

DELIVERABLE T3.2.2

D.T3.2.2 – Pilot action reports

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A.T3.2 Evaluation of pilot actions for EE improvement

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1. Introduction and aims

This document is a post-investment report describing the pilot action. This determines the results of the investment and other accompanying activities.

The aim of this document is to present the achievements of the implemented measures and their usefulness.

2. PA report

This chapter presents in tabular form all interesting information about the pilot action. The table below is the business card of the pilot. It contains attractive information that not only shows the course and achievements of the pilot action but can also be a tip for people interested in similar energy efficiency improvement measures or owning similar buildings. It was demonstrated in document D.T3.1.4 that pilot action in Zlin Region is a good practice, so it is a testimony to how such investments should be implemented.

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| Name of the pilot action | PA3 with zero-energy public buildings in Zlin Region |
| Type of the pilot action | Investment |
| Location | Zlin Region, the Czech Republic |
| Number of modernized buildings (with building's type) | 8 buildings incl. 3 hospital and 5 educational |
| Modernized area of the buildings | 12375,36 m ² + 4948,1 m ² + 5232,4 m ² + 3406,2 m ² + 4649,83 m ² + 2929,99 m ² |
| Main problems in the buildings | Too much energy consumption in buildings Too high costs of building maintenance |
| PA goals | <ol style="list-style-type: none"> 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 |
| Type of energy efficiency improvement method used | <ul style="list-style-type: none"> installation of indoor climate measurements, which means CO₂, humidity and temperature are measured the thermal modernization of the buildings, replacing mainly windows with a heat transfer coefficient $U = 0.9 \text{ W/m}^2\text{K}$ and doors with $U = 1.2 \text{ W/m}^2\text{K}$, a thermally insulated roof made of mineral wool or EPS ($\lambda = 0.039 \text{ W/mK}$) in the minimum thickness of 22 cm. The insulation of the walls with EPS $\lambda = 0.039 \text{ W/mK}$ and 16 cm thickness |
| Number of smart meters (with their purpose) | 27 smart indoor meters with memory, that measure CO ₂ concentration, temperature and relative humidity |
| Pilot action duration | 11.2016-09.2018 |
| Partners involved | EAZK |
| People number involved to implement the PA | EAZK, representatives from the Zlín region, energy auditor, project engineers, representatives from the hospital, energy specialist, project |



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| | developer |
| Investment value | 16 092 920 € |
| Description/Details of the PA | <p>The pilot action in the Czech Republic involved high school and special primary school buildings. They are very specific historical objects built in early 20th century and now are under the historical protection. Indoor climate measurements have been installed, which means CO₂, humidity and temperature are measured. The buildings underwent thermal modernization, replacing mainly windows with a heat transfer coefficient $U = 0.9 \text{ W/m}^2\text{K}$, replacing doors with a heat transfer coefficient $U = 1.2 \text{ W/m}^2\text{K}$ and a thermally insulated roof made of mineral wool or EPS ($\lambda = 0.039 \text{ W/mK}$) in the minimum thickness of 22 cm. In some schools were possible to insulate walls that are not historical with EPS $\lambda = 0.039 \text{ W/mK}$ and 16 cm thickness. All these actions led to the energy savings from 15 % to 30 % depends on the possible solutions. Energy management was established in 2009 and allows accurate estimation of results. Schools are heated by the natural gas boiler and hospital has its own district heating system powered by natural gas boiler and waste incinerator.</p> <p>EAZK provided technical support at all stages of its implementation, including the preparatory, construction and operational stages. He helped in the selection of external experts assessing the optimization of the functioning of the building. EAZK supported and managed the implementation of energy management in accordance with EN ISO 50001; development of a programming tool necessary for regular evaluation of data results, financial analysis and investment management. In addition, EAZK will train building staff in energy management skills.</p> |
| Type and number of the stakeholders reached | <p>Number of reached target groups in the framework of pilot action:</p> <p>General public - 0 Local public authority - 0 Regional public authority - 6 Sectoral agency - 0 Infrastructure and (public) service provider - 18 Higher education and research - 2 Education /training centre and school - 88 (mostly the teachers) SME - 42 Business support organisation - 0</p> |
| Achieved effects/results | <ul style="list-style-type: none"> • Improving energy efficiency in Zlin Region. • Building users will gain experience in how smart metering works and how it should be monitored. • 953 919 kWh annual reduction of energy consumption. • 55 060 € annual cost savings. • 190,695 tons annual reduction of CO₂ emission. • Increasing the comfort of the building use. • Easier operation of the building. • The exchange of experiences and practices of carrying out similar investments in various political, social and technical conditions. • Increasing public energy awareness. • Change in people's behavior. |



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| | <ul style="list-style-type: none"> Promoting and disseminating knowledge about energy efficiency measures in buildings. |
| Satisfaction of users | Users of the buildings are definitely satisfied with the reconstructions. Moreover the directors are more aware of the energy consumption and savings. Janitors and other staff are now much more involved in the energy savings and are the key parts for the operating the boilers and preparing of the hot water. |
| Possibility of replication | The activities can be transferable and replicated in other cases and regions. |
| Distinctive feature of the pilot action | – the unique energy management led by EAZK |
| Number of staff trainings | In each school (5) were teachers, director and janitors taught how to operate the building after the reconstruction of the buildings. Focus was on the indoor temperature and mostly on the right ventilation of each class. |
| Number of promotional meetings – focus group meetings, seminars | Three focus groups were made. 23 participants took part in all meetings which focus was to consult and present the progress in developing of OnePlace. One seminar took place in the Zlín Region headquarters in Zlín on 12th November 2019. During the seminar, EAZK presented particular BOOSTEE-CE project outcomes. |

Table 1: Pilot action business card

The results presented above clearly show that the pilot action has brought and will bring so many benefits that one can speak of success. The scale of the project is huge hence it requires a lot of investment funds but generates equally large savings and significant results.

The analysis of activities showed that all intended plans were implemented and met expectations.

3. Conclusions

This study is a summary of the pilot action in the Czech Republic. The main results are measurable benefits achieved in selected buildings, including cost and energy savings and reduction of CO₂ emissions. In addition, it can be concluded that the OnePlace platform is useful for preparing, conducting and monitoring EE investments as a tool supporting the entire investment process.

The identified replication possibilities of the pilot action in other buildings or locations as well as the transfer of acquired knowledge and experience prove that the pilot can be successfully continued and developed.

The information contained in this document is based on deliverable D.T3.1.4, D.T3.2.1, Output 3.1 and PA3 fact sheet.