...technology in harmony with nature
Goldman Energy are proud to offer TEDOM Cogeneration Units. TEDOM are our Technology partners from Europe and offer high efficiency Cogeneration reciprocating engines. Based on their extensive portfolio of over 3000 CHP units worldwide, TEDOM are constantly developing more efficient engines.

**GOLDMAN ENERGY ENGINEERS**

- Size the Cogeneration engine based on your electricity and thermal requirements
- Install the Cogeneration unit to TEDOM, and Australian, standards
- Design and program the integrated control system to run the unit to optimal performance
- Commission the TEDOM units. Goldman Energy Engineers are Tedom Level 2 commissioning certified.
- Integrate the Cogeneration system into your BMS
- Provide 24 hour support for your Cogeneration project

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**COMBINED PRODUCTION OF HEAT AND POWER**

Cogeneration is a highly efficient and ecologically beneficial method of power generation. CHP effectively utilises the waste heat produced from the engine while producing power. During this heat and power generation process, fuel energy utilisation is up to 90%.
TEDOM CHP UNITS CAN BE DELIVERED IN DIFFERENT CONFIGURATIONS

Based on the individual requirements of each project, the configuration will be either:

- Compact block version with a sound enclosure
- Compact block Version without a sound enclosure
- Placed in a container
- Custom designed individual requirements

WITH SOUND ENCLOSURE

- The sound attenuated version is designed for inside installation. The key advantages of this configuration are speed and ease of installation along with low noise level. This is the most popular version of TEDOM CHP units.

WITHOUT SOUND ENCLOSURE

- A simple concept without sound enclosure is designed for installations where an enclosed engine room is available.

CONTAINERIZED

- The container version is designed for external installations outside the residential or industrial buildings. This provides easy installation and resistance to weather elements.

COGENERATION = POWER + HEAT

Electricity generated by a CHP unit can be used for consumption by the building in which the machine is situated, or it can be supplied to the grid. The heat from CHP unit is used to heat the building, to prepare hot water or for process heating. CHP units are also used as emergency sources of electricity in places where an uninterrupted supply is necessary.
The Cogeneration units in the Micro series use engines from Kubota and MAN. These gas engines provide excellent efficiencies and long service lives. Following nearly twenty years of CHP manufacturing excellence, TEDOM owes its success to a rich history of satisfied customers. The new series of TEDOM Micro CHP units follows a long line of pedigree products, such as the previous MT 22 PLUS and PREMI, with over 1,000 units already in service.

TOTAL EFFICIENCY OF MORE THAN 95 %
High efficiency thermal recovery from the engine is complemented by a water cooled alternator, thus further increasing efficiencies. An immediate benefit of this system is that no forced air ventilation is needed. The unit can be installed virtually anywhere you would put a boiler.

CONSTANT ENGINE RUNNING SPEED
The Japanese industrial Kubota engine gives an outstanding service life through operating at constant speed.

“PLUG AND PLAY”
The all-in-one design allows very easy connection of CHP unit into the building’s heating system.

FLEXIBLE CONTROL PANEL PLACEMENT
The external electrical control module, attached to the engine body by a hinged connection, improves the use of space around the unit by providing options for positioning.

REDUCTION OF CO₂ EMISSION LEVEL
Reduction of CO₂ emissions is also an important aspect of a high efficiency of fuel utilization. Tedom CHP systems significantly reduce CO₂ emissions over separate source production of heat and power.
LOW EMISSIONS
The T30 has industry leading low CO₂ and NOx emissions and is regarded as zero NOx by most assessors such as BREEAM, SAP calcs etc. This also makes local planning requirements simple to comply with.

EASY ACCESS
Fast and efficient servicing through the provision of quick release covers on all sides.

LOW SPATIAL REQUIREMENTS
Very compact footprint, plus creative design of removable covers radically limits the space needed for maintenance. This enables the unit to be installed in very restricted areas.

LONG SERVICE LIFE
High integrity design and precise manufacturing processes, together with guaranteed fixed price maintenance ensures the longest operational life. Units in service have already exceeded tens of thousands of running hours.

