THE RECOVERY OF THE BIOMASS WASTE FOR INDUSTRIAL PELLETS BY RECYCLING

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Abstract

The biomass as an organic product which may be used as a fuel - biofuel or the raw material in the industry. The bio-fuel may be occurred as a plant or animal origin. These may be used by their direct combustion. The most effectively usefull method for biomass utilization is finalization in the pellet product as combustion product. The pellets have had appropriate parameters with geometry, caloric power, ash and dust. These wood products are rescent fuels produced by wood waste.

KEYWORDS; BIOMASS, PELLETS, RECYCLING

1. Introduction

Biomass is part of the product, waste and residues from agricultural crops (vegetable and animal origin), forestry and related industries industija. Energy from biomass comes in solid and liquid state (eg. Biodiesel, bioethanol, biometanol) and gaseous state (eg. Biogas, gas from biomass razlaganjeto and landfill gas). Biomass is a renewable source of energy that can be distinguished:

Wooden biomass (forestry residues, waste wood), grown wooden table (trees that grow quickly), biomass (algae and grasses), debris and waste from agriculture, animal wastes and residues, urban and industrial waste. The main advantage of using biomass as energy source is that it is a great potential, both in planted crops, waste materials in agriculture and in food industry. Gases that are produced by the use of biomass can be used in the production of energy. The advantage of biomass compared to fossil fuels is incomparably low emissions and waste. It is believed that the burden of the atmosphere with CO_2 in the use of biomass as fuel is negligible because the amount of CO_2 emitted during combustion is equal to the amount of CO_2 absorbed during the growth of plants if natural growth and harvesting of timber in sustainable 1hektar-ratio of forest areas annually absorb equal amounts of CO_2 that are released by burning 88,000 gallons of fuel to households or 134 000 m3 natural gas. Agricultural waste are available for cultivation: crops (straw: wheat, barley, oats, rye, etc..), Corn (leaf, stem and cob), rice (straw and husks which make up over 25% of the weight of rice), vegetable plants (beans, peas, potatoes, peppers, tomato, watermelon, onion, cabbage, cucumbers, etc..), industrial plants (sugar beet, sugar cane, sunflower, cotton, tobacco, poppy, etc..) feed plants (clover, alfalfa, fodder beet, etc..) waste from pruning of fruit (apples, plums, pears, cherries, peaches, cherries, nuts, etc.). and vineyards.

2. The general waste biomass from agriculture and ranching

Many wastes from livestock (domestic animals) that can be used to obtain bioenergy.The most common source of bioenergy is getting manure from domestic livestock such as cattle, horses, pigs, sheep and poultry and dry waste from domestic livestock and poultry. The current practice of agricultural land is these wastes to be buried in the country with plowing the surface, or burnt directly to let yourself fall apart or be ispaseni of livestock. Most studies on agriculture and biomass, however, showed that as much of ovoi bins to separate and use for energy. Biomass is the

oldest known source of renewable energy used by man thousands of years, ie since the invention of fire today.Renewable (sustainable) source of energy for its creation was to-and unlimited tinuirano can be grown in unlimited quantities in a relatively short time. Biomass has a heterogeneous and complex chemical composition. Energy value of biomass from plants derived from solar energy through the famous process of photosynthesis.Chemical energy accumulated in plants and animals (which feed on plants), or into the garbage they produce is called bioenergy.

The combustion as a process of conversion of biomass heat energy is released and re-oxidized carbon in carbon dioxide to replace the one that is absorbed while the plants grow. As a result, the use of bioenergy can play a dual role in reducing the gases causing the greenhouse effect.

Biodiesel is a mixture of fatty acid esters obtained from alkaline vegetable oils, animal fats or recycled oils. Biodiesel can be used as fuel in passenger cars as clean, but usually used as an additive in diesel oil in order to reduce the level of particulates, carbon monoxide, and toxic substances jaglerovodorodite of cars driven by diesel oil.Biodiesel can be commercially produced from a number of oils and fats such as:

Animal-fat, fat you eat, fat not eating and all other varieties of fat, fat, grease lubrication, poultry fat, fat whale, fish and fat from clogging fat, vegetable-oil, soybeans, corn , canola, sunflower, rapeseed, cotton seed, flax and others.;-recycled oils, used oils for cooking and frying oils in restaurants. It is also to produce biodiesel from other oils, fats and oils derived from recycled mustard, palm, coconut, peanuts, sesame, olive, and oil shafranika and oils produced by: algae, bacteria, yeast and mulberry. There are two basic types of vegetable oils as feedstock for biodiesel and getting it:-intact oil as raw material obtained from: almond oil, walnut oil, oil from flowers, olives, ricinus oil, rapeseed oil, soybean oil, pumpkin oil linen and others. Oils from rapeseed and soybeans typically commonly used as raw material for obtaining biodiesel. –Vegetable crops, such as mustard, palm oil, hemp and algae. Recycled oils are usually called:- Waste vegetable oil (waste vegetable oil) recycled cooking oils, frying oils in restaurants and other recycled oils.

