



POLSKIE I NORWESKIE GMINY
razem dla klimatu i energii

Raciechowice

Installation of heat pumps powered by photovoltaic installations in selected public buildings of the Municipality of Raciechowice

Project description was prepared within the umbrella project "Polish-Norwegian cooperation platform for climate and energy conservation", which is funded under the PL04 Programme of the Bilateral Cooperation Fund, financed from the Norwegian Financial Mechanism (NMF) 2009-2014.



Description of the municipality

Raciechowice is a small municipality located in the southern part of Poland and counting approx. 6200 inhabitants. It is considered as the environmentally friendly municipality and for many years now it has been involved in many ecological initiatives.

WWW: <http://www.raciechowice.pl/>

Description of the overall idea for innovation

Identified problem: since the municipality is not connected to the natural gas distribution network, all public buildings are heated with individual oil-fired boilers. The boilers are already quite old and emit significant amounts of CO₂, sulphur compounds and solid particulates. Moreover, traditional lighting installation consume large amounts of electricity. Main objective of the innovative project: change of the heating source in selected public buildings of the Municipality of Raciechowice. Oil-fired boilers will be replaced with heat pumps supported by PV installations. Also, current internal lighting will be replaced with LED lamps. Using heat pumps connected with PV installation as the main source of heating should result in significant economic and environmental benefits. Moreover, using such an innovative system in the region will contribute to the promotion and dissemination of renewable energy sources not only among neighbouring municipalities, but also among private households. Solar energy is commonly available and the Municipality of Raciechowice has favourable local conditions to make use of it. Within the pilot project solar energy will be used to produce electricity, which will power heat pumps supplying the buildings with heating.

The project will make use of the modern technological solutions. It includes implementation of the comprehensive monitoring and control system. PV installation will be equipped with the electricity output meter, while heat pumps will have meters measuring electricity consumption and heat production. Data from the meters will be sent to the Town Hall via Internet and will be administered by the person made responsible for the monitoring process. Change of the heating source in the buildings will be accompanied with the modernisation of internal lighting in order to reduce electricity consumption. After implementing both solutions, the buildings should be able to produce nearly 100% of energy that they use.

Description of the micro-project

The micro-project consists in the development of the pre-investment feasibility study based on the assumptions of the audits carried out in 9 public utility buildings from the territory of the Raciechowice municipality (4 schools, 2 centers for people with special needs, 2 office buildings and 1 cultural center). The study will include identification of the optimum solutions for improvement of energy efficiency in analysed buildings, which will be based on the assessment of their technical condition and will focus on undertakings improving the efficiency of the heating system. The study will also help to determine the level of CO₂ emission reduction resulting from the investment.

Additionally, the municipality is planning an assessment of the profitability of the investment aiming at reducing demand for electricity and heat. Thank to this assessment it will be possible to check if the overall idea for innovation is justifiable and possible to implement.

Planned results/outputs of the micro-project

1. Development of the characteristics of the buildings included in the project (including assessment of the efficiency of their heating system and warm usable water supply system);
2. Development of the characteristics of the electricity supply and distribution system;
3. Comparison of the current situation of the buildings with the situation after the installation of RES;
4. Assessment of the profitability of using PV installation for electricity production;
5. Assessment of the profitability of using heat pumps for heat production;
6. Carrying out an energy audit of internal lighting;
7. Development of the list of optimum solutions and possible variants of actions;
8. Preparation of the technical description of the optimum variant selected for implementation;
9. Estimation of the CO2 emission reduction resulting from using RES to produce heat and electricity.

Expected role of the Norwegian

It is planned that the Norwegian partner will be involved in the project and will be invited to share his experience in order to help the municipality to choose the most appropriate technology and monitoring method. With his help, the municipality will assess if proposed solutions are reasonable and will bring expected economic and environmental results. Raciechowice is also willing to extend this cooperation to other areas in the future (e.g. to work on common social and cultural initiatives).

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