

# Utena – LT



→ Good practice example

## Pilot action community: Utena – Lithuania

### Type of energy consumption:

heat energy  hot domestic water  electricity  water

### Use of renewable energy resources (potential or actual):

biomass  wind energy  geothermal energy  solar energy  hydroelectric power station

### Rational use of energy:

sustainable building systems, low energy housing  building thermal modernisation  modernisation and upgrading of the heating systems  modernisation of lighting  balanced/sustainable transport

The main goal of modernizing the heating systems was to increase the effectiveness of the energy use. Therefore, the more economy fuel such as wood was used. That provided with smaller Company loss and created the positive environmental impact.

## → Community

### Short description containing:

<b>Geographical position</b>	Eastern part of Republic of Lithuania
<b>Main profile of activity in the region</b>	food industry as well as agriculture
<b>Number of inhabitants</b>	33 860
<b>Important institutions</b>	County authorities

### Energy data:

<b>Energy supply</b>	512 buildings with 9 884 flats
<b>Energy consumption</b>	169 400 MWh
<b>Total heated flat area</b>	495 310 m <sup>2</sup>
<b>Type of fuel (for heat energy) (in 2007)</b>	60% natural gas, 40% wood waste

### Climatic data: (selected data important for the described case)

<b>Average yearly temperature</b>	7 °C
<b>Mean wind speed</b>	3.0 m/s
<b>Average of heating days per year</b>	184 days
<b>Hours of sunshine per year</b>	1 700

## → Context

In order to upgrade the heating systems there were several important investments made in the Utena District Heating plants. When the price of fuel oil and natural gas started growing rapidly it was decided to invest in a wood fuel boiler. The project was environmental and the Nordic Environment Finance Corporation (NEFCO) agreed to finance it providing a non-repayable direct assistance. The project consisted of two stages.

First, a 10 MW wood burning mouth with a steam boiler, a fuel storage facility and push movers were installed. The boiler produces 59364 MWh of heat using 7912 t of wood waste.

Second, the old KVGM-50 and PTVM-30 boilers were replaced with two effective water heating boilers of the 14MW capacity, each burning gas and fuel oil. Balance of fuel used by the Company changed considerably. In 2001 fuel oil in the fuel balance accounted for as much as 92%, whereas in 2004 this fuel made up only 13%, and fuel wood – 38%. In 2005 the Company ceased using fuel oil.

When fuel wood prices started growing in 2004, it was decided to invest into the installation of a condensing economiser of the wood fuel boiler and using a condensing economiser in gaseous fuel burning boilers. About 18 GWh or about 10% of annual generation volumes of heat are generated using the condensing economiser. These investments helped reduce the consumption of fuel used for heat generation. Consequently, in recent years the Company's efficiency increased to 97.0% compared with 89.1% in 2004. Therefore, irrespective of wood price increase by almost 50% in 2006 compared with 2004 and natural gas prices – by 33%, fuel expenses for generation of 1 MWh went up only by 10% due to the quantity of heat generated by the recuperator. The investments to the condensing economiser cost 2.373 mln. Lt.



## → Cost and benefits

### Economical

After installation of a wood fuel boiler the expenses for fuel reduced.

The investment to the condensing economizer amounted for 2.373 mln. Lt of which 857 thous. Lt were granted by the Lithuanian Environmental Investment Fund. The planned payback period is 3 years.

The investment to the wood boiler amounted to 3 mln. Lt, the planned payback period is 5-6 years, expected lifetime – 20 years.

### Environmental

According to the negotiable pollution permits trading system implemented in Lithuania, in 2005 the limit for CO<sub>2</sub> emissions to the atmosphere was established for the Company for a period of three years. As CO<sub>2</sub> emission of the bio-boiler is not calculated the Company was able to sell unused quantities of CO<sub>2</sub> established by negotiable pollution permits. Income earned from sale of negotiable pollution permits was invested by the Company into renovation of heating pipeline routes.

## → Evaluation and Outlook

The Company continues investing into the improvement of efficiency of heat generation, reduction of atmospheric pollution and modernization of transmission network.

## Further information

**Name of the contact person:** Audrone Nakrosiene, **Position:** Specialist, **Organisation:** Lithuanian District Heating Association, **Address:** Naugarduko 55A, Vilnius, **Tel/fax:** +370 682 505 35, **E-mail:** audrone@lsta.lt

This case study was prepared by Audrone Nakrosiene, Lithuanian District Heating Association in co-operation with Energy Consulting Network with the financial support of Intelligent Energy Europe.