“SUPER-SILENT” OPERATION
Partly due to the lack of ventilation requirements, the acoustic performance of the unit is 60 dBA at 1m. This is an industry leading benefit and enables installation of the CHP close to noise sensitive areas. Local planning requirements can almost certainly be met without any further special attenuation.

“Ranging from 7kW to 50kW engines, the Micro range offers high efficiency Cogeneration for the smallest applications. The ease of installation makes for a cost effective project, giving you a great return on investment.”
Cento

The Cogeneration units in the Cento series use gas engines which have been developed and manufactured in Tedom’s own engine manufacturing plant. The long engine life and low gas consumption guarantee economic operation of the cogeneration units. The automatic regulation of the mixture and the advanced system of cleaning the exhaust flue gas ensures low emission levels. This means that the Cento units are markedly below the Australian limit values of emissions.

ADVANTAGES OF THE CENTO COGENERATION UNITS:

- Engines originating from TEDOM’s own production
  - Advanced design thanks to the long years of experience in the field of gas engine production
- The same design features are used for the entire production series
- Modular system
  - Affordable price thanks to the use of standard parts
  - Fast delivery of spare parts
- Good accessibility to individual parts of the system
  - Simple and fast servicing
  - The sound enclosure can be easily removed in the case of major repairs.

THE CENTO COGENERATION UNITS ARE SUITABLE FOR OPERATION WITH VARIOUS GASEOUS FUELS:

- Natural gas
- Biogas (sludge gas, landfill gas)
- LPG
- Other gases

THE CENTO SERIES IS AVAILABLE IN THE FOLLOWING DESIGNS:

- With a sound enclosure
- Without a sound enclosure
- In a container
EQUIPMENT

- **Various operation possibilities**
  - Parallel operation with the mains, emergency mode, island operation, combined operation

- **Remote control**
  - Possibility of connection to a central control room
  - Operation controlled from a remote computer
  - Unit operation checks by means of SMS messages
  - Possibility of a common control of multiple units

- **Low noise emissions**
  - If the sound enclosure or container is used

- **Bosch engine management system**
  - An advanced system for optimising the engine operation and fuel consumption control

- **Low emissions of exhaust gas**
  - Operation using a lean mixture or with a three-way catalytic converter

- **Better possibility of heat utilisation**
  - Possibility of extension with an additional condensation exchanger

- **Variable design of ventilation in the version with a sound enclosure**
  - In-built fan in the rear side of the sound enclosure
  - Air is drawn from the installation area
  - Possibility of connection of the ventilation duct to the flange
  - Possibility of delivery of the ventilation system with a noise suppressor or without it

- **Exhaust silencer out of the basic frame**
  - This system makes it possible to adapt the installation of the exhaust silencer to specific conditions on the installation site

“The Cento ranges provides a simple solution to a wide variety of customers. The number of options available enables us to perfectly match the engine with the building requirements, increasing efficiency”
The QUANTO range is TEDOM’s largest engine range. Utilising engines from MWM and Caterpillar, these engines include the TEDOM control system and full integration into your existing system. The QUANTO range goes from 500kW through to in excess of 4MW.

**ADVANTAGES OF THE QUANTO UNITS INCLUDE**

1. Increased Electrical Efficiency
2. Good accessibility to individual parts of the system – Simple and fast servicing
3. Reliable operation
4. Low emission from Exhaust gas – Operation with a lean mixture of gas or a three way catalytic converter

**QANTAS AND GOLDMAN ENERGY**

Our team at Goldman Energy designed, supplied and installed 2 x 4300KW TEDOM QUANTO and 2 x 1500KW QUANTO units for the Trigeneration Plant for Qantas at their Sydney Airport location. This project provides

1. Electricity,
2. Domestic Hot Water and
3. Chilled Water
to the Qantas Head Office, the catering facility, the Jet base and Terminal T3.

Goldman Energy have worked closely with Qantas to provide a world class facility, significantly reducing Qantas’ environmental emissions.

This project includes 4 absorption chillers and 2 electrical chillers to produce over 23MW of chilled water.

