



Clean Cycle™ generators create additional power from waste heat with no additional emissions

Boscaro pruning and composting plant
Vigliano Biellese, Italy



GE's Clean Cycle power generators convert heat from biomass boiler into 250 kW of electricity.

Since it began operations in December 2010, the F.lli Boscaro pruning and composting plant in Vigliano Biellese, Italy, has used a superheated water biomass boiler to heat the plant. The boiler runs on pruning clippings and other woody biomass by-products from garden and park maintenance activities. But with approximately 1,942 kW of heat created, the excess was being wasted.

To make use of the surplus heat, the Boscaro plant obtained two 125 kW Clean Cycle waste heat-to-power generators – the advanced technology from GE's Distributed Power business. Instead of being lost, the excess heat from the boiler is transferred to the Clean Cycle units for power generation.

The Clean Cycle solution fits in with Italy's – and Europe's – energy conservation approach. "Our government promotes the development and construction of small power plants - such as ours - that are geographically distributed, rather than large plants," said plant owner Fabrizio Boscaro. "By adding the Clean Cycle systems to our plant, we can harness local biomass materials as our own energy source and do our part to help Italy meet its renewable energy goals." The Boscaro facility also supports the European Union's initiative to have member countries generate 20 % of their energy from renewable sources by 2020.

By generating power that is then sold to the electricity grid for a feed-in tariff set by the Italian government, the Clean Cycle components have effectively created a new revenue stream for Boscaro's operations – while producing no additional emissions. Without requiring any incremental fuel for its operation, the Clean Cycle system has boosted total energy efficiency for the plant.



GE Power & Water Distributed Power

Customer advantages:

- Cleaner energy with no fuel required and producing no additional emissions
- Allows for sale of excess electricity to the local grid, creating revenue
- Supports European Commission's goal to achieve a 20 % reduction in emissions by 2020



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Fabrizio Boscaro
Owner of F.Ili Boscaro

Key technical data:

Number and type of units	2 x Clean Cycle generators, 1 superheated water biomass boiler
Thermal input	~1,942 kW (6,8 MBtu/hr.)
Electrical output	250 kW gross

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GE Power & Water's Distributed Power business is a leading provider of power equipment, engines and services, focused on power generation at or near the point of use. Distributed Power's product portfolio includes highly efficient industrial reciprocating engines and aeroderivative gas turbines that generate 100 kW to 100 MW of power for numerous industries globally.

We provide lifecycle support for more than 37,000 aeroderivative gas turbines and reciprocating engines worldwide to help you meet your business challenges and success metrics – anywhere and anytime. GE's global service network connects with you locally for rapid response to your service needs.

Headquartered in Cincinnati, Ohio, Distributed Power employs about 5,000 people around the world.



GE imagination at work

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