

Setting

Country	Bulgaria
Location	Town of Bansko, Blagoevgrad Region
Project start date	2005
Project end date	2007
Technology keywords	Forestry & Energy Crops, District Heating
Host sector	District Heating Company

Technical summary of the project

Objective of the project	Construction of a heating station together with heat transmission network, biomass (wood waste) fueled for production of hot water (115/70°C) for space heating and domestic hot water preparation for industrial sites, administrative and dwelling buildings, hotels.
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Project description

The town of Bansko is situated at the foot of the Pirin mountain range in western Bulgaria, just 100 km south of the capital Sofia.

The project was executed in DH Bansko, Bulgaria. Two grate water heating boilers are mounted with 5 MW capacity each, imported from Austria. They burn chipped air-dry wood waste with moisture content up to 40 % and calorificity of 10 300 kJ/kg which after pre-treatment by re-circulation of exhaust gases (when humidity goes up to 20 %) will become 14 600 kJ/ kg. Only heat is produced (hot water with temperature 115/70°C). The produced hot water is delivered to consumers by a two-pipe transmission network with pre-insulated pipes and respective sub-stations. An existing heat transmission network is used which is refurbished and extended.

The technological cycle includes the following:

- From the storage place the wood biomass is fed to a silo for 24-hour fuel storage capacity;
- The biomass fuel is taken from the silo and is transported to an intermediate bunker from which is distributed with transported to the combustion chambers of the boilers. In the combustion chamber there is a hydraulic-driven grate for optimum combustions of wet material and of material with high ash content, eg. bark. Primary combustion air is fed by 3 fans and for better combustion part of the exhaust gases are recycled back to the chamber. There is a movable container of 1100 kg capacity for collection of ash from the grate.
- Exhaust gases go to two cyclones where solid particles are separated and the clean gases is driven to the chimney by a fan (both boilers are connected to the same chimney).
- The water is fed to the water heating boiler and after warming is delivered to the consumers by network pumps.
- In order to maintain the necessary temperature there are re-circulation pumps at the entrance to the boiler.
- In order to maintain the pressure in the back pipe-line, there are pumps for additional water quantities from a special reservoir.
- A water treatment installation is being built to provide water with necessary qualities for the heating system.

Project results:

Annual production of 15 159 MWh_t heat energy in the new installation;

Project benefits include:

- Heat production from wastes saving scarce fossil fuels;
- Greenhouse gas emission reductions

The generated heat is sold to one local industry, several hotels and holiday villages, private housings and municipal buildings.

Lessons learned and conclusions

Bansko has developed as an attractive winter and ski resort and there are consumers of generated heat.

The project has high replication potential in small towns and rural areas in wood-rich regions of Bulgaria where there is availability of significant quantities wood biomass from wood processing industries and from sanitary felling of the forests.

Environmental and social benefits

(Estimate of) Greenhouse Gases abated	Annual: 3 950 tCO ₂ -equivalent in average Up to a period of 10 years: 39 500 tCO ₂ -equivalent Up to a period of 15 years: 59 250 tCO ₂ -equivalent
Number of reduction units	
Socio-economic aspects	Increasing the security of supply with heat energy and the comfort of living of Bansko population. Serving as a good example of district heating network in Bulgaria fueled with wood waste that otherwise will be thrown away and will additionally create problems with its safe and clean disposal. Significantly lower heat prices of biomass, compared to electricity, liquid fuels, propane-butane, coal or other energy sources in the region.
Methodology used	The methodology for CO ₂ calculations is based on the approved by the Bulgarian Ministry of Environment and Waters emission factors.

Economic data

Capital costs	5,9 million leva
Financing scheme	Bank loan and equity, EBRD grant
Financing organisation	N.A.

Project developer

Name of the project developer	BulEcoEnergia Company
E-mail and/or web address	http://www.buleco.com/
Contact person	Eng. Anton Ivanov

Host organisation

Name of Host organisation	District Heating Bansko - Toplofikacia Bansko, Municipality of Bansko
E-mail and/or web address	http://bansko.net
Contact person	Alexander Kravarov - Mayor

Technology provider

Name of Technology provider	Polytechnik, Austria
E-mail and/or web address	http://www.polytechnik.com/
Contact person	-