

Clarke Energy

Engineer - Install - Maintain



Distributor & Service Provider
Gas Engines

Power Generation

Electricity
Cogeneration / CHP
Trigeneration / CCHP
Quadgeneration



Power Generation

Clarke Energy is the authorised distributor and service partner for GE Energy's gas engine division in a growing number of countries across the world. In addition to providing high-efficiency, reliable gas engines we combine this with the expertise and resources to deliver unbeatable product support.

Whether your requirement is for the supply of a single gas engine generator or a complete turnkey power generation facility, we can meet that need. Our ability to add value by offering an end-to-end service, from initial proposal to reliable long-term maintenance, has led to us becoming a multi-national company with operations in ten countries across the globe. Our company prides itself on integrity, delivering only the highest quality products whilst providing a reliable accountable localised service.

Benefits of working with Clarke Energy

Clarke Energy provides flexible solutions for your gas generation projects. Our services range from the supply of a gas engine generator, through to the complete turnkey installation of a gas powered generation facility. Clarke Energy has a dedicated, top-quality team of sales, engineering, project management, commissioning and maintenance staff to meet your needs. We also offer long-term maintenance contracts backed up by a strong balance sheet, giving peace of mind with respect to the long-term performance of your GE gas generation equipment.

Power Generation with Gas Engines

Through on-going investment in research and development, GE's gas engines are highly efficient at the conversion of the energy within gas into electrical energy.

Electrical generation plants come in two main forms:

- Stable base load (continuous) generation
- Electricity peaking

Base-load generation is useful where there is a stable source of fuel, such as natural, landfill or coal gas to power the generators. GE Jenbacher gas engines are renowned for their reliability in the field and when challenged with difficult gases. The generation of electricity alone typically takes place where there is no local need for heating and cooling. The power that is produced can either be exported to the local electricity grid, or alternatively be used in island mode operation to power local facilities.

Electricity peaking stations typically operate in standby mode, then when there is a peak in demand for power from the electricity grid; the gas engines receive a signal to commence operation. Due to their flexibility and robustness gas engines are able to provide a rapid response to fluctuating demand. They are then turned off as demand reduces.

Cogeneration – Combined Heat and Power

Cogeneration or combined heat and power (CHP) systems are configured to produce both electricity and useful heat. GE Jenbacher CHP systems utilise heat produced during the combustion of the gas in the engine and facilitate process 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 as opposed to separate electricity and heat generation equipment. Cogeneration plants are typically embedded close to the end user and therefore help reduce transportation and distribution losses.

The heat from the engine is available in two key forms. Firstly low grade heat is recovered from the cooling water circuit of the engine. This is typically available as hot water for recovery via a plate heat exchanger. Secondly high grade heat from the engine exhaust can be utilised. This heat leaves the engine at over 450°C and can be used directly, in a boiler to generate steam or combined with the low grade heat and recovered as hot water.

Preston Hospital, UK, 1 x JMS616



Ankleshwar, India, 3 x JMS320



Trigeneration – Combined Heat, Power and Cooling

Trigeneration or combined heat power and cooling (CHPC) systems take the concept of cogeneration to the next level. Trigeneration systems produce electricity along with useful heat and cooling water. Here the heat recovered from the engine is used in absorption chillers. These heat driven chillers are able to provide cold water for utilisation in air conditioning systems or for process water.

Combining a CHP or cogeneration plant with an absorption refrigeration system allows utilisation of seasonal excess heat for cooling. The hot water from the cooling circuit of the plant serves as drive energy for the absorption chiller. The hot exhaust gas from the gas engine can also be used as an energy source for steam generation, which can then be utilised as an energy source for a highly efficient, double-effect steam chiller. Up to 80% of the thermal output of the cogeneration plant is thereby converted to chilled water. In this way, the year round capacity utilisation and the overall efficiency of the cogeneration plant can be increased significantly.

Quadgeneration - Combined Heat, Power, Cooling with CO₂ recovery

Quadgeneration systems are some of the most advanced gas engine driven power plants in the world. Quadgeneration encompasses the features of a trigeneration system, with electricity, heat and cooling and includes the recovery of carbon dioxide from the exhaust gas.

Carbon dioxide can be used for a number of purposes including encouraging growth in plants or if cleaned to food grade quality can then be used in carbonised drinks industry.

