



POLISH AND NORWEGIAN CITIES
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ENERGY AND ENVIRONMENTAL MANAGEMENT IN PUBLIC UTILITY BUILDINGS IN CZĘSTOCHOWA

Sector: Sustainable energy management

Timeframe: since 2003

Location: Częstochowa



Photo: City of Częstochowa

PROJECT BACKGROUND

Częstochowa (approx. 235 000 inhabitants) is located in the southern part of Poland, in the Silesian Voivodeship. Since January 2012 the city is a member of the Association of Municipalities Polish Network "Energie Cités". In the same year it also signed the Covenant of Mayors, and two years later it developed and formally approved local Sustainable Energy Action Plan. The document shows how the city plans to fulfil its commitment in the area of GHG emission reduction. One of the foreseen initiatives improving energy efficiency in the public sector, and thus contributing to the decrease of GHG emissions, is the programme entitled "Energy and environmental management in public utility buildings in Częstochowa", which is being implemented since 2003. It includes thermal retrofitting of public utility buildings, modernisation of district heating substations and implementation of different types of low-cost, managerial and educational measures. They all contribute to the realisation of the concept of sustainable energy economy. Częstochowa is basing all its activities on the "5 x E" rule, where "E" stands for Energy, Efficiency, Economy, Ecology and Education. A unit responsible for the implementation of sustainable energy measures is the City Engineer's Office, which hires three specialists subordinate to the municipal engineer.

DESCRIPTIONS AND RESULTS OF IMPLEMENTED PROJECTS

FREE MARKET

Częstochowa started benefiting from the free electricity market already in 2009, as the first city in Poland. When organising open tenders it follows the rule of separating purchase of distribution services from the purchase of electricity itself, which introduces real competition between the energy retailers. The tenders are organised for a purchasing group composed of all municipal institutions and companies. In 2015, following bidding regulations concerning electricity market liberalisation, Częstochowa announced another joint tender for electricity supply covering the demand of 5 departments of local administration, 137 organisational units, municipal companies and the City's Road and Transport Authority. Change of the energy provider was successfully conducted. Energy volume covered by the tender amounted to 44,25 GWh.

Financial savings achieved in the period 2009-2015 as a result of the first change of the energy provider reached 21,3 Mio PLN (approx. 5 Mio EUR). It is estimated that in 2016 they will come to further 5,8 Mio PLN (approx. 1,3 Mio EUR), which gives together over 27 Mio PLN (approx. 6,3 Mio EUR).



Częstochowa also selected a winning tender for the gaseous fuel supply for the purchasing group composed of the Control and Administration Department and the city's 88 organisational units and companies. The contract was awarded for the period 01.04.2016 – 31.03.2017. Foreseen financial savings resulting from this action come to 640 000 PLN (approx. 149 000 EUR).

Moreover, Częstochowa is the first Polish self-government, which won the tender organised by the President of the Energy Regulatory Office and received an Energy Savings Certificate (ESC) with the value of 689 toe. Such certificates, also called the "white certificates", are issued for energy-saving activities resulting in a certain reduction of energy consumption. They are the securities that can be traded on the market.

RESULTS

Savings achieved in the period 2009-2015 in result of an open tender for electricity supply came to 21,3 Mio PLN (approx. 5 Mio EUR). Together with the additional savings predicted for 2016 they should exceed 27 Mio PLN (approx. 6,3 Mio EUR). The tender awarded for the gaseous fuel supply should bring the municipality further annual savings of 640 000 PLN (approx. 149 000 EUR). The "white certificates", obtained for energy-saving measures implemented, were sold for 660 000 PLN (approx. 153 490 EUR).

USE OF ENERGY PERFORMANCE CONTRACTING - THERMAL RETROFITTING OF BUILDINGS

The retrofitting works consisting in thermal insulation of the envelope and modernisation of the heat source were conducted in 14 educational facilities. Moreover, in cooperation with the ESCO company, the municipality modernised district heating substations in 22 educational facilities and re-constructed 2 boiler houses switching from solid fuel to heating oil. District heating substations in further 19 buildings were reconstructed by the Fortum company to



Photo: City of Częstochowa

satisfy municipality's claim concerning compensation for the property (elements of district heating network) passed over to the company until 1997. The compensation included also installation of automated boiler houses using eco-pea coal as a fuel in 4 facilities.

RESULTS

In 2014 heat consumption in Częstochowa's educational facilities decreased by 40% compared to the baseline year (2003). In the same year the heating costs were reduced by 6% (486 000 PLN ≈ 113 000 EUR) compared to 2013. Regarding other types of municipal buildings, heat consumption decreased by 20% compared to 2003 and the heating costs were reduced by 10% (359 000 PLN ≈ 83 500 EUR) compared to 2013.

USE OF ENERGY PERFORMANCE CONTRACTING - "DROP TO DROP" PROJECT

In November 2012 Częstochowa launched a pilot project named "Drop to drop", which was implemented in five educational facilities and three buildings occupied by the municipal boarding house. In March 2013 the project was extended to include further 16 educational buildings and in March 2016 next 10 buildings joined. The main aim of the action



was to reduce water consumption in participating buildings, at the same time reducing amount of energy needed to heat it and the related costs. This is achieved by implementing relevant technical solutions, tailor-made for each building, and by organising educational activities addressed to the building users.

