

BIOMASS - WOOD

DOLE (France)

If the share of renewable energy in Europe is to be increased to 12% by 2010, one has to consider an increase in the use of biomass wood, both for heat and electricity production. Wood and wooden waste are anything but rare, but they need rather heavy investments if they are to be fully exploited. That is why the use of biomass wood in Europe, except for traditional uses, is still marginal. Nevertheless, some municipalities have followed the path opened by Scandinavian initiatives. Dole is one of them and commissioned two wood-fired boilers in 1998.

GENERAL ASPECTS

Dole is a city with 25,000 habitants located at the foot of the Jura Mountains in a hilly border region in East France. Dole lies above the banks of the Doubs and the canal linking the Rhone to the Rhine. Built on a prehistoric and Gallo-Roman site, the city is a rail junction and its activity is rather tertiary-oriented, with some industries. Dole is also Louis Pasteur's birthplace.

Climatic data:

Degree days (Base 18 °C): 2878



CONTEXT

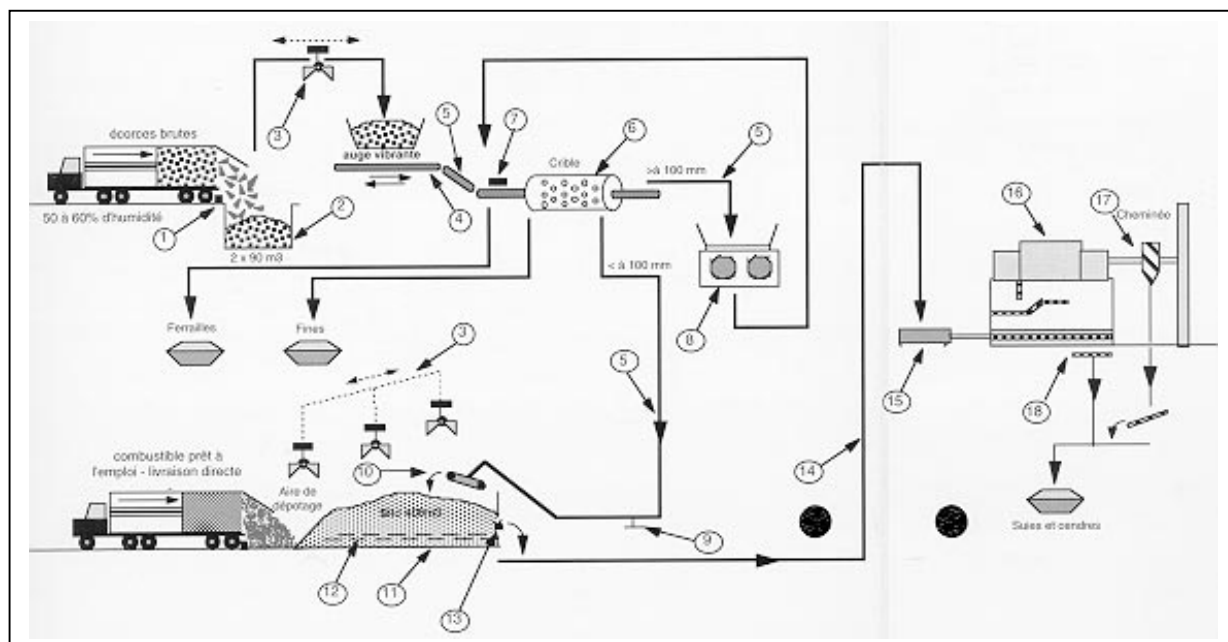
The "Biomass wood and local development" Plan was launched by the French Government in 1994 and implemented by ADEME (French national energy conservation and environmental agency). Its objectives are to:

- Structure the biomass wood sector by ensuring long-term fuel supply, guaranteeing the quality of the product (in terms of size, moisture content, calorific value) and fixing a price for biomass wood that makes it an attractive option to fossil fuels,
- Encourage the building of automated wood-fired boilers.

