



Jenbacher gas engines convert biogas from organic waste to electricity for fruit processing plant in India

Jain Irrigation Systems Limited fruit processing plant Jalgaon, Maharashtra, India



Combined heat and power system producing electricity and steam

A fruit processing plant in Jalgaon, India, is using GE's ecomagination-qualified Jenbacher combined heat and power (CHP) technology to generate 1.67 MW of power and create steam for refrigeration. Two 834 kW J316 gas engines are producing the electricity from the biogas that results from anaerobic digestion of organic waste at the Jain Irrigation Systems (JISL) facility. Also, the CHP system is turning heat from the engines' exhaust flue gas into the steam.

The results are impressive: Overall plant operating efficiency has grown to more than 83 percent since JISL installed the Jenbacher units in 2010; HCFC/CFC refrigerants have been eliminated; and annual carbon dioxide (CO₂) emissions have been cut by 48,000 – an achievement that prompted JISL to apply for Clean Development Mechanism (CDM) benefits.

By selecting GE's CHP components for biogas conversion, the JISL plant can recycle instead of dispose of the 200 tons of organic waste it creates each day by processing twice that amount of fruit.



GE Energy Gas Engines

Customer advantages:

- Recycles all organic waste for energy and steam
- Reduces annual CO₂ emissions by 48,000 tons
- Long service intervals and low fuel consumption
- Total efficiencies (electrical and thermal) of more than 83 percent



Key technical data:

Number and type of units	2 x GE's J316 GS gas engines
Electrical output	834 kW
Electrical efficiency	39.9 percent

Ecomagination qualified

Jenbacher biogas-fueled gas engines are ecomagination qualified. Ecomagination is GE's corporate-wide commitment to imagine and build innovative solutions to today's environmental challenges while driving economic growth. GE's Jenbacher biogas-fired gas engines received ecomagination qualification for their ability to provide customers with a cost-effective, high output means of generating power while substantially and measurably reducing their operating emissions. For more information on ecomagination, please visit our website at www.ecomagination.ge.com.

GE's Gas Engines division

GE Energy's Gas Engines division is a manufacturer of gas engines, generator sets, combined heat and power (CHP) modules, Organic Rankine Cycle (ORC) systems and auxiliaries. With a legacy of technological innovation across three product lines, including Jenbacher engines, Waukesha engines and Heat Recovery Solutions technology, GE's gas engines set the industry standard for flexible fuel capability, low emissions and efficiency. Engines feature impressive fuel flexibility, operating not only on natural gas, but on a broad range of alternative gases such as biogas, landfill gas, coal mine gas, flare gas and sewage gas. Our solutions include combined heat and power, gas compression, and waste heat-to-electricity generation in industries ranging from oil and gas to agriculture, and are deployed in over 80 countries. With this ability to provide diverse power output, ranging from 0.12 – 9.5 MW, and eight products and solutions qualified through GE's ecomagination program, GE's Gas Engines business offers specialized local power solutions to deliver cleaner, more efficient, affordable energy around the world.

GE's Gas Engines business has its headquarters, main production facilities, and more than 1,400 of its 2,600 worldwide employees located in Jenbach, Austria. GE's Jenbacher gas engines segment also operates regional gas engine assembly facilities in Hangzhou, China, and Veresegyház, Hungary. The Waukesha gas engines division is located in Waukesha, Wisconsin, and the Heat Recovery Solutions facility is in Stuart, Florida.



GE imagination at work