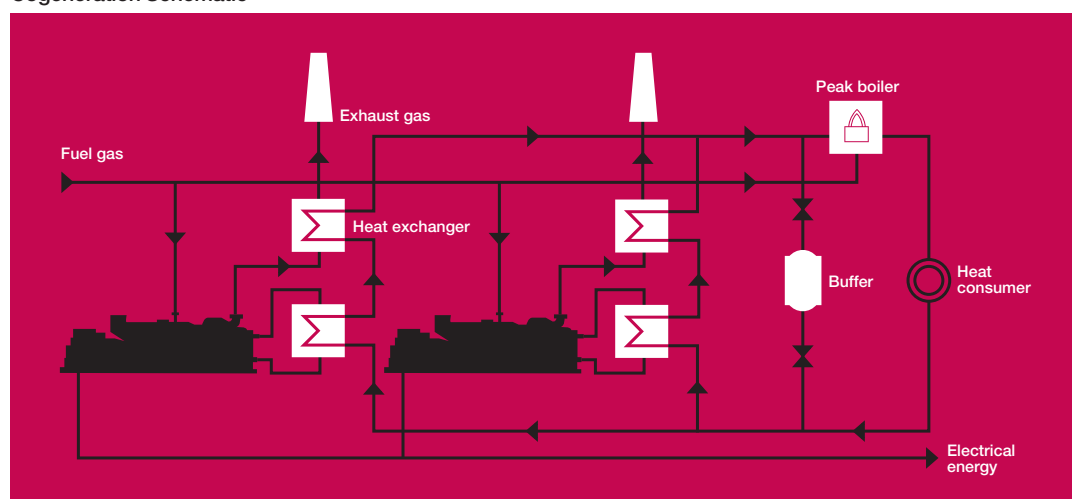
Quadgeneration not only provides the benefits of high efficiency generation, utilising over 90% of the energy contained within the gas, it also utilises carbon dioxide, a by-product of the combustion process to give the highest levels of performance.

Our Competence

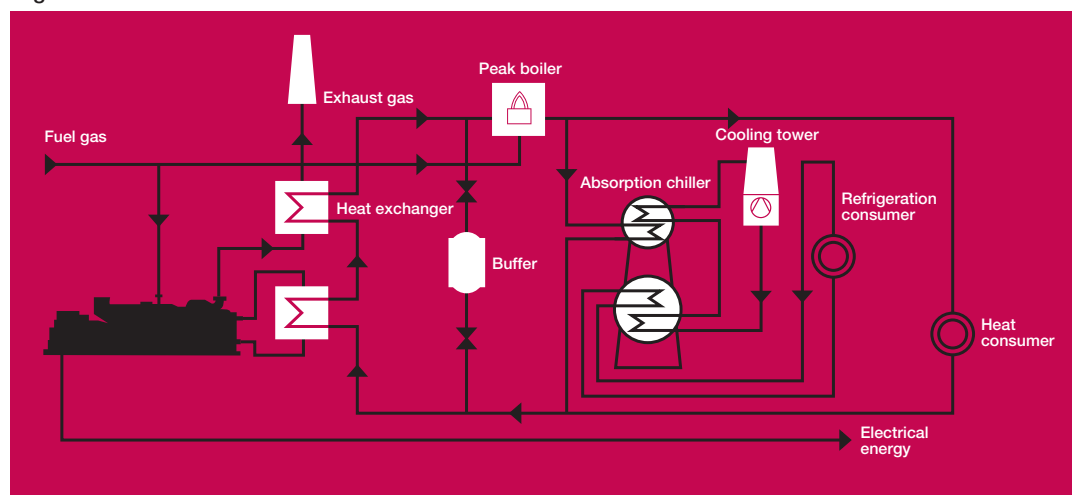
Clarke Energy has comprehensive experience in the engineering, installation and maintenance of gas based power generation facilities.

The GE Jenbacher gas engine is known for having the highest levels of electrical efficiency on the market. When coupled with a contractual maintenance agreement with Clarke Energy it will give peace of mind that they will achieve the highest levels of availability and returns for their project.

Cogeneration Schematic



Trigeneration Schematic



If you would like to discover more about gas engine based generation, or how Clarke Energy can help develop your power scheme please contact your local sales office.

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