

Calla energy biomass gasification co-firing project in Kentucky

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Calla Energy Partners LLC has teamed up with the Gas Technology Institute (GTI) to develop a biomass gasification-based co-firing project to produce 15 MW_e of electricity from biomass and other opportunity fuels in the Eastern Kentucky region. The electricity and steam generated will be consumed by a nearby industrial park. Excess electricity will be sold to the grid. The heart of the project is the demonstration of GTI's RENUGAS[®] biomass gasification technology and a low NO_x burner developed for this combustion application.

The U.S. Department of Energy (DOE) has selected the team of Calla Energy Partners LLC and GTI to develop the biomass gasification project as part of their biomass co-firing program. The process produces a clean-burning fuel from biomass that can be used in a variety of applications. Calla Energy plans to use the low Btu gas for co-firing with either natural gas or coal in their steam boilers. The use of biomass provides a clean source of energy to the site and creates new economic opportunities for rural America.

Under this program, GTI will provide a gasification plant based on the RENUGAS[®] gasification technology. The unit will be designed to process 400 tons per day of biomass consisting of sawdust and other opportunity fuels into low calorific value fuel gas. The project will evaluate designs for co-firing this gas with natural gas or coal in Calla Energy's boilers located at the industrial park. GTI will utilize its low-emission gas combustion systems to reduce NO_x emissions from the boiler. Steam from the boiler will drive a conventional steam turbine. The biomass contribution is equivalent to producing 15 MWe of electric power. Waste heat from the plant will be utilized in the nearby industrial park. An existing coal fines recovery operation reclaiming coal from ponds at the site is the anchor tenant of the industrial park and will use steam extracted from the turbine for drying of coal fines.

The plant, to be built in Estill County, Kentucky, will be the cornerstone of the Calla Energy industrial park. Calla Energy Partners plans to offer low-cost, reliable electricity and steam at their 600-acre industrial park to attract a variety of tenants that will promote new jobs and stimulate the economy in this area of Kentucky. Calla will provide the host site and will be the owner of the energy plant.

Calla Energy Partners has identified a variety of biomass feedstocks to supply the gasification plant, including sawdust; bark; demolition materials; and waste wood. These have been analyzed by GTI and the process design based on these feedstocks and mixtures has begun. In addition, the gasification island and the syngas conditioning island configurations are being evaluated for simplicity and flexibility of use. Two alternative designs are being considered: 1) The clean syngas may be co-fired with natural gas in a gas fired boiler using a GTI-designed low NO_x burner to generate steam for the steam turbine. 2) The clean syngas may be used as a reburn fuel in a coal-fired circulating fluidized bed combustion (CFBC) boiler to reduce NO_x emissions and eliminate the need for an SCR system to meet emissions criteria. The merits of both approaches will be evaluated and the project team will select a preferred plant configuration by the end of 2001.