

## Electricity from Sugarcane

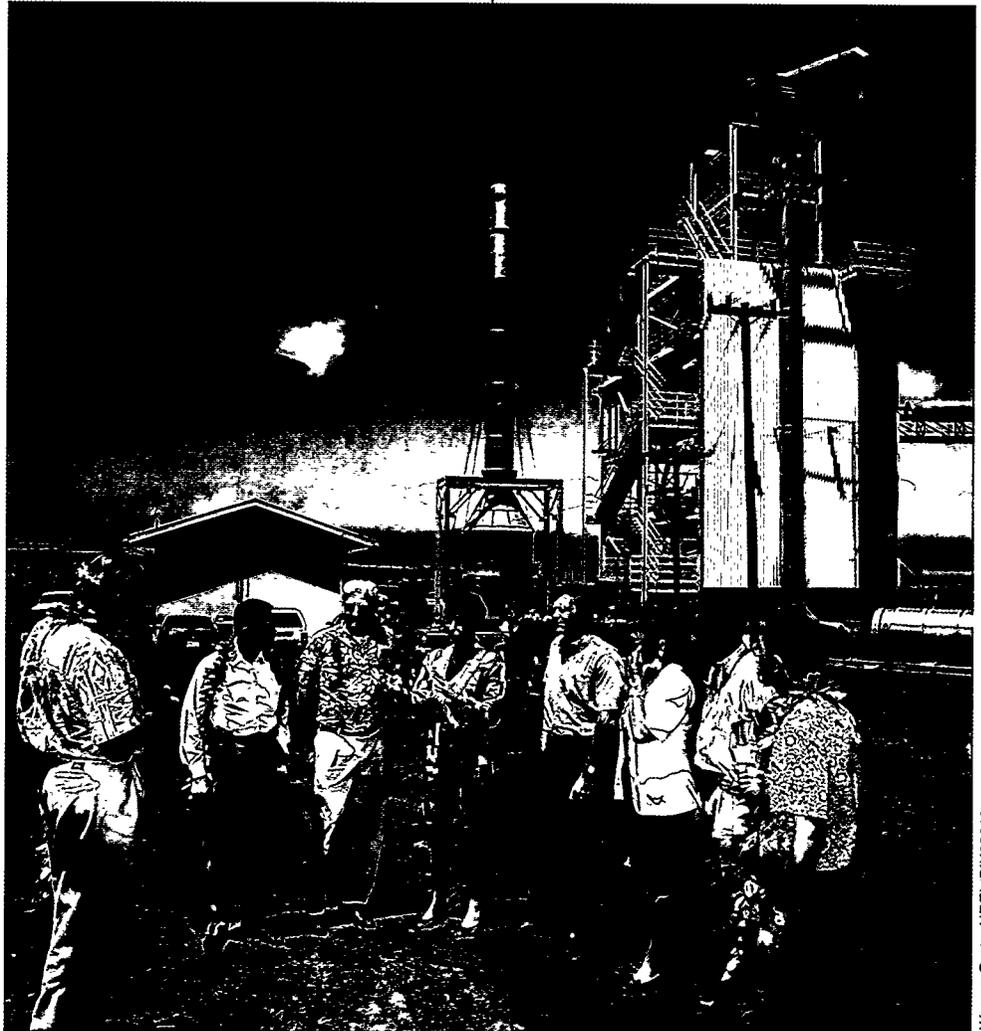
For a state such as Hawaii, which is currently forced to generate most of its electricity from expensive, imported fuel oil, renewable energy resources are particularly valuable. Approximately 8% of Hawaii's electrical power is already being generated from biomass, the state's largest source of renewable energy, and research is under way to make better use of this resource.

Most of Hawaii's biomass plants use bagasse, the fibrous waste from sugarcane processing. Sugar is Hawaii's most important agricultural export, and local sugar mills burn bagasse to provide thermal power to the mills and electricity for sale to utility grids. These mills use direct-fired steam-turbine generators. Because biomass gasifiers are more efficient, they are potentially capable of producing 50% more electricity from the same amount of bagasse when compared with systems that burn the bagasse directly. This has prompted the State of Hawaii to explore gasification technology in partnership with DOE and an industry research group.

The government-industry joint venture has built an experimental gasification facility at the Hawaiian Commercial & Sugar Company mill in Paia, on the island of Maui. The facility currently processes almost 100 tons of bagasse per day into biogas. Jerry Smith, the manager of the project, knows how important electricity produced from biomass is to Hawaiians.

*"It keeps the people on the island working. Plus, with a plant this size, you're not dependent on importing oil. And that's a big thing when you're sitting on an island."*

— Jerry Smith, Paia gasifier project manager, in a 1996 interview for *Growing America's Energy: The Story of Biomass Power*



Warren Gretz, NREL/PIX03810

*Compared to conventional steam turbines, biomass gasifiers are capable of getting 50% more electricity from the same energy crop. Hawaii's first gasification facility, at Paia on the island of Maui, is pictured receiving a traditional blessing on dedication day.*

The experiment shows how the sugar mills can generate more electricity with the same resources and make more money from selling power to the utility; this benefits the local sugar industry by helping to keep Hawaiian sugar competitive in worldwide markets.