

# Biomass

## Biomass energy

Latest generation of boilers with shredded wood is completely automated. The modern techniques of regulation make it possible to control combustion effectively. Today, heating with wood guaranteed an output higher than 80%.

Thanks to these new generations of boilers, the heating with wood becomes as practical as a traditional heating for all the collective housing units. Easy to exploit, it ensures a thermal comfort who does not have anything to envy other energies.

The installation of a wood boiler makes it possible to mobilize a resource already available on the territory and until there unexploited: waste drink local companies and municipal services, those resulting from pruning and maintenance of the scrap-metal. Wood contributes to energy independence by reducing the imports and thus makes it possible to locally reinject the expenditure of heating instead of exporting them in currencies.

The use of wood energy has various advantages:

### Economic

From an economic point of view, the price of kWh "wood" is of the same order of magnitude as that of natural gas: the fuel is cheaper, but the costs of maintenance/management are more important. On the other hand, wood is economically advantageous since it replaces a expensive energy (fuel or gas propane)

### Social

The share of labor in the price of kWh wood is much more important than in that of fossil energies. In addition, this share of labor is intended for the benefit of local employment. In the case of fossil energies, the expenditure of the consumer is indeed mainly intended to finance installations installed in foreign countries, the recourse to wood energy thus makes it possible to the local councillors to instigate their basin of employment, the sums spent by the community remaining on their territory.

### Environmental

By convention, the assessment carbon of the combustion of wood is neutral. It is considered indeed that the tree absorbs as much CO<sub>2</sub> during its growth than it does not release any during its use.

### Geopolitics

Energy independence with respect to fossil energies, coming from foreign, often unstable countries.

On the other hand, the implementation of a boiler room "wood" is not as simple as in the case of fossile fuel.

### Definition

A boiler room wood is a whole of production of heat including/understanding four essential elements, adapted to the use of a solid fuel:

### storage

the system of extraction and transfer of wood towards the generator of heat

a generator of heat

a system of purification of the gas rejections and ash-extraction  
The family of fuels

#### Rough barks

They are directed preferences towards the boiler rooms of strong power. It is a fuel at low prices but which represents maintenance and high capital costs. Their ash content is highest of fuels drink

Wet sawdusts

It is the result of cuts carried out in sawmills. The sawdusts are particularly volatile matters: a storage adapted to this fuel style must installation.

Gauged plates

They come from the shredding of the falls of slicing, of the short falls of joineries, of wood foresters etc. Elles can be stored and dried under shelter.

Broyat

As its name indicates it, it is the result of the crushing of pallets, of case...

This fuel is primarily dry and often requires operations of refining to allow a better quality of storage. In source derived drink varied, the blast-furnace slag formation (residue of combustion) which can generate problems in certain boilers (clogging of the hearths).

Chips and sawdusts dry

Dry and light, these fuels are easily transportable. This product is used rather in subsistence farming. They are also very stable for storage.

Granulated

They come from the dry sawdust agglomeration. The cost of provisioning is high. The use of this type of fuel represents the weakest maintenance and capital cost. On the other hand they must be stored safe from any moisture: in the contrary case they could be degraded out of sawdusts.

Storage

The wood is delivered in boiler room is discharged in a storage bin which constitutes the reserve plug for the power supply of the boiler. There are three types of silo:

Ditch bunker

30 to  
200 m<sup>3</sup>useful;

Adapted to boiler rooms of power lower than 3MW;

Delivery by tractor with agricultural bucket or truck bucket (tilting or at moving bottom);

Good architectural integration.

Metal containers

Adapted to boiler rooms adapted to 800 kw;

from 15 to 30 m<sup>3</sup>;

less expensive solution in civil engineering;

less easy architectural integration.

Principal storage associated on one level a silo or a hopper plug

It is a building covered, closed on three sides and ventilated. The delivery is carried out by truck with any type of benne. Deux case of establishment of storage are possible within the framework of small boiler or average power:

In a radius of  
2 km around the boiler room

On the site even of the boiler room

Concept of autonomy/provisioning

The need for the storage of wood generates the taking into account of this concept. The solution drink energy does not have an advantage in energy term of independence (a strike of transport, for example, can compromise the provisioning)

Concerning the provisioning, the trucks will not be of the same type as the trucks of fuel delivery. The accesses must thus be studied with attention.

Rejections

The use of wood as a means of heating involves certain waste, and one must manage the environmental impacts and the risks medical.

Fume

Resultants of the combustion of wood, certain particles emitted remain polluting: they are the organic compounds (COV), of polycyclic aromatic hydrocarbons (HAP), of dioxanes.... These noxious gas emissions are due:

With the natural combustion of wood, material complexes contain certain elements chemical in the forms of traces (chlorine in particular...)

With the often incomplete combustion of wood

To face these phenomena the boilers wood are equipped with system of treatment of the fume which makes it possible to filter and to recover the solid particles.

The problems of the fume are especially important in urban environment

Removing of the cinders (by dry or wet way)

This operation consists in withdrawing the ashes produced in the hearth by the combustion of wood. Waste can be developed several manners

Valorization in agriculture

This valorization is regulated by the departmental medical payment. For the powers of boilers lower or equal to 2MW (case of the colleges), ashes must be approved or standardized. These procedures are some not very constraining and reserved for ashes resulting from the same constant fuel used during the season of heating. A guarantee must be brought on the composition of developed ashes.

Elimination towards a technical center of hiding