



Biomass to Biofuels and Waste to Energy

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Introduction

Biomass may be a modern name for the traditional technology of burning plant or material for energy production (electricity or heat), or in various industrial processes as raw substance for a range of products. It can be purposely grown energy crops (e.g. miscanthus, switchgrass), wood or forest residues, waste from food crops (wheat straw, bagasse), horticulture (yard waste), food processing (corn cobs), animal farming (manure, rich in nitrogen and phosphorus), or human waste from sewage plants. Biomass is a natural carbonous resource. It is used to produce syngas (already evaluated in chapter: Syngas). Lately however, new bioprocesses have been developed to produce a number of biofuels and power in an attempt to reduce our dependence on fossil resources. In this chapter the processes that transform biomass into sugars and oil via biochemical pathways are analyzed.

Biomass is any organic material which is employed as a fuel. For purposes of power generation, the foremost common sources of biomass include wastes from wood products or the sugar cane industry. Other agricultural wastes are sometimes used as well. Biomass is made up of living things (or things that were once living). This can include any plant or animal material, such as sugarcane or corn crops, wood chips, or even dung. All these types of biomass contain energy, because they're organic materials. So, whether they started life as plants or animals, they've all absorbed chemical energy naturally from the sun. Biomass consists of a spread of organic molecules that are carbon based, containing

hydrogen, oxygen, nitrogen, and little numbers of other atoms. The carbon during this biomass originated from the carbon dioxide in the atmosphere. Currently around half the EU's renewable energy is predicated on biomass a figure that's likely to rise. "The advantage of biomass is that it are often implemented rapidly and uses the present energy infrastructure biomaterials as a field of research.

This general definition shouldn't be seen as analogous to the definition of biomass within the German Biomass Ordinance which specifies the substances that are counted as biomass under the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz-EEG). Other substances could also be mentioned as biomass, albeit they're not named intrinsically within the German Biomass Ordinance. The growing concern for the environment and sustainable development, have led to worldwide interest in renewable energies and bio-energy especially. Biomass Conversion and Biorefinery presents articles and knowledge on research, development and applications in thermo-chemical conversion; physico-chemical conversion and bio-chemical conversion, including all necessary steps for the supply and preparation of the biomass as well as all possible downstream processing steps for the environmentally sound and economically viable provision of energy and chemical products. Biomass may be a fancy name for material from plants and animals. Some sorts of biomass are often burned to supply energy. One common example is wood. Biomass contains stored energy. That's because plants absorb energy from the sun through the method of photosynthesis. When biomass is burned, this stored energy is released as heat.

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