

## How CHP from ENER·G is helping the District Heating (DH) sector reduce energy costs and lower greenhouse gas emissions

This case study looks at a specific DH refurbishment project in Romania that benefits from the use of cogeneration.

### The Targoviste District Heating System

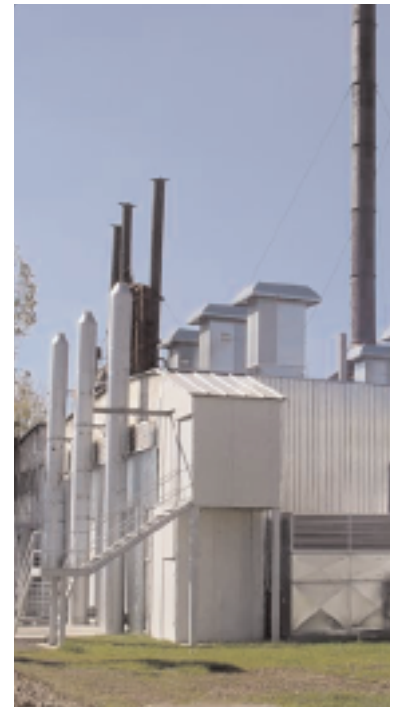
Greenhouse gas emissions from aging and inefficient DH plants can have a significant negative impact on local air quality. Therefore, important investment is needed in this sector across Europe to reduce this negative impact on the environment. Particularly the case in Central and Eastern Europe where DH is very common.

Targoviste is situated in the south central region of Romania and has a population of nearly 90,000. The local DH system supplies thermal energy to about 16,000 apartments and 270 businesses, schools and kindergartens.

The existing facilities were more than 25 years old and had very low, only 62%, thermal efficiency resulting in a high consumption of natural gas. The local municipality's objectives were to increase the efficiency of the DH plant and to secure a source of cheap heat whilst achieving EU environmental standards.

In addition the refurbishment of the plant was to be carried out as Joint Implementation project between Romania and the Netherlands in accordance with the Kyoto Protocol.

The four main components of the project were: the installation of a



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new cogeneration system; installation of a new heat only boiler; upgrading of an existing heat only boiler, and the upgrading of the heat transportation networks over a period of time.

NUON Energy Romania, a subsidiary of the Dutch utility NOUN was set up with the specific goal of implementing the municipal cogeneration project in Targoviste and was responsible for the purchasing of the equipment.

Following tendering ENER-G Nedalo, the ENER-G group's Dutch subsidiary won the contract to supply the cogeneration units.

Nine ENER-G 800 units with a total generating capacity of 7.2MWe were delivered over a four-month period in early 2006. The units were built, tested by ENER-G Combined Power Ltd. Each unit was also witness tested by NUON in the UK and shipped and installed in the old boiler house. Date of commissioning: December 2006.

Output figures of the units:  
*Electrical output:* 816 kWe  
*Thermal output:* 1,240 kW  
*Fuel consumption:* 2,256 kW  
*Emissions (NO<sub>x</sub> mg/Nm<sup>3</sup> ref 5% O<sub>2</sub>):* <500

The total value of this turnkey project, including spare parts and

commissioning was €3,050,000 and was provided on capital purchase basis.

The project provides heat to the people of Targoviste while the electricity generated is delivered to utilities owned by the municipality via the national grid.

It is estimated that the project will result in CO<sub>2</sub> emission reductions of 307,228 tonnes per year.

Further important revenue for the project is gained through the transfer of carbon credits from Romania to the Netherlands under the Joint Implementation mechanism.

Unlike most other projects ENER-G do not have an operations and maintenance contract for this equipment as NUON chose to undertake these after extensive training by ENER-G. NUON are also supported by ENER-G's service centre that can provide remote support via each unit onboard telemetering and control system.

ENER-G has a flexible approach and provides alternative financial solutions. ENER-G provides a solution at no capital cost to the client where we install, operate and finance the cogeneration installation to the client and sell the energy produced.

The benefits of CHP from ENER-G in the District Heating Sector:

Offers financial savings over conventional energy supply:

- High efficiency reduces energy wastage
- Lower energy bills
- Convenient on site generation
- Greater security of supply
- Significant reduction in greenhouse gas emissions
- Flexible procurement options – no capital required

ENER-G Group is a leading distributed power generation and energy management company, providing clean energy initiatives with visible benefits to the environment.

As well as ENER-G Combined Power, the group's business activities include renewable power generation from landfill gas, energy from waste, and energy management.

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