



CHP Units

For generation of combined
heat and power



Cogeneration

Power and Heat from One Source

Traditional power generation is usually very inefficient. The heat generated during this process has usually no use. Cogeneration is a efficient alternative.

Combined Production of Power and Heat

The combined production of heat and power, or cogeneration, is the method of electric power generation during which the heat created during the manufacturing process is utilised efficiently. This results in a very efficient use of the fuel being used.

Small-sized and medium-sized CHP units are mostly designed on the basis of gas-combustion engines. The engine rotates the generator that produces electrical energy. The heat from engine cooling and from exhaust gases is used for heating, hot water preparation, and other purposes.

The power produced in the CHP unit can either be utilised for internal needs or supplied to the power grid. In certain cases, CHP units can also have a role as a backup source of power in the event of power outage.

Who Benefits from Cogeneration

Cogeneration can be applied in any structures where heating or cooling is required:

- hospitals and clinics
- retirement homes
- hotels and boarding houses
- waste water treatment plants
- swimming pools and water parks
- biogas plants
- industrial complexes
- district heating schemes

Reduces CO₂ Emissions

The burning of fossil fuels is always associated with CO₂ emissions. The less fuel burned, the fewer the emissions produced. In this respect, the TEDOM CHP units are a highly effective solution: They utilise natural gas that has low emissions of CO₂ and at the same time, they are highly efficient due to the combined production process.

CHP Units Compliment other Renewable Energy Sources

When compared to renewable energy sources like sun or wind, CHP units have one great advantage: it is possible to plan production of power independently of any weather conditions. CHP units continue to generate power when the sun is not shining and the wind is not blowing.

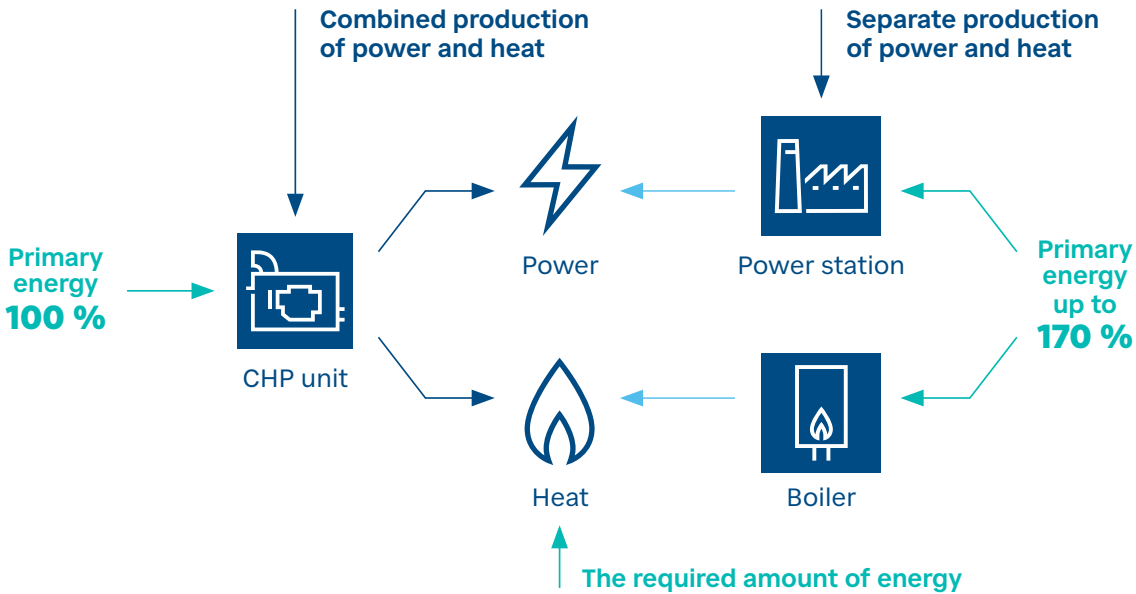
Energy when Needed

The CHP unit size is usually designed depending on the amount of heat necessary. Produced power will be consumed on-site, sold back to the grid, or stored in a battery. CHP units are highly flexible sources of energy.