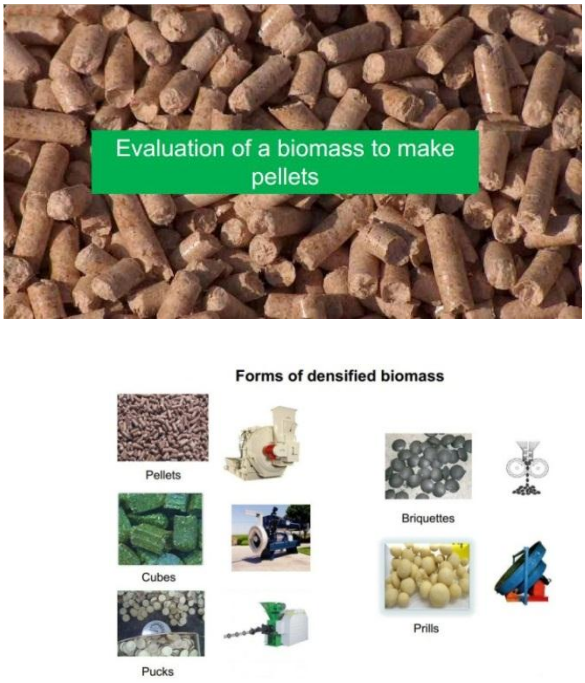

Figure 1. Pellets

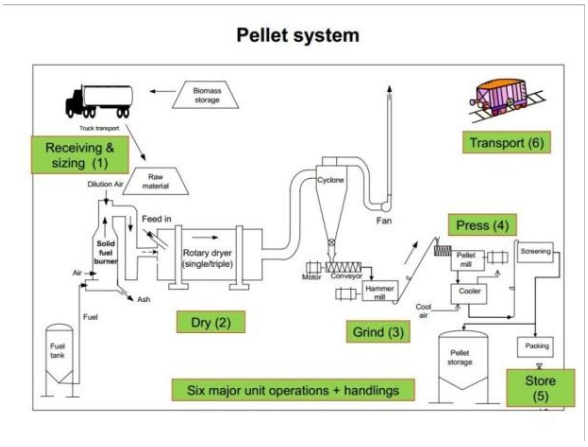

Figure 2. Pellet System

The wood pellets are the type of wood fuel. These have got forms of the short cylinders with diameters from 6 – 10 mm and 10 – 30 mm. The net caloric power is 4,7 – 5,0 kWh / kg (16.9 – 18 MJ/kg). The pellets density are in the limits of the 650 – 700 м^3, and placement demand are in the limits of 1,5 m^3/t. As an energetically comparisons it may be said that 2,1 t pellets are responsible to 1000 l easy combusted oil. The general advantages of the pellets are the following: Decreasing of the oil and gas, Sustainable of combusted source, The pellets are clear and don't polluted environment, They are sustainable source, The prize is not directed from the world markets, more acceptable and more appropriately, Decreasing the costs of waste refusing, Lower ash content and gas emissions.

The standardization of the pellets production is a good tool for controlling the quality of the production. As a most important indicator for the pellets quality is their stability and strength which affect by the transport and combustion. For example, Sweden may be mentioned as a state with regulated classification and this one has limited the pellets according to the quality dividing them into three classes. Macedonian pellets from the region of the south-eastern area (Gevgelija, Berovo, Pehcevo, Vinica etc.) are with good quality acceptable for the Macedonian market.

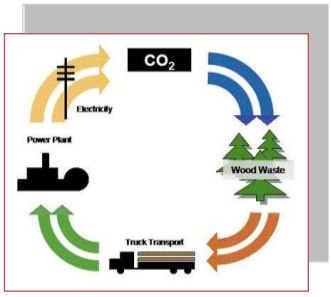

Figure 3. Process Production

3. *Conclusion*

The characteristics and properties of the biomass as an energetic source are changeable according to the plant type, moisture content and other examples moving to the limits from 10% for сено to 95% for different ѓубрива (влажна base). Technologies for transformation of the biomass to energy primarly is influenced from the fuel type and everyone of them has got specific demand for the dry matter, form, size etc. Among the moisture content and energy, the characteristics of the biomass are defined with their physical structure, mass, density and ash content. Using the biomass as a fuel, that means that absorbed CO_2 from the atmosphere at the growth time of the plant. The system is known as the carbon neutral.

The wood pellets are the type of wood fuel consisting пилевина. Usually, these are parallel product in the forest and wood production. The pellets have got a big density I may be produced with very low ash content (lower than 10%) and this is the reason why these pellets combusted with high combustion efficiency. Also, their geometry and small sizes permitted automatic supplying of the горилниците with very fine adjustment. Their big density permitted their compact stocking and rational transport at the big distances.

4. *Literature*

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