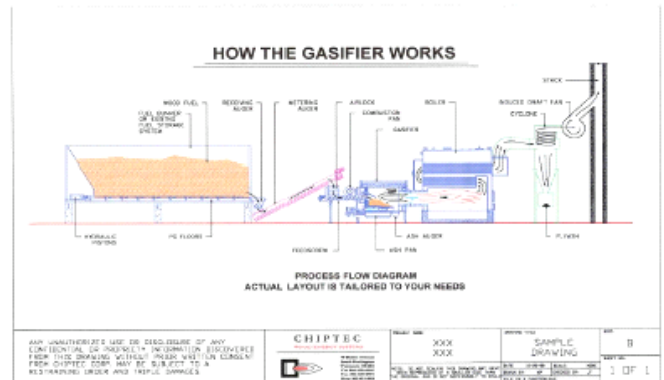


TECHNOLOGY DEVELOPMENT PROJECT FACT SHEET

RT006: Biomass Technologies

Biomass is plant matter such as trees, grasses, agricultural crops or other biological material. Biomass is a renewable source of energy that can be used as a solid fuel or converted into liquid or gaseous forms, for the production of electric power, heat, chemicals or for use in vehicles. With more than 7,000 MW of installed capacity, biomass is the second-most utilized renewable power generation resource in the U.S. Approximately 37 billion kWh of electricity produced each year from biomass which requires around 60 million tons of biomass material.

Gasification is a major and unique element in the development of improved Biogas systems. It is a thermochemical process that converts solid biomass raw materials to a cleaner fuel gas form of fuel. Biogas is allowing biomass uses to be developed in a wide range of energy conversion devices to produce power. While traditional steam turbine systems are available now, recent development in recent fuel gas cleanup have made gas turbines, fuel cells, and reciprocating engines available for evaluation. Most of today's Biogas plants are **Direct-Fired** combustion systems that are similar in design to fossil-fuel power plants. These facilities are purpose-built for lumber and papermill manufacturing plants that have a large need for process heat and an electrical load.



Small Modular Biopower
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Gasification Plant
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Cofiring Plant
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Direct Fired Plant
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Cofiring involves replacing a portion of the coal with biomass at an existing power plant boiler. For utilities and power generating companies with coal-fired power plants, cofiring with biomass may represent one of the least-cost renewable energy options. It is easiest to implement with old stoker type boilers rather than pulverized coal systems. **Small Modular Biopower** Working with industry, the U.S. Department of Energy's Small Modular Systems Project is developing small, efficient, and clean biomass systems of less than 5MW scale.