What is biomass?

Biomass is an energy material derived from waste products and plant and animal residues. It is a cheap and available raw material that can be easily converted into an efficient source of energy. It is worth knowing that biomass is a renewable energy source

Biomass energy can be divided into several generations however, the key form for me is:

solid form-these are all energy trees and plants. The most commonly used products here are briquettes and so-called pellets. Both biofuels are made of sawdust and shavings, as well as, for example, straw. The briquette has a compact form, the pellet is granulate. Biomass processed in this way is commonly used to heat homes.

Advantages of biomass:

The use of biomass for energy purposes has many advantages. The source of biomass is ecological, natural and reproducible, and what's more, it is even possible to cultivate.

Combustion does not cause additional carbon dioxide emissions. What's more, the ash from biomass processing can be used as fertilizer for the cultivation of other energy crops

Biomass is one of the most stable renewable energy sources, because its resources are the largest among all alternative energy sources.

It should not be forgotten that the conversion of biomass into electricity or heat contributes greatly to the utilization of organic waste. Thanks to this solution, it is possible to cultivate even low-quality soil-not very fertile or somehow contaminated.

It is valuable that the products of nature are used to such an extent.

biomass as an energy source also finds many advantages from an economic perspective:

-First of all, it is relatively cheap, easily and widely available.

-Its resources are quite evenly distributed, especially in comparison with other energy resources that often have to be transported over long distances.

With regard to transport, however, the disadvantages of biomass also become apparent.

Disadvantages of biomass

The efficiency of biomass as an energy resource is strongly affected by humidity. This often creates problems related to storage and transport appropriate conditions are necessary. Although biomass is considered harmless to the environment, it should be emphasized that certain amounts of sulfur dioxide or nitrogen oxides are emitted during its combustion. Biomass as a renewable energy source is not as efficient as, for example, coal.

Calculations show that two tons of biomass is the energy equivalent of one ton of hard coal. And that's only if we consider dry biomass, i.e. the one with the highest efficiency.

Wood biomass

The renewable energy source that is most used in Europe is wood.

It can be obtained as an energy fuel from energy plantations (e.g. poplar, willow or eucalyptus), from forest waste.

Types of wood biomass

1) sawdust- is a by-product of the milling and cutting of wood in sawmills. Pieces of wood do not count as biomass, but sawdust does. it is worth knowing that sawdust is considered a very valuable fuel.

2) wood chips- They are produced as a result of crushing the tree with blunt tools, e.g. a roller or a hammer. In the wet form, they have an energy value of about 10 MJ/kg, and in the dry form - 16.5 MJ/kg.

3) bark- it is the outer layer of the tree. It is a waste of the wood industry, but after being transformed into wood chips or sawdust, it becomes biomass.

4) wood briquettes- It is in the shape of a cylinder or cube. It has no sticky substances, making it pure biomass. It is created as a result of joining sawdust, whirlpools or chips thanks to lignin, which is formed during their crushing. The production of briquettes is cheaper than the production of pellets.

5) pellets- They come in the form of granules with a diameter of 6-25 mm and resemble dry pet food. Their energy value is higher than that of wood and reaches even 20 MJ/kg

Timber balance in Poland

Poland ranks third in terms of biomass waste potential from forests. The amount of waste is approx. 10% of the total harvested wood. There are several thousand active sawmills in Poland, 2000 of which employ more than 5 people. Of the harvested wood in the forest, 10% is bark, 15% - brushwood, 20% - firewood (e.g. branches and rootwood), 19% - sawdust and edgings, and 36% - sawn timber (e.g. joists and boards). In energy production, the share of wood is about 3%, which is in particular the production of heat.

Heat production in Poland through the use of wood

The largest amount of waste wood in Poland is burned in home kitchens and stoves. First of all, it takes place in the suburbs, in small towns and in the countryside. Boilers used for this purpose are characterized by low efficiency, because they are designed to burn coal. The first wood-fired boiler aroused such great interest that 7,000 such boilers were produced within two years. As of today, there are 19,000 coal-fired boilers in operation in Poland.

The use of biomass in Mazovia

Energy problems are a challenge of the 21st century not only in the global and national dimension, but also in the regional dimension. Hence, the activities of the “Mazowiecka Agencja Energetyczna” are aimed at obtaining new sources of renewable energy. MAE activities concern the use of biomass and wind energy, hydropower and waste-to-energy. The potential for the development of the use of wood biomass is the greatest in the following poviats: makowskim, ostrowskim, ostrołęckim, przasnyskim, wyszkowskim,grójeckim, garwolińskim.

Charakterystyka energetyczna Województwa Mazowieckiego