CHP Units Can Run on Renewable Fuels

CHP units burn both natural gas and LPG as well as various biogas types. Biogas is generated as a product of the biomass decomposition in agricultural biogas plants, municipal recycling centres, or during the waste-water treatment process. Other types of gas can be used for the production of power including mine gas, which is generated when coal is being mined, in closed mines, or at oil well heads.

Energy Saving Through Cogeneration



Decades of Experience

So far, TEDOM has put into operation more than 10,000 CHP units. TEDOM has extensive experience and knowledge within the design and installation field. Should you be interested in doing business with TEDOM, you can be assured that you will always be served by an experienced dealer who will assist you in establishing your optimum solution.



Monitoring Operation of TEDOM CHP Units



Communication technologies enable TEDOM to monitor the CHP units for operation 24 hours a day from anywhere in the world. With this level of interaction, we can easily see any deviation from the normal CHP unit operation and we can draw the operator attention to the necessary correction, if it is required. In addition, remote monitoring reduces repair time when there is a failure, because the service technician sets out to the installation site already aware of the failure cause. Most frequently, CHP settings can be adjusted remotely correcting faults when they occur.

Reliable Service

The key features for operators is machine reliability and on-time service. TEDOM has an extensive international service network with dozens of service centres and hundreds of professionally trained technicians. Our central warehouse has almost all spare parts available from stock. Our service partners are provided with both regular training and professional technical support to provide maintenance of TEDOM units abroad.

Quality and TEDOM Engines

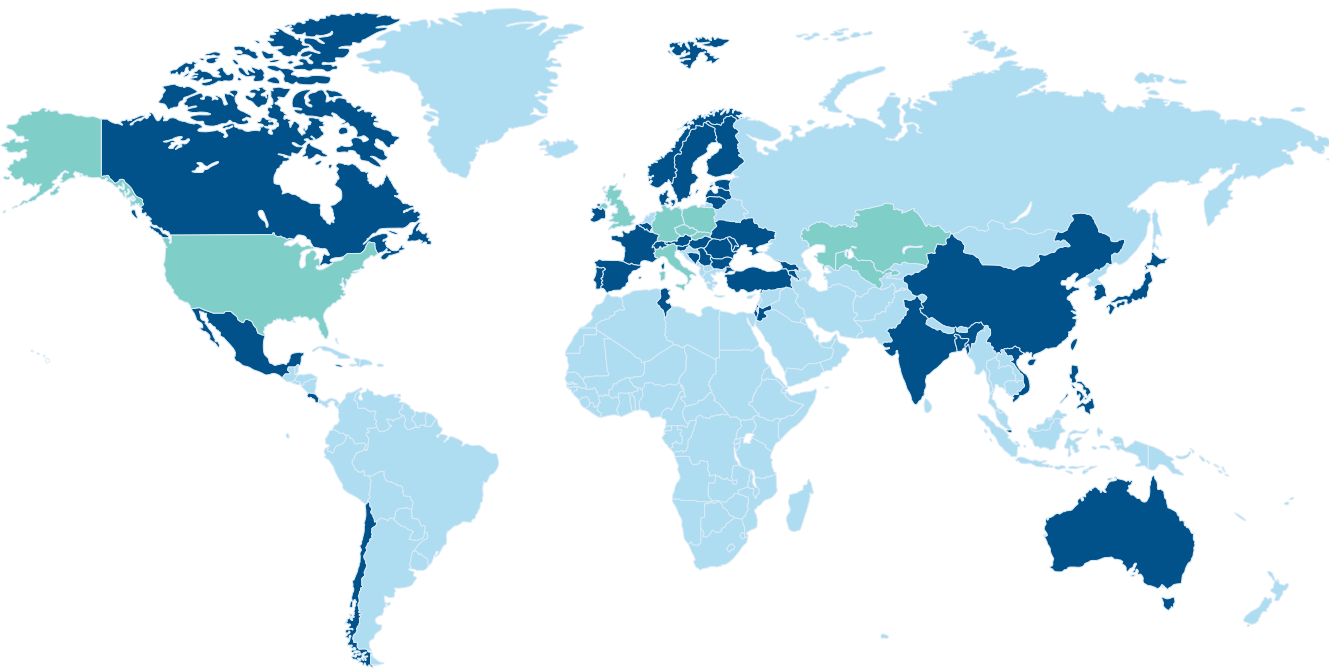
When designing the CHP units, we base our experience from the development and production of our own TEDOM combustion engines. TEDOM holds their development firmly in its hands. Thanks to their high quality workmanship and low operating costs, the TEDOM engines have already proven themselves in thousands of installations. Technically advanced components from proven suppliers are the basis for the reliability and long service life of our machines. However, we also design and produce our machines with engines from different manufacturers as, for example, MWM, Kubota and MAN.



