE

ENERGETICKÁ AGENTURA ZLÍNSKÉHO KRAJE, o.p.s.

Zlínský kraj

CZECH REPUBLIC

PA3. Zero-energy public buildings in Zlin Region

Introduction

The BOOSTEE-CE (*Boosting Energy Efficiency in Central European Cities through Smart Energy Management*) project will develop and implement technical solutions, strategies, management approaches & financing schemes to achieve higher Energy Efficiency (EE) in public buildings. This will be achieved through a transnational cooperation and using geospatial data, smart energy management tools and energy audit to facilitate the implementation of EE buildings. The final aim is to improve the governance of EE in existing public buildings (within Pilot Actions) and ultimately reduce energy consumption.

Aims

The pilot action to improve energy efficiency is implemented in 8 buildings.

The **Uherské Hradiště hospital (Dormitory building, Intern medicine (new building), Autopsy building)** with total area of 12 375,36 m^2, volume of 45 702,8 m^3 were built in 1972, 2017-2018 and 1917, respectively. The buildings are used by 165 people and other staff. The buildings are connected to the district heating system powered by natural gas boilers. Electricity consumption is almost 133 MWh. The new building is classified as "A" that means extremely low consumption of energy in the term of hospital buildings.

The four-story building of **Grammar school in Holešov** with an area of 4 948,1 m^2, volume of 22 878,3 m^3 was built in 1902. The building is used by 408 students, 33 teachers and other staff. Heat used for heating and for hot water is prepared in the 4 natural gas boilers with 480 kW overall power. Electricity is mainly used for lights and partially for the circulating pumps for heating system.

The four-story building of **Secondary pedagogical and social school Kroměříž** with an area of 5 232,4 m^2, volume of 25 629,7 m^3 was built in 1902. The building is used by 180 students and 35 teachers. Building is heated by 2 natural gas boilers with 192 kW overall power from year 1994. Only 5 MWh is used for lights and circulating pumps in heating system.

The three-story building of **Basic school 1. Máje Kroměříž** with an area of 3 406,2 m^2, volume of 9 055,7 m^3 was built in 1887. The building is used by 50 children and 11 teachers. Building is heated by the 4 natural gas boilers with 192 kW overall power. Electricity is mainly used just for lighting.

The four-story building of **Grammar school Valašské Klobouky** with an area of 4 649,83 m^2, volume of 20 835 m^3 was built in 1906 (historical part) and 1995 (newer part). The building is used by 210 students, 23 teachers and 11 other staff. The building is heated by 3 natural gas boilers (each has 80 kW installed power). Hot water is prepared in two 22 kW and 19 kW natural gas boilers. All radiators are equipped with thermostatic valves and whole heating system is regulated in the boiler room.

The three-story building of **Grammar school and secondary medical school Vsetín** with an area of 2 929,99 m^2, volume of 13 476,4 m^3 was built at the beginning of 20th century. The building is used by 276 students, 20 teachers and other staff. The building is connected to the district heating system. 500 kW heat exchanger supports the building with heat and preparation of hot water. Zlín region is the owner of the buildings.

Project supported by the Interreg CENTRAL EUROPE Programme and funded under the European Regional Development Fund

The following objectives have been agreed as part of the pilot:

- thermo-modernization of buildings
- construction of a new hospital building in modern standards (low energy consumption)
- increasing the comfort of the building use and easier operation of the building
- promoting and disseminating knowledge about energy efficiency measures in buildings

Solutions

The pilot action includes an investment in the **energy management system** in the hospital building and connection to existing central boiler room. **Thermo-modernization of buildings** is carried out, consisting in the replacement of windows with U = 0.9 W/m^2·K and doors with U = 1.2 W/m^2·K and heat insulation of the roof with mineral wool or EPS (λ = 0.039 W/m·K) in the minimum thickness of 22 cm and the walls with EPS (λ = 0.039 W/m·K) and 16 cm thickness.

PA idea (MONITOR -> CONTROL -> MANAGE -> SAVE)

The implementation of the energy consumption **monitoring and management** system contributes to a significant reduction in the value of energy bills. The data collected by the system, which constantly **controls** the level of energy consumption, allow to optimize the level of contracted capacity, which in turn generates **annual savings**. The system constantly monitors the level of energy consumption, provides information about where it is distributed, where it is lost. The tools provided by the system allow to easily analyze this data and draw conclusions about ways to reduce the costs associated with the use of energy. Energy **management** allows to optimize the contracted capacity, selection of a cost-effective tariff, energy monitoring and provides knowledge about energy flows in the building.

Reduction of CO_2 emission, improvement of air quality


Reduction of energy consumption


Optimization of costs (financial savings)


Increasing the comfort of the building use

PA indicators & results

- investment period **11.2016-09.2018 (18 months)**
- investment cost **16 092 920 €**
- people involved in PA implementation (**EAZK, representatives from the Zlín region, energy auditor, project engineers, representatives from the hospital, energy specialist, project developer**)
- 3 tools / instruments used **(energy management led by EAZK, energy audit and project blueprints)**
- trainings, meetings, seminars
- **953 919 kWh** annual reduction of energy consumption
- **55 060 €** annual cost savings
- **190,695 tons** annual reduction of CO_2 emission
- change in people's behavior by raising awareness

Added values for replication and dissemination

The activities can be transferable and replicated in other cases and regions. Information about the pilot action is promoted and disseminated in the region and beyond.

Contact

Tomáš Perutka
Project manager
Energy Agency of the Zlín Region
tomas.perutka@eazk.cz

Project supported by the Interreg CENTRAL EUROPE Programme and funded under the European Regional Development Fund

DISCOVER MORE ABOUT BOOSTEE-CE

Contact us!

Project website: www.interreg-central.eu/Content.Node/BOOSTEE-CE.html

Project on Facebook: www.facebook.com/BOOSTEECE/

Platform OnePlace website: oneplace.fbk.eu/

Project supported by the Interreg CENTRAL EUROPE Programme and funded under the European Regional Development Fund