GE Energy

GE's Jenbacher gas engine division is one of the world's leading manufacturers of gas-fueled reciprocating engines, packaged generator sets and cogeneration units for power generation. It is one of the only companies in the world focusing exclusively on gas engine technology.

GE's Jenbacher gas engines range in power from 0.25 to 4 MW and run on either naturalgas or a variety of other gases (e.g., biogas, landfill gas, coal mine gas, sewage gas, combustible industrial waste gases).

A broad range of commercial, industrial, and municipal customers use Jenbacher products for on-site generation of power, heat, and cooling. Patented combustion systems, engine controls, and monitoring enable its power generation plants to meet stringent emission standards, while offering high levels of efficiency, durability, and reliability.

GE's Jenbacher product team has its headquarters, main production facilities, and 1,300 of its about 1,700 worldwide employees in Jenbach, Austria. GE also operates two regional gas engine assembly facilities in Hangzhou, China, and in Veresegyház, Hungary.

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GE imagination at work

GE Energy

Give your plant maximum power, with waste water.

Turn digester gas into power with Jenbacher gas engines.

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GE imagination at work

digester-gas-to-energy at waste water treatment plants

Previous generations of waste water professionals have often accepted the high costs of operating waste water treatment facilities as a consequence of meeting their discharge permit requirements. However, as the cost of energy rises and emphasis on renewable energy increases, municipalities are now seeking solutions that save money and meet renewable requirements. GE Energy's Jenbacher gas engines provide a renewable energy solution that results in long-term savings for waste water treatment plants.

energy costs

Water treatment processes include energy-intense operations, such as aeration and pumping. As a result, WWTPs require significant energy consumption. As electricity prices rise, plant operators are facing increasing energy costs in order to meet discharge permit requirements. The second leading expense to WWTP owners is the cost of energy, behind only personnel. For plants, who employ anaerobic digestion for biosolids treatment, the process of combusting digester gas to produce electricity and heat may provide a solution to rising operating costs. The U.S. Environmental Protection Agency reports that less than 20% of WWTPs with anaerobic digestion currently use their digester gas for heat or power. But, the renewable energy fuel source derived from digester gas can be converted, using gas reciprocating engines, to electricity and heat-offsetting as much as 2/3 of a plant's electricity demand and eliminating the need to purchase fossil fuels for plant heating processes.

volume and production process figures

Gas produced in anaerobic digesters from municipal WWTPs generally contains 55% to 65% methane and has a typical low heating value of 500 – 600 BTU/SCF. As a general rule, approximately 1 MW of electricity can be generated from biosolids for every 25-30 MGD of waste water treated.

our competence

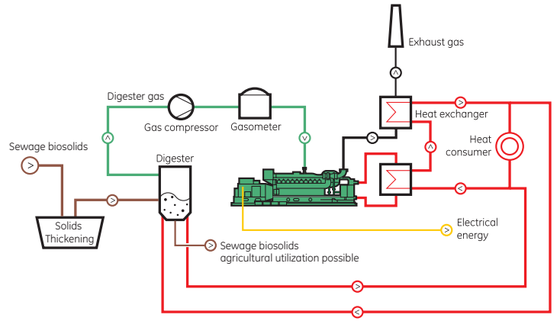
GE Energy's Jenbacher gas engines team has more than 25 years of experience providing energy solutions for WWTPs. More than 460 digester gas fueled Jenbacher systems with a total electrical output of approximately 330 MW have been delivered worldwide.

advantages

- Seamless dual fuel mixing
  maximise renewable energy output and smoothen gas production fluctuations by supplementing natural gas on the fly
- High electrical efficiencies
  generate more electricity with your digester gas with electrical efficiencies ranging up to 40%
- LEANOX controls with turbo charger bypass
  ensure the correct air to gas ratio under all operating conditions to minimize exhaust gas emissions while maintaining stable engine operation
- Longer overhaul schedule
  minimize maintenance costs with 60,000 OPH major overhaul intervals
- 1800 RPM engine
  obtain higher specific output with lower costs allowing the engine to run smoother and with less vibration

the Jenbacher concept

GE Energy's Jenbacher gas engines' high electrical efficiencies provide renewable energy solutions and are robustly designed to handle the variable nature of digester gas. Our extensive portfolio of engine sizes and outputs allow project designers to properly match fuel availability with engine ensuring maximum energy production, project savings, and long-term reliability.



reference installations

model, plant	key technical data	description	
J316 **Columbia Boulevard WWTP, Portland, Oregon, US**	Fuel: Digester gas Engine type: 2 x JMS 316 Electrical output: 1,700 kW Thermal output: 3549 MBTU/hr Commissioning: May 2008	The installation of two JMS 316 engines provides 1.7 MW of renewable energy for this 100 MGD plant. This electrical output accounts for approximately 40% of the plant's electrical demand.	
J320GS **Annacis Island Vancouver, British Columbia, Canada**	Fuel: Digester gas Engine type: 4x 320 GS Electrical output: 3,216 kW Thermal output for biogas: 13.4 MMBTU/hr for natural gas: 13.1 MMBTU/hr Commissioning: 1997	The Annacis Island waste water treatment plant is one of four plants presently operating in the Greater Vancouver area. It collects the sanitary sewage of municipalities totaling nearly 1 million people.	
J208 **Strass im Zillertal Tyrol, Austria**	Fuel: Digester gas Engine type: 1 x JMS 208 GS Electrical output: 330 kW Thermal output: 1,434 MBTU/hr Commissioning: April 2001	The shining star for energy efficiency at WWTPs. A J208 GS engine provides electricity and heat for a facility that generates 120% of its energy demand. The excess power is fed into the local grid.	
J420 **Bergen County Utility Authority (BCUA) Little Ferry, New Jersey, US**	Fuel: Digester gas Engine type: 2 X J420 Electrical output: 2,800 kW Thermal output: 10 MMBTU/hr Commissioning: 1997	This dual fuel blending system, which switches between biogas and natural gas on the fly without shutting down the engines, was recently awarded the 2009 WAVE award by the Association of Environmental Authorities (AEA). Heat recovered from the engines is used to heat the digester in order to maintain gas production and provide heating for the BCUA facility. The system provides approximately 90% of the BCUA's electricity needs.