

Best practice from Ukraine (№1)

District heating in the town of Zhovkva, Ukraine

The town of Zhovkva, 35 km from Ukrainian-Polish border and with population of 13.600 inhabitants, lives the typical life of Western Ukrainian small towns: poor roads, some agriculture, not so many industry, and unemployment. However, the region is rich in forests.

In 2003, Zhovkva authorities were delegated to run *Zhovkvateploenergo*, a communal company that produces and distributes energy to Zhovkva, and had several million in debt for consumed gas.

The municipality of Zhovkva initiated the process of transition from gas to solid fuel back in 2005. The purpose of the initiative was to switch from gas to woody biomass, in order to completely stop use of gas for the provision of district heating services in Zhovkva.

What has been done

Zhovkva authorities started looking for money to modernize the boilers. In 2012, Zhovkva joined the Covenant of Mayors, a European co-operation movement which signatories commit to increasing energy efficiency using renewable energy sources on their territories. In 2014 and 2015, Zhovkva won two grants from the Covenant of Mayors, a European movement for local climate and energy actions which aims to reduce CO₂, worth 1.05 million euros. Another UAH 2.6 million (79,093 euros) came from the Swedish International Development Agency (SIDA). SIDA gave the money mainly for an energy audit of the city's heating system and budgetary institutions, with the city financing of UAH 660,274 (20,378 euros) for the purpose, which they did.

EU funding has helped to carry out the winterization of the kindergarten and modernization of the district heating company. There are four municipal boiler houses in Zhovkva. One of them was re-equipped with solid fuel combustion appliances of total capacity of 2,46 MW. Instead of combusting gas, it uses wood chips and sawdust now. The chips come from the nearby forests and wood processing companies. One more facility is being reconstructed too. Two more gas boiler houses were put on hold on stand-by reserve.

Heat loss was also tackled: 1.6 km of heat networks were replaced with new insulated pipes and united into one network. Now the heat losses between a boiler house and residential and municipal buildings being heated dropped considerably.

Study of biomass logistics

Development of biomass logistic was a unique study undertaken in order to optimize woody biomass supply and consumption for Zhovkva communal company that provides heat.

Currently there are 3 boiler houses that use woody biomass (firewood and chips) for heating, reconstruction of another boiler house and conversion to mostly chips is planned. Therefore, need for biomass is expected to grow 2-2.5 times (in energy equivalent). Since, East Europe Foundation has supported the study that looks in the how much resources will be needed in the future, which biomass is available and who are suppliers.

As a result, the area of 50 km radius was analyzed and best solutions were proposed in terms of correlation between various biomass types, its quantity and quality; suppliers and their prices; alternatives suppliers of biomass from energy plantations or production of own pellets.

Some main conclusions include, for example, that the company currently manages to organize stable supply of biomass, but with the higher output they would need to improve warehouse operations, consider additional suppliers within the wider 100 km radius, purchase own chipping machine etc.

Such a study has a potential not only to improve company performance, but can have a regional policy impact as element of the regional energy efficiency program.

Outputs and potential for replication

The services of central heating in the city are provided to 33 apartment buildings, 18 institutions and 27 other consumers. Rest of the city's inhabitants lives in private buildings with individual heating.

The implementation of the project has made it possible to reduce the tariff for the population, budget institutions (-10%) and other consumers (-30%) annually. Switching from gas to biomass allowed the community of Zhovkva to save 20% of city budget funds annually.

Almost half of the 13,000-resident town is heated with biofuel, not gas, consuming substantially less energy and saving 31 MWh / year. Reduction of CO₂ emissions are 1085 tons per year.



Photo: Kriger boiler, 3*820 KWt
Source Zhovkvateploenergo



Photo: new isolated pipes
Source Shorthand social)

Zhovkva officials believe that a lot of city's success belongs to the young team that works on the projects.

Joining the Covenant of Mayors, a European co-operation movement, was for the Zhovkva city both additional stimuli and resource for implementation of energy efficiency using local renewable energy sources.

In the recent years in Ukraine the growing number of apartments has been disconnecting from centralized heating and converted to individual heating with gas, because of heat loss in aging pipes, frequent breakdowns and big debts of central heating stations for gas. Against the background of this situation, Zhovkva project is an exemplary demonstration of what can be done in small urban area that still utilizes central heating, with local resources, support from international donors and careful planning. District heating can also save on costs and reduce pollution.

Sources:

Utility company Zhovkvateploenergo

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