**FUELS USED**

The major fuel for running CHP units is natural gas, however, a number of units have been configured to use biogas, landfill gas, gas from water treatment plants or other alternative fuels like mine gas for their operation.
**Trigeneration**

**WHAT IS TRIGENERATION?**
Trigeneration refers to the simultaneous production of power, heat, and cooling. It is the coupling of a CHP unit and an Absorption Chiller. It uses the hot jacket water and exhaust gas from the Cogeneration unit to produce Chilled water.

**TRIGENERATION ADVANTAGES**
The advantage of Trigeneration is better utilization of the CHP unit throughout the year. Owing to the gas fuelled operation (saving of power), the production of Chilled water through Trigeneration is cheaper. Absorption Cooling is highly reliable, low in noise and has a long service life.

**DEPLOYMENT OPTIONS**
Trigeneration units can be operated wherever the produced Chilled water can be utilized. It is mostly used in the air-conditioning of production areas, office or residential rooms. Trigeneration is frequently used, for example, to produce heat in winter months and cooling in summer.

Trigeneration can also produce all three forms of energy simultaneously.

The Absorption Chillers can use the Hot jacket water or the Hot Exhaust Gas to produce the chilled water.

**Single Effect Hot Water driven chillers:**
Advantage: three-way electronically controlled valve allows continuous control of the output of heat intended for heating or cooling.

**Double Effect Exhaust Gas driven chillers:**
Advantage: absorption efficiency with utilized energy of exhaust gases is markedly higher than when the hot water energy is employed.

“Trigeneration for commercial buildings is a great opportunity to produce electricity and chilled water using this highly efficient technology. The reduced costs of your HVAC system could significantly reduce your operating costs.”
Controlling and Monitoring

TEDOM CHP units utilize several types of controllers depending on CHP unit output and customer requirements. All controllers fully support the automatic operation of the total system.

Specialized control systems, called concentrators, allow division of power among individual machine sets or are used to control multiple CHP units.

CHP units can be controlled locally or remotely. Keys and control system displays are used for local monitoring and remote control. This can be carried out directly from a connected PC or via Internet or from a mobile phone.

An internet connection can monitor the CHP unit installed at your sites remotely to maintain maximum efficiency and reliability.

We utilise the technology from ComAp for our high tech, integrated control systems. ComAp specializes in creating electronic control and management solutions for use in the power generation industries and drive power markets. By providing these state of the art products with our equipment we are able to do so much more than just control the CHP unit.

OUR MONITORING CAN EXTEND TO:
- Plant room environmental conditions
- Heat exchanger performance
- Inlet and outlet temperatures
- Performance of existing equipment
- Boilers, chillers, pumps etc

TYPICAL APPLICATIONS FOR COGENERATION TECHNOLOGY
Cogeneration units can be used in all buildings with year-round demand for the consumption of heat, power or cooling. Examples of such uses include hospitals, nursing homes, swimming pools and spas, ice rinks and stadiums, district heating plants, hotels, department stores or industrial plants. When biogas is used, they are also suitable for water treatment plants, agricultural-related sites, and some communal landfill sites.
Servicing

Our qualified service engineers will provide ongoing support for all of the installed equipment. A regular maintenance schedule will be tailored to your requirements to ensure that we provide the level of service that you need.

MAINTENANCE CAN INCLUDE:
- Tedom CHP Units
- Absorption Chillers (if installed)
- Pumps
- Valves
- Electronic systems

With our rapid response time, Goldman Energy are in a perfect position to maintain and repair any issues encountered with your plant equipment. Our qualified service technicians will ensure that the uptime of the equipment is maximised to provide optimal performance.

PUMP MAINTENANCE
With pumps, and any equipment with moving parts, continual monitoring and servicing are required. Our technicians can provide ongoing support with your pump maintenance including:
- Replacement parts
- Schedule maintenance
- Reactive maintenance

REMOTE MONITORING & TROUBLESHOOTING
All of our Cogeneration, and Trigeneration, systems come complete with remote monitoring abilities. This allows Goldman Energy to measure the performance of the equipment and identify issues early. With high speed internet connections we are able to troubleshoot a lot of the issues from our Head Office.