RESULTS

Implementation of the programme entitled "Energy and environmental management in public utility buildings in Częstochowa" resulted in significant water savings. In 2014 water consumption in 118 educational facilities came to 124 367 m³, which is 77 036 m³ (38,2%) less than the consumption in 2003.

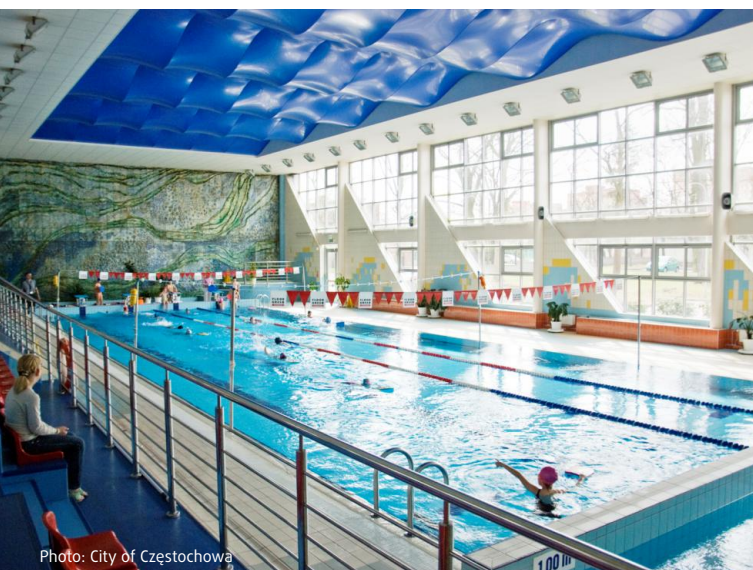


Photo: City of Częstochowa

SYSTEM FOR MONITORING UTILITIES CONSUMPTION

Since 2003 the City Engineer's Office has been gathering data on utilities consumption and related costs incurred by all municipal units. In order to improve the process of utilities management, in 2008 Częstochowa introduced an on-line System for Monitoring Utilities Consumption, which is used to collect data from energy and water bills received by all municipal institutions and companies. The system includes

modules enabling relevant analyses and reporting. Since 2003 the data on energy and water consumption (including the settlement terms) are obtained directly from respective institutions, which enables on-going monitoring of the efficiency of their use and the correctness of the settlements made. Engaging building managers in the process of data acquisition serves also educational purposes as it helps them realize how important it is to regularly monitor utilities consumption and related costs, as well as to take actions rationalising this consumption.

RESULTS

According to the analyses made real savings resulting from reducing utilities consumption reach approx. 27 Mio PLN (approx. 6,3 Mio EUR). In 2014 total energy and fuel consumption registered in 118 educational facilities, where detailed monitoring and reporting procedures were implemented, came to 44 682 MWh and was 38,5% lower than the consumption in 2003. Also CO₂ emission was reduced (coming to 20 666 tCO₂, which gives 36,9% reduction compared to 2003), as well as the water consumption (coming to 125 152 m³, which gives 37,9% reduction compared to 2003).



Photo: City of Częstochowa



MODERNISATION OF STREET LIGHTING

Modernisation of street lighting was conducted on the basis of the lighting service provision agreement made between the City of Częstochowa and the company Tauron Dystrybucja S.A., Częstochowa's Branch. The action started with the comprehensive inventory of street luminaires made at the beginning of 2012, which helped to determine the scope and technical details of planned modernisation works. They included replacement of 4 862 old luminaires with the new, energy efficient ones, as well as installation of 1 172 additional luminaires.

RESULTS

As a result of the investment the output of the lighting network was reduced by 550 kW, decreasing also electricity consumption by approx. 2 200 000 kWh per year. The costs of electricity and distribution services, incurred from the municipal budget, dropped by 1,65 Mio PLN (approx. 0,4 Mio EUR) per year.

JOINT RESULTS OF ALL IMPLEMENTED ACTIONS

Joint results achieved in 118 educational facilities due to the implementation of all described measures (period 2004-2014) are following: reduction of energy consumption by 197 058 MWh, reduction of CO₂ emissions by 83 689 tonnes and reduction of water consumption by 678 931 m³.



Photo: City of Częstochowa

In recognition of Częstochowa's activities for sustainable development and energy conservation, the city was nominated to the national contest and received an Eco-Inspiration Emblem 2014 in the category of "City of Sustainable Development". It took the first place both in the eyes of the Contest's Programme Council and in the on-line voting organised within another contest, announced by the editorial office of the "Ekologia i Rynek" ("Ecology and Market") magazine and Ekorynek.com portal, which took place under the patronage of the Ministry for Environment.

Częstochowa's authorities efforts were also appreciated by the international organisation CDP, which marked out the city in its "CDP Climate Change Report 2015" for the strategic approach towards the development of low-emission economy, building dialogue and exemplary cooperation with the business sector in this area.



Photo: City of Częstochowa

MORE INFORMATION

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