

# BIOMASS – WOOD

## Urban heating

# DOLE

## (France)

To reach the objective of increasing the proportion of renewable energies in Europe by 2010 to 12%, means giving more importance to wood-energy, for both heating and electricity. Wood and its forest by-products are largely available, but the investment needed to make full use of them is preventing greater mobilization. Nevertheless, some municipalities are working along these lines: including Dole, which brought two wood-fired boilers into service in 1998.

## THE CITY

Dole, with 30,000 inhabitants, is situated at the foot of the Jura mountains, in Eastern France. Dole overlooks the banks of the Doubs and the Rhône-Rhine canal. Originally built on a prehistoric and Gallo-Roman site, today it is a tertiary town with a railway hub and some industry. Dole is also known as the birthplace of Louis Pasteur.

### Climatic data:

Day degrees (Base 18°C): 2878



## CONTEXT

The "Wood Energy and local development" Plan was launched by the French government in 1994 and implemented by the ADEME. Its objectives are to:

- structure the procurement of wood energy: obtain durable procurement of fuel;
- guarantee product quality (granulometry, humidity level, heating capacity);
- render the price of wood fuel competitive with fossil fuels;
- encourage the development of automatic wood heating plants.

Apart from the larger number of industrial applications, major targets are communal housing and tertiary sectors, which, through large, stable consumption levels, help to structure the wood-energy sector.

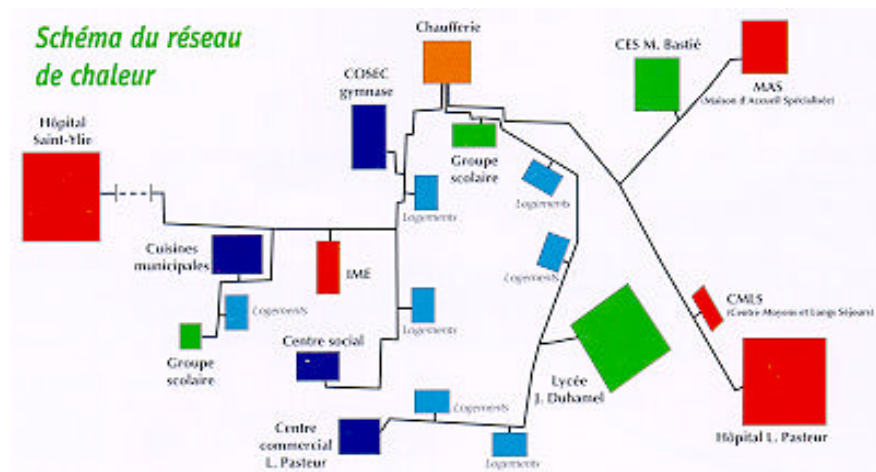
Within the terms of this plan, 585 heating plants had been installed in French regions by January 2002. These include 355 in the communal housing and tertiary sectors, 230 in industry for a total power of 526 MW and a wood consumption of 154 000 TEP/year. Since 1995, the Jura Department and the ADEME have combined resources to implement this plan and help produce the wood heating plants. The plan is managed by the AJENA (Association jurassienne pour la diffusion des énergies renouvelables – Jura Association for the diffusion of renewable energy) which is very active and innovative in this region.

# EXPERIENCE OF DOLE

Of the heating plants recently installed in the Jura, two are in Dole: one supplies the heating network and the other is used for a residential block.

## The central heating plant in the Mesnils-Pasteur district

The first heating plant in Dole was built in 1967. It powered an underground heating network, 5,500 m long which provided heating and hot water for nearly 1,800 housing units, two hospitals, two school groups, a secondary school, a shopping mall and several social establishments.



This heating plant had three generators:

- a 12 MW coal-fired generator dating from 1967
- a mixed heavy fuel oil/gas 15 MW generator dating from 1967
- a 15 MW heavy fuel oil generator dating from 1975.

When discussing what was needed to comply with the new legislation governing operating authorization, the town council felt that this was a good opportunity to study the possibility of using wood energy. A fourth generator, wood-fired, was therefore installed to cover summer power requirements.

The heating plant, with a capacity of 3.2 MW, went into service in September 1998. Its size is appropriate for the production of domestic hot water in summer, when it runs Dole's heating network alone. It runs at its basic rate, meaning at full power, from October to May and then at adjustable rates during the summer. This means that as much wood can be used as possibly, more than one third of the total energy. It runs entirely automatically from the feeding of wood to the extraction of ash, via power regulation.

With the recovery of 12,000 tonnes of forestry by-products per year, this heating plant consumes one third of the estimated supply for the geographic sector. The fuel, consists of about 80% bark (mainly conifer) and 20% miscellaneous products from the wood industry, untreated, unpainted, uncoated, sent directly from the region's sawmills to the Dole heating plant. The preparation line is designed to accept the widest range of wood waste. The installation screens, crushes and removes metal from the raw products delivered. The ash is either incorporated in green waste compost or used directly in agriculture.

The price of wood is relatively low, making it competitive with other fuels used, including coal. However, it needs equipment suitable for storage, handling, preparation and combustion. A building of about 350 m<sup>3</sup> has therefore been built on the heating plant site, which can store a maximum of 600 m<sup>2</sup> of fuel or 250 tonnes, representing 4 to 5 days of autonomous operation.



## Investments and financing

Investments		Financing	
Civil engineering and silo	114,000 Euro	Dole OPHLM (subsidized housing management)	378,000 Euro
Heating installations	395,000 Euro	Jura General Council	92,000 Euro
Studies and miscellaneous	52,000 Euro	Ademe	92,000 Euro
Total	562,000 Euro	Total	562,000 Euro

## EVALUATION AND OUTLOOK

Franche-Comté is the second most wooded region of France with more than 40% of its area wooded. The Mesnils Pasteur wood-fired heating plant is, in size and consumption, one of the biggest in France. Dole wanted to give priority to wood consumption for economic and ecological reasons. Indeed, using this local energy generates local jobs. It has notably led to the creation of 4 jobs. It helps eliminate wood by products from the region's sawmills. Heating energy expense thus remains within the local economy. These heating plants also replace nearly 1,000 TEP of coal and more than 1,300 TEP of heavy fuel oil. It prevents 76 tonnes of SO<sub>2</sub> and nearly 8,000 tonnes of CO<sub>2</sub> from being emitted into the atmosphere.

This project was completed due to tenacious political will. It took about 6 years from the first discussions to inauguration of the plant. On the other hand, the installation of a second wood-burning plant in Dole, just a few months after the first one, demonstrates Dole's new commitment and gives this technique a very promising future.

A showcase of wood energy is being prepared in the Jura Dole sector. It should show private individuals and particularly decision makers and elected representatives how to make contact with all aspects of the wood-energy sector.

## FURTHER INFORMATION

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