In addition to the many industrial applications, the privileged targets are the multi-family housing and tertiary sectors for they have high and steady energy requirements. Structuring the biomass-wood sector according to demand in these sectors was seen as something possible. Under this plan, 188 boiler houses were installed throughout France up to 1999, 120 in multi-family houses and 68 in the industrial and tertiary sector, for a total capacity of 150 MW. Since 1995, the Jura Department and ADEME have been pooling their resources to set up a plan aimed at promoting the installation of wood-fired boilers. AJENA (Jura Association for the dissemination of renewable energy sources), a very active and innovative local association, was entrusted with co-ordinating the action.

Investment:		Funding	
Storage facilities, civil works, packing unit	930,000 Euro	Ademe	518,000 Euro
Wood-fired boiler and connections	590,000 Euro	Jura Department	168,000 Euro
Studies, project management, inspections and insurance	155,000 Euro	FNADT*	152,000 Euro
		Owner	837,000 Euro
Total	1,675,000 Euro		1,675,000 Euro

* FNADT: Funds for Town and Country Planning



The automated wood-fired boiler supplying 286 homes in the Sous-Plumont district

The Sous-Plumont district is quite close to the city centre of Dole and spreads on both sides of a large avenue. The social housing organism (OPHLM de Dole) runs 286 council flats scattered over 12 buildings in the area. Built at the end of the 1960s, these flats have a total surface area of 20,000 m² and are heated by a generator installed at a central point from the blocks of flats. The boiler supply had been changed from fuel oil to natural gas and needed to be renovated. Two preliminary studies recommended a combined wood/gas solution. This suggestion was unanimously accepted by the Board of the social housing organism, which includes three representatives of the tenants.

Commissioned in 1998, a few months after the introduction of biomass wood in the urban heating system at Mesnils-Pasteur, this boiler could benefit from the packing system installed at the first unit. Local supplies are then guaranteed both in terms of quality and quantity. Bark and wood chips are hauled to the 180 m³ underground buffer silo located close to the boiler house.

Wood covers 80% of the installation heat requirements and natural gas is used as top-up or back-up when the installation is undergoing maintenance. The quantity of wood necessary for one heating season is estimated at 1,550 tonnes, i.e. 3.570 MWh. The efficiency of the 900 kW boiler is 82 % if fed with a fuel with a moisture content of 45 %. This type of boiler is designed to take wood with up to 60% of moisture content.

Investment and funding

Investment:		Funding	
Civil works and silo	114,000 Euro	OPHLM de Dole	378,000 Euro
Installations in the boiler room	395,000 Euro	Conseil Général du Jura	92,000 Euro
Studies and other expenses	52,000 Euro	Ademe	92,000 Euro
Total	562,000 Euro	Total	562,000 Euro

EVALUATION AND PERSPECTIVES

The boiler house at Mesnils Pasteur is one of the biggest one to be found in France in terms of size and consumption. In 1999, it was the only one in France to be equipped with a fuel preparation chain.

This project proved also useful in diversifying the energy supply in the heat network and providing an outlet for a local source of energy which does not need to be transported over long distances. Money can therefore be re-injected into the local economy, which contributes to creating or preserving local jobs. A 9 MW CHP unit was in the process of being built at the beginning of 1999 with a view to improving the network general cost-efficiency.

With 40% of woodlands, Franche-Comté comes second in the ranking of the French most wooded regions. The boiler house provides a way to make use of a resource which otherwise would be burnt or wasted and which represents 1,000 TOE of coal and more than 1,300 TOE of heavy gas-oil. It also contributes to a cleaner atmosphere, since 76 tonnes of SO₂ and nearly 8,000 tonnes of CO₂ are avoided.

The installation of a second wood-fired boiler house in Dole, a few months only after the first one was installed, demonstrates the Municipality's commitment and is extremely promising for the future development of this technique.

FOR FURTHER INFORMATION

Michel CAIREY-REMONNAY
ADEME Franche-Comté
13, chemin des Prés de Vaux
FR-25000 BESANCON

Tel: + 33 3 81 47 96 81
Fax: + 33 3 81 61 16 81

Raymond METRA
Mairie de Dole
Place de l'Europe
Boîte postale 89
FR - 39108 DOLE
Tel: + 33 3 84 79 79 79
Fax: + 33 3 84 79 79 80

This case study was prepared by Energie-Cités in collaboration with the Municipality of Dole and the ADEME Franche Comté. It received funding from the ALTENER Programme of DGXVII of the European Commission.

