

GOOD PRACTICE EXAMPLE

**National Energy company,
Ltd. Bratislava**



Národná energetická spoločnosť

energetika • technológie • životné prostredie • emisné merania • poradenstvo



1. General description

National Energy Company covers 6 subsidiary companies that operate 8 boiler plants for wood biomass in the cities: Hřiňová, Hnúšťa, Žarnovica, Tlmače, Poltár, Veľký Krtíš, Revúca and Trebišov. The boiler plants are equipped with boilers using wood biomass in the form of wood chips and sawdust and boilers using natural gas. Gas boilers are used as power-reserve and, if necessary, they cover peak consumption of heat. Boilers for wood biomass cover 85 to 95% of the total heat consumption. Boiler plants supply with heat and hot water urban and municipal sphere. Supply of wood fuels is provided by company Intech, which includes Biomass division. The annual consumption of wood fuels is currently 50,000 tons.

Identified GPE is supply chain that includes contacting and selecting owners of fuel wood biomass in forestry and agriculture, harvesting, production and transport of wood chips to stores of boiler plants.

The above-mentioned example is transferable and implementable in companies producing energy from wood biomass for use in household and municipal sphere, industry and also in the plants.



Figure 1: Boiler house in Žarnovica

2. Description of activity in biomass supply chain

The entire supply chain has the following structure:

1. Identification and negotiation with owners of fuel wood biomass. Provided by company Intech – Biomass division based on a planned annual consumption of fuel in different boiler plants. Suppliers are exclusively forest land owners and owners of agricultural land overgrown by forest tree species.
2. Concluding contracts on wood biomass sale. Provided by company Intech – Biomass division purchasing standing timber from forest and non-forest land. The contracts are short-term.
3. Timber felling and wood chips production. Provided by company Intech – Biomass division.
4. Wood chips transportation into stores of boiler plants. Provided by company Intech – Biomass division by its own transport facilities.



Figure 2: Biomass storage of end user in boiler house.

3. Technical characteristic

Information and communication technology is used to contact wood biomass owners and manage production process and fuel supply. Concluding contracts is facilitated by personal contacts using current experience.

Since boiler plants are supplying mainly heat for households and objects, fuel consumption is concentrated into the heating season from October to April. It places an increased demand on the supply arrangements. That's the reason, why the fuel stores in boiler plants carry 2-3 month supply and use also buffer stores on leased property.

Boiler construction allows the use of lower quality fuels (moisture content, heat value).

The company employs workers for timber felling and skidding into forest depots. They use chainsaws and special tractors, skidding all parts of trees, including crown.

The company owns 3 wood-chipping machines – brands Kesla and Bieber with a total annual capacity of 50,000 tons, producing wood chips in forest depots.

Wood chips is transported by own transport facilities with a container structure and trailers. The capacity of each vehicle is 60 to 70 m³ of the wood chips.

Fuel is transported into the boiler through movable platforms and conveyer system. The movable platform is filled by front loader.

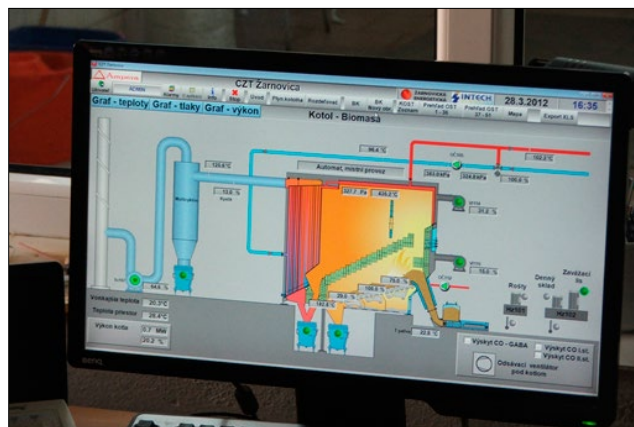


Figure 3: Control system of boiler house in Žarnovica

4. Economic characteristic

Direct costs on the purchase of standing trees range between 3 and 8 EUR/t. The cost of felling and concentrating are from 5 to 13 EUR/t. Wood chips production costs are 10 to 13 EUR/t. Transport costs depends on the distance and range from 6 to 14 EUR/t. Overhead expenses are 6-7 EUR/t. The total production costs of 1 ton of fuel are 30-55 EUR/t.

Subsidiary companies pay the price for delivered chips depending on the amount of produced heat in the output of the boiler (EUR. kWh-1). This method allows to evaluate the quality of supply fuel. Higher quality of fuel – heat value implies higher price.

5. Other characteristic

Laws of energy, renewable energy resources, air protection, nature conservation, waste, work safety and transport have to be respected in the field of biomass energy production and activities in the supply chain.

Heat producers have to respect also decree of the Office for Regulation of Network Industries on calculating the price of supplied heat, where the rate of profit is limited.

Annual consumption of 50,000 tons of wood chips replaces 13.3 million m³ of natural gas or 33.5 thousand tons of brown coal, what saves CO₂ emissions and other greenhouse gases (CH₄).

Company Intech – Biomass division employ in the described supply chain 27 people. Subsidiary companies operate biomass boiler plants and employ 85 people.

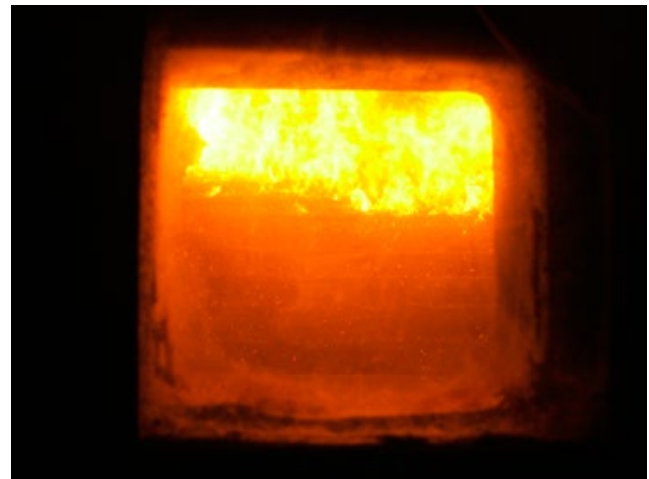


Figure 4: Wood biomass boiler grate