TEDOM, all the production processes and procedures are subject to a strict quality control. The company is a holder of the ISO 9001 Certificate. TEDOM also ensures that its production is environment-friendly according to ISO 14001 standards.

World Wide Delivery

Many years of experience with CHP unit installations in dozens of countries worldwide allows TEDOM to respond flexibly to the various requirements of any customer. We have direct international representation in 8 countries and together with our business partners, we are always capable of finding a convenient solution with regard to the local conditions.



Branches:

- | | | | |
|------------|-----------|-----------------|--------------|
| └ Czechia | └ Poland | └ USA | └ Kazakhstan |
| └ Slovakia | └ Germany | └ Great Britain | └ Italy |

CHP Units

TEDOM

35–55 kW_e

MICRO



100–555 kW_e

CENTO



600–2300 kW_e

QUANTO



Fuels:

└ natural gas └ hydrogen └ propane └ biogas └ mine gas └ sewage gas └ landfill gas



For a current overview of manufactured units visit www.tedom.com

MICRO

Compact Machines with High Efficiency



Installation or replacement of technology in technical rooms of existing buildings pose a frequent problem, mainly because of the reduced accessibility. TEDOM took these obstacles into account when developing the Micro CHP units. The design is compact and can fit anywhere. As a result, the installation is quick and does not incur any significant extra costs. Even the follow-up service of CHP units does not require much space.



A Lot of Energy Under the Small-Sized Sound Enclosure

The Micro series CHP units have a total efficiency of over 95 %. The water-cooled generator has a major role in this. If an additional condensing exchanger is used, the efficiency will exceed 100 %.

Long Service Life

Smart conception and first-rate processing together with regular maintenance guarantee the life of CHP units in the tens of thousands of operation hours.

Low Demands for Space

The compact dimensions and low demands for the service area allows installation of micro CHP units into confined and non-ventilated areas. Due to the rotatable switchboard, the CHP units can fit through most doors which makes their installation in existing buildings much easier.

Easily Accessible Components

The easily accessible sound enclosure allows trouble-free access to all the CHP units components. This feature shortens the time required for service visits and this is favourably reflected in its price.

Plug & Play

The design allows very easy connection of the CHP unit into the building's heating system. Due to the water-cooled generator, the CHP unit does not need ventilation. This makes complex construction modifications unnecessary.

Automatic Operation

Due to the sophisticated control system, Micro CHP unit operates on a completely automatic basis so it does not need any attendance. If the actual CHP unit status needs to be checked from time to time, it's as simple as taking a look at the control display to see the actual condition of the CHP unit. Additionally, TEDOM CHP units can be connected to the Internet to control their operation remotely through a computer or smartphone.

Low Operation Noise Levels

Because of the tightly sealed sound enclosure, the CHP unit operation is very quiet even in close proximity.

Adjustable Power Switchboard

The separate switchboard allows for individual positioning layout, depending on how the CHP unit is positioned. This layout also protects sensitive electronic components against the heat generated by the engine.



CENTO

It Will Adapt to Your Needs



Predominantly, you will find Cento CHP units in buildings with a high energy demand, for example, hospitals, schools, hotels, aqua parks or conference centres. Intelligent structure, variable design and a wide output range - it is these features that allow for installation of our CHP units wherever needed.

Cento CHP Unit Version Options

Open Module

This CHP unit is one with a simple design and its own switchboard that needs no special ventilation. You can access all of its components very easily – this makes service visits much simpler. It is ideal for installation into a sound-proof machine room. Above all, it is cheaper than our other models.



Sound Enclosure

The sound enclosure that encases the CHP unit is internally modified so that it absorbs the motor generator noises to the maximum extent possible and at the same time protects the CHP unit components from impurities and damage. This version is intended for installations inside buildings.



