



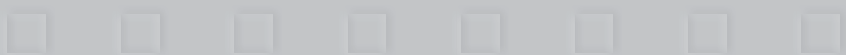
**TEDOM**

technology  
... in harmony  
with nature



cogeneration

TL





introduction

Tradition

tradition

# cogeneration

Within the Tedom Holding company, the CHP unit manufacturing group is one of Tedom's key business divisions. Our customers greatly appreciate the very high technical standards, reliability, unmatched performance and professional after-sale maintenance service they receive from TEDOM products. All these direct client benefits are achieved because of TEDOM's extensive experience gained in the development of cogeneration technologies, our trained and highly qualified staff and last but certainly not least, TEDOM's operating experience of its own CHP units. TEDOM is one of Europe's premier CHP manufactures in the field of small-scale cogeneration.



## Historical Background of CHP Unit Manufacturing

The first TEDOM CHP unit was manufactured in 1991, with an output of 22 kW powered by a Škoda Favorit combustion engine. Two years later TEDOM began manufacturing CHP units equipped with LIAZ engines. In 1995 the number of manufactured CHP units reached 100. The following year the first CHP unit with a Caterpillar engine was introduced. 2003 served as a milestone for TEDOM with the production of the 1000<sup>th</sup> unit. At the same time TEDOM purchased the production facility for LIAZ engine manufacturing in Jablonec nad Nisou. These engines are now offered under the TEDOM trademark. In 2005 the Quanto range was introduced extending TEDOM CHP power using DEUTZ engines. By the end of 2008 the number of manufactured and sold TEDOM CHP units reached 2000 with total installed output of all units close to 500 MW. The annual growth of installed electrical output ranged from 60 up to 100 MW.



Production plant in Hořovice



Production plant in Jablonec nad Nisou

*Photo above: Production plant in Výčapy*

know how

## Development, Manufacture



**The development of TEDOM CHP** production is centered at TEDOM CHP s.r.o. located in Hořovice. Our skilled team of research and development engineers continuously works to introduce new models as demanded by the marketplace, incorporating into our manufacturing process various features requested by our clients. Systematically they are also focusing on ever-increasing CHP unit life and reliability. This includes integrating enhanced technical parameters as developed from TEDOM's CHP operating experience. Our specialists not only carefully monitor the latest trends in the cogeneration business but also gather data and experience from CHP unit operators, service and maintenance staff. This "real world" TEDOM advantage provides important data to our design team to implement market driven flexible responses to our CHP construction and design process. All these combined activities facilitate the creation of a "Total TEDOM Customer Satisfaction Ownership Experience" providing for long and trouble free CHP operation.



**The manufacture of TEDOM CHP units** is located in Hořovice, Jablonec nad Nisou and Vyčapy. With our extensive CHP installation experience and capacity to modify requirements as needed to meet clients unique needs, our production team is able to promptly customize individual customer needs around the world. Our indisputable advantage is our response and listening to our customers' needs. The entire manufacturing process is certified according to the ISO 9001:2000 standard.



**The efficient sale of TEDOM CHP units** in the Czech Republic is ensured via our skilled business managers who are highly experienced in the technical and economic aspects of TEDOM installations. This expertise allows TEDOM to offer its clients the best CHP recommendation for a variety of applications. Our team of export sale managers closely cooperates with a wide range of business partners around the world providing sales, service and maintenance support to our customers. In addition to our business partners, there are TEDOM commercial representatives in Moscow and Peking.

production

# in the World TEDOM in the World

Currently we export our products to more than 35 countries in the world – from Australia through China, Russia and the whole of Europe up to the Americas.



TEDOM is one of the most significant cogeneration technology suppliers. Because of TEDOM's long-term experience with CHP installations around the world, we are very flexible in meeting our clients' different requirements. Also, in co-operation with our representatives we work to arrive at the best solution according to specific local conditions.



## Combined Production of Heat and Power

Cogeneration is one of the most efficient and ecologically beneficial methods of power generation consisting of the effective utilization of waste heat while producing power. During this heat and power generation process, fuel energy utilization is up to 90% with minimal losses.



## Reduction of CO<sub>2</sub> Emission Level

Reduction of CO<sub>2</sub> emissions is also an important aspect of cogeneration together with a high efficiency of fuel utilization and low production losses. These are around one ton per generated MWh as compared to standard power generation.

## Configuration Options

### TEDOM CHP units are delivered as standard with:

- compact block version with Sound Enclosure
- version without Sound Enclosure
- placed in a container
- custom designed individual requirements

### With Sound Enclosure

■ The sound attenuated version is designed for built-in 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 built-in installations where an enclosed engine room is available.



## Cogeneration = Power + Heat

Electricity generated in cogeneration unit can be used for consumption by the building in which the machine is situated, or it can be supplied to the network. Heat from the cogeneration unit is used to heat the building, to prepare hot water or for technological heating. Cogeneration units are also used as emergency sources of electricity in places where an uninterrupted supply is necessary.



## Tri-generation = Power + Heat + Cooling

By means of absorptive coolers it is possible to use heat produced by cogeneration for the production of cooling for technological purposes or air conditioning. In such cases we are talking of tri-generation, the combined generation of power, heat and cooling.

# options

## Configuration Options

### Containerized

■ The container version is designed for external (outdoor) installations in domestic or industrial buildings. Its advantage is ease of installation and resistance to weather elements.



### Special Client Requirements

■ Any version of CHP units can be modified to individual customer requirements or needs. An example: the separation of heat and motor generator modules that are used for used for cogeneration for higher outputs.



### Fuels Used

▶▶▶ The major fuel for running cogeneration units is natural gas. In recent years, however, the number of units using biogas, landfill gas, gas from water treatment plants or another alternative fuel like mine gas for their operation has sharply increased.

### controlling

## Controlling of CHP Units

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



CHP units can be controlled locally or remotely. Keys and control system displays are used for local monitoring and control. This can be carried out directly from **either a PC**, electronic dispatching via **SMS** or an alternate method according to customer needs.



Controlling of multiple CHP units at the same time is provided via specialized control systems, so-called **concentrators**, which enable splitting the output between each system.



### Typical Areas Using Cogeneration Technology

▶▶▶ Cogeneration units can be used in all buildings with year-round demand for the consumption of heat and power, or cooling. These are, above all, hospitals, homes for elderly people, swimming pools and spas, ice rinks and stadiums, district heating plants, hotels and bed and breakfast houses, department stores or industrial plants. In cases using biogas, they are suitable for water treatment plants, agricultural concerns and some communal landfill sites.

## After-Sales Services

Service support is an integral part of the business partnership between TEDOM and its customers. Service department staff, responsible for these services have gained significant data through long-term daily experience from servicing hundreds of CHP units operated by our customers.

After-sales services for particular markets can include:

- CHP unit commissioning
- regular technical maintenance specified by producer
- service during and after the warranty period of all CHP unit parts
- medium repair and overhaul service of the whole CHP unit
- training of service staff of TEDOM representatives abroad
- training of operator staff in the field of CHP unit servicing and maintenance



## Central Warehouse of Spare Parts

Each CHP unit consists of hundreds of component parts. To avoid long waiting time to receive spare parts for our customers, TEDOM keeps over 7000 spare part items in reserve in the Výčapy central warehouse. We are able to quickly respond to our customers' requirements.

# realization

## Examples of TEDOM Installations



District heating Svitavy, Czech Republic  
Quanto C2000 SP, 2001



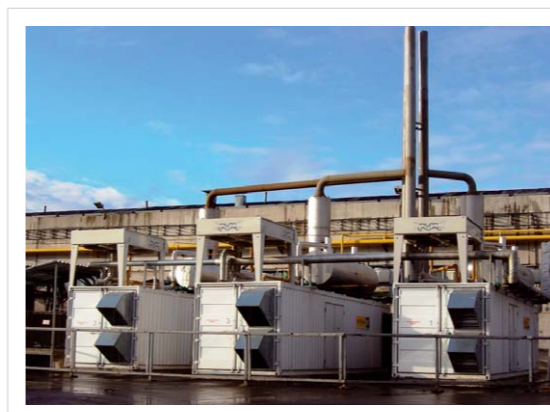
Aquapark Čestlice Praha, Czech Republic  
Quanto C400 SP, 2008



Hospital Krnov, Czech Republic  
MT 140 SP, 2000



Mine KWK Sośnica-Makoszowy, Poland  
Quanto D2000 SP BIO CON, 2009



Glass factory Anopino, Russia - Cat 1000 CON, 2007



Bioplant Agralco, Spain - Cento T160 SP BIO, 2007

TEDOM **cogeneration** [www.tedom.eu](http://www.tedom.eu)



For more information please check our website or contact our partner in your country.  
The list of TEDOM Partners is available at [www.tedom.eu](http://www.tedom.eu)