GE Energy

even in the middle of nowhere

cogeneration with Jenbacher gas engines

GE imagination at work

cogeneration of heat and power

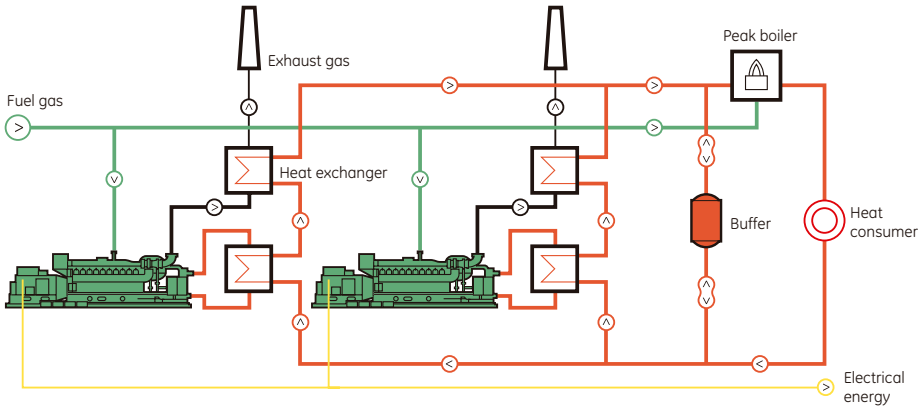
Cogeneration systems – also called combined heat and power or CHP systems – generate both heat and power. Jenbacher CHP systems economically utilize the waste heat incurred during engine operation to generate overall plant efficiencies of more than 90%. This efficient form of energy conversion achieves primary energy savings of roughly 40% by using a gas engine cogeneration system instead of separate power and heat generation equipment. Transportation and distribution losses are also reduced or eliminated as the decentralized energy supply is set up where it is needed.

the Jenbacher concept

The basic structure of a Jenbacher CHP system consists of an engine/generator unit and heat exchangers for the utilization of waste heat. The incorporation of a wide range of heat sources – from engine cooling water, oil and air/fuel gas mixture to exhaust gas – is configured to maximize the benefit to each individual customer.

Cogeneration systems can be supplemented with a boiler system for bridging peak heat demand periods. An additional increase in the operating time and efficiency of the system is made possible by the connection of a heat storage medium. Power plant electrical switch and control systems distribute the electricity and manage the engine, while hydraulic equipment ensures the heat distribution.

The generated power is utilized by the individual facilities (e.g., hospitals) or fed into the public power grid. The thermal energy can be used for both generating heating water and steam production as well as for various types of process heat. Gas engine cogeneration systems are also used for CO_2 fertilization in greenhouses and trigeneration systems (combined generation of heat, cooling and power).



advantages of Jenbacher cogeneration systems

- High electrical efficiencies of up to 43%
- Overall efficiencies (electrical and thermal) of over 90%
- Wide range of power and heat outputs
- Minimum emissions through the patented LEANOX® lean mixture combustion
- Compact design requires a comparatively small footprint
- Specially designed engines for utilization of alternative energy sources (e.g., biogas, landfill gas, coal mine gas, or coke gas)
- Maximum operational safety and availability
- Low investment costs

key figures

A cogeneration plant with 1,000 kWel and 1,250 kWth can meet the following heat demands:

Short-distance heating network	approximately 12,500 m^2 of residential area
Hospital	approximately 150 beds
Building supply	approximately 10,000 m^2 of useful area (floor space)

our competence

The first Jenbacher gas engine was built in 1957. Currently more than 3,600 Jenbacher cogeneration plants with a total electrical output of over 4,000 MW are in operation worldwide. Increases in energy costs, environmental concerns and energy demands will continue to promote the future growth of CHP systems. Jenbacher's innovative cogeneration systems will continue to lead the way.

GE Energy

GE Energy'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 3 MW and run on either natural gas 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 all relevant international emission standards, while offering high levels of efficiency, durability, and reliability.

GE Energy's Jenbacher product team has its headquarters, production facilities, and 1,200 of its more than 1,400 worldwide employees in Jenbach, Austria.

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for more information on Jenbacher gas engines

Austria (Headquarters)
Achenseestraße 1-3
A-6200 Jenbach
T +43 5244 600-0
F +43 5244 600-527
jenbacher.info@ge.com
www.gejenbacher.com

Denmark
Industrivej 19
DK-8881 Thorsø
T +45 86966788
F +45 86967072
jenbacher.scandinavia@ge.com

Germany
Amselstraße 28
D-68307 Mannheim
T +49 621 77094-0
F +49 621 77094-70
jenbacher.germany@ge.com

China
15 Floor, The Lee Gardens
33 Hysan Avenue Causeway Bay
Hong Kong
T +852 2100 6976
F +852 2100 6630
jenbacher.asiapacific@ge.com

Italy
Via Crocioni, 46/H
I-37012 Bussolengo (VR)
T +39 045 6760211
F +39 045 6766322
jenbacher.italy@ge.com

Spain and Portugal
Avda. del Camino de lo Cortao, 34 – Nave 8
E-28700 San Sebastián de los Reyes (Madrid)
T +34 916586800
F +34 916522616
jenbacher.iberica@ge.com

The Netherlands
Stationspark 750
NL-3364 DA Sliedrecht
T +31 184 495222
F +31 184 415440
jenbacher.netherlands@ge.com

United Arab Emirates
City Tower II, Sheikh Zayed Road
P.O. Box 11549, Dubai
T +971 4 3131486
F +971 4 3131586
jenbacher.middleeast@ge.com

North America
5244 North Sam Houston Pkwy E.
Houston, TX 77032
T +1 832 2955600
F +1 281 4429994
jenbacher.us@ge.com

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