Container

A CHP unit, as well as with any other equipment, can be placed into a metal or concrete container. This version is intended for outdoor installations and therefore has several advantages:

- the container protects the CHP unit from adverse weather conditions,
- a maximum of 3 cogeneration modules can be placed in one container,
- the container colours can be modified to adapt to blend into the environment.



QUANTO

The Basis of Your Power Engineering Project

Big and Efficient

- ▄ stand-alone motor generator
- ▄ modifiable power and control switchboard location
- ▄ engines made by renown manufacturers
- ▄ generators for both low and high voltages
- ▄ various design options



The Quanto series CHP units offer a really high output. One of these CHP units is capable of reliably supplying heat to an urban community with two hundred and fifty apartments and an adjacent school. It can also produce enough power to handle the consumption of a town with two thousand inhabitants. These CHP units will find further applicable uses, for example, in energy-intensive industrial plants or when utilising non-traditional sources of energy, for example, mine gas.

Focused on Output

For the Municipal and Industrial Power Engineering

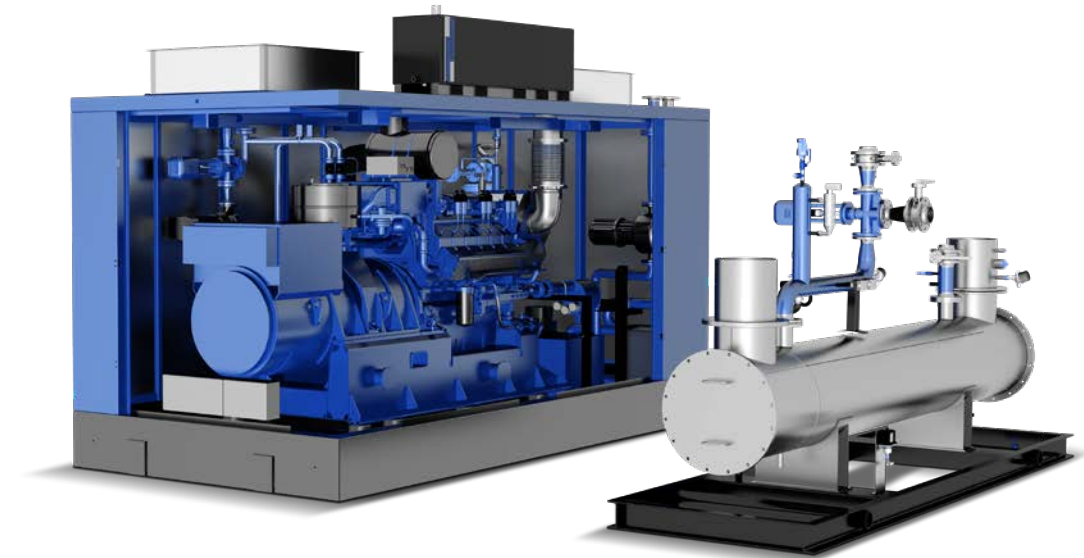
The Quanto series CHP units are frequently employed in district heating systems where the heat from CHP unit is supplied to the heat distribution system and the power from cogeneration is sold to the electrical system. In addition, Quanto CHP units are frequently employed in supplying industrial facilities with power and heat. Given their output, they may have a significant role in the support of power engineering services, for example, as a flexible supplement for renewable sources of energy. They are also important in the area of spare energy sources or in facilities that operate in an island mode.



„Turn Key“ Projects



The installation of a separate CHP unit into a machine room is often a mere sub-stage of the entire power engineering project. As a cogeneration technology manufacturer, we also provide our customers with turn-key projects. This means that, besides the supply of CHP units, we also ensure reconstruction or development of the district heating facilities, corporate energy centres, etc.



Optional Versions

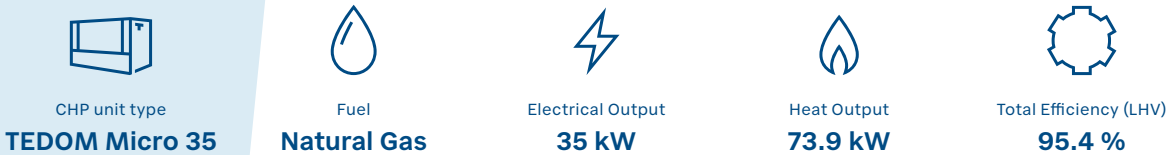
- We provide our customers with Quanto CHP units in three basic versions.
- As a solution for buildings, we offer a version in a sound enclosure where individual technological elements are assembled in our production facility to be dispatched as a whole.
- When placing a CHP unit into a sound-proof machine room, the version without a sound enclosure is often sufficient.
- The container versions where the complete cogeneration technology is installed in a container or on its roof are specifically designed for the outside environment.



