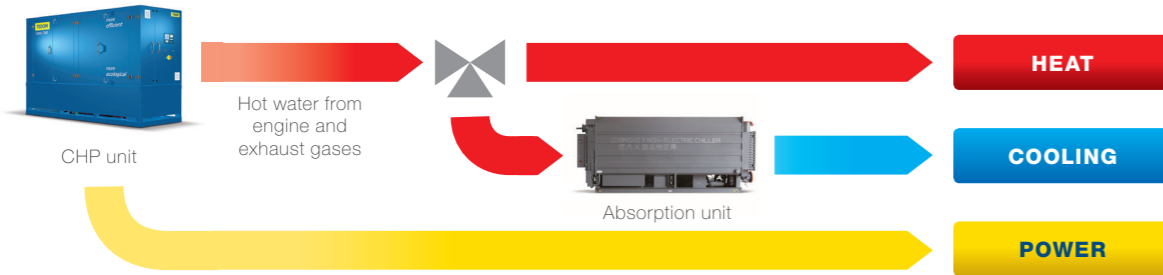


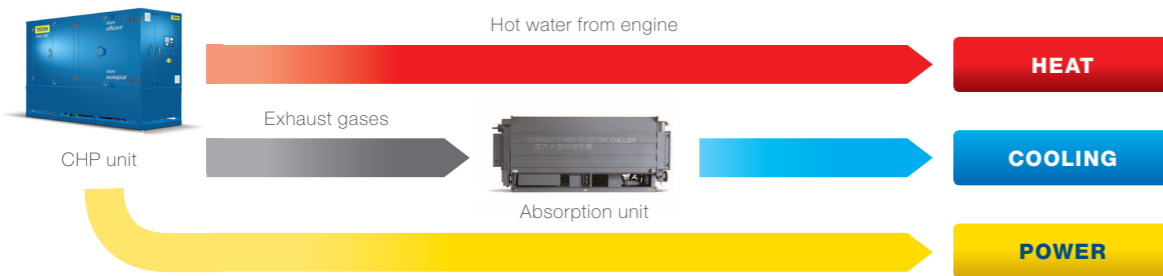
## Trigeneration Type A

- Connection of the **hot-water cooling absorption unit** and CHP unit, the exhaust heat exchanger is a part of the CHP unit.
- All the CHP unit's thermal energy is utilized to heat the water.
- **Advantage:** three-way electronically controlled valve allows continuous control of the heat output intended for heating or cooling.
- Suitable for the facilities that require heating in winter and cooling in summer.



## Trigeneration Type B

- Connection of the **exhaust cooling absorption unit** and CHP unit, the exhaust heat exchanger is a part of the absorption unit.
- Hot water from the CHP unit's engine circuit is used for heating only.
- **Advantage:** the efficiency of absorption cooling is higher owing to the higher temperature of exhaust gases.
- Suitable for the facilities with the all-year parallel consumption of heat and cold.



## Overview of Produced Types

CHP unit type	Type of trigeneration	Absorption unit type	Electrical output [kW]	Heat output [kW]	Cooling capacity [kW]
Cento T200	A	BDH 15 - TGA 130	200	265*	178**
Cento T200	B	BE 17 - TGA 110	200	152	193
Quanto D600	A	BDH 42 - TGA 420	600	658*	487**
Quanto D600	B	BE 35 - TGA 240	600	384	402
Quanto D1200	A	BDH 74 - TGA 610	1 200	1 189*	856**
Quanto D1200	B	BE 54 - TGA 410	1 200	746	631
Quanto D2000	A	BDH 122 - TGA 910	2 000	1 977*	1 423**
Quanto D2000	B	BE 91 - TGA 610	2 000	1 236	1 056

\* with fully utilized heat output of CHP unit for heating only (so called 'winter mode')

\*\* with fully utilized heat output of CHP unit for cooling only (so called 'summer mode')

The TGA cooling towers are designed for the wet-bulb thermometer at +22 °C

**TEDOM**

... technology  
in harmony  
with nature

# TRIGENERATION

Simultaneous production of Power, Heat and Cold



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NATURAL GAS - BIOGAS - LPG - MINE GAS

## What is Trigeneration

Trigeneration refers to the simultaneous production of power, heat, and cold. It is coupling of CHP unit and cooling absorption unit that allows transformation of the heat from cogeneration into the cold through the absorption process.

## Advantages of Trigeneration

- Effective utilization of heat from the CHP unit, also in summer months
- Significