

“ BIOMASS AND BIOGAS ”



DEFINITION: biomass is organic material that comes from plants and animals. It is a renewable source of energy.

Biomass comes from agricultural crops and waste, sewage, municipal solid waste, animal residues, such as manure and liquid manure, industrial residues and forestry crops, like poplars and wood residues.

BIOMASS: biomass can be burnt directly to produce heat or electricity or can be converted into biogas that is burnt as fuel or used to produce both heat and electricity.

So, biomass power plants transform biomass after a burning process that produces steam. Steam is used to get heat for buildings or electricity.

In particular, wood and wood processing waste provide us with electricity to be used both to heat buildings and houses and to move machineries in industries.

When forestry companies cut trees or carry out their everyday activities, they produce wood waste, composed of branches, cortices, rotten wood and leaves.

They use them to produce biomass in the form of woodchip. To get woodchip, forestry companies use a special tool called “woodcrusher”: a woodcrusher crushes wood waste and gets small pieces of wood, roughly 2cm long.

After that they transport woodchip to a **BIOMASS POWER PLANT** where it is burnt to heat buildings, to produce heat in industries and to generate electricity. But in a biomass power plant you can also burn sewage, municipal waste, animal residues or solid waste.

BIOGAS: biomass can be converted to other useful forms of energy, such as biogas.

Biogas is a fuel gas; it is a mixture of 65% methane (CH₄) and of 35% CO₂. It is a renewable energy source from agriculture crops or animal manure.

Biogas is the result of the process of **fermentation**. By fermentation we mean the process of degradation of organic substances using micro-organisms also known as anaerobe. This process takes place in special containers called “digesters” where there is no oxygen, essential for the fermentation to happen.

Biogas has some **PROS:**

1. it produces **clean fuel**;
2. it **doesn't emit gases**, so it doesn't cause pollution;
3. it is **highly efficient**.

It has another pro because it produces **digestate**. Digestate is the material remaining after the anaerobic digestion. It's important because farmers use it as a natural fertilizer.

However, biogas implies also a few **CONS:**

1. it **steals land** and fields available for farmers to be cultivated to produce crops;
2. the **cost of building** biogas power plants is high;
3. biogas power plants may affect the **visual impact**.