References

CHP UNIT INSTALLATION at EQUUS Corporate Office

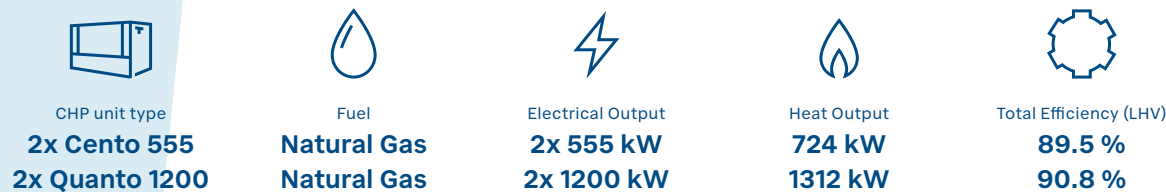
TEDOM CHP Micro 35 uses natural gas to power an internal combustion engine which generates electricity. The CHP system captures the excess thermal energy produced in this process and uses it to heat the building and melt the snow off the sidewalks surrounding the building in the winter. This process is highly efficient and significantly lowers utility costs and greenhouse gas emissions.



The Quanto and Cento CHP units for the greenhouse operators in Duncannon, USA

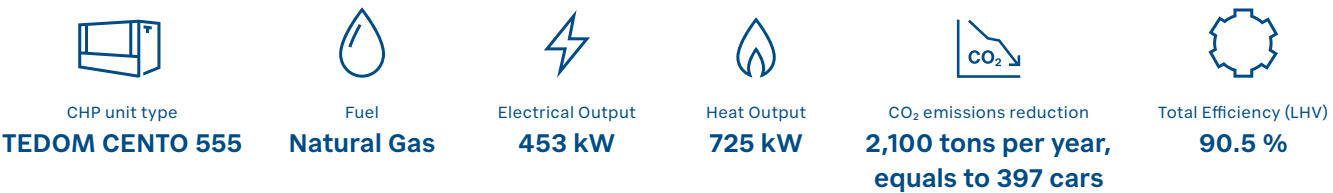


Four TEDOM CHP units were supplied for greenhouses operated by PA Options for Wellness, an American medical marijuana cultivation and clinical research company. These were two 1200 kW Quanto CHP units and two 555 kW Cento CHP units. This brings the total installed electrical capacity of this installation to more than 3.5 MW. This CHP unit composition allows for flexible operation, service interventions without any interruptions in the operation and it simultaneously brings a considerable resistance to the power grid outages.



CHP UNIT INSTALLATION at Progel, Mexico

PROGEL is a leading manufacturer of grenetina, natural gelatin. Given the fact that grenetina production process is energydemanding, PROGEL sought methods to cut down energy costs. The option of installing highly-efficient cogeneration technology was evaluated as the most effective choice. Juan Francisco Rios from Grupo Energios mentioned: „The experience with TEDOM Cento 555 CHP unit installed in Progel has exceeded expectations. It is worth mentioning that during 6 months there have been savings of approximately 160,000 USD.



CHP UNIT INSTALLATION at Township of Centre Wellington



“Selecting a co-generation energy solution, rather than a traditional diesel generator, will provide our community with an emergency power back-up system and energy producing system for the daily operation of the Sportsplex. It is incredible that this green energy solution is expected to produce operational savings of \$1 million over 10 years.” Kelly Linton, Mayor of the Township

The Combined Heat and Power System produces up to 250 kW of power for the Sportsplex which is approximately 80 % of the daily demand in the summer and approximately 60 % of the demand over the winter months. Over the year it off sets the energy currently provided from the grid by approximately 2,000,000 kWh (kilowatt hours) roughly equivalent to the amount of energy used in 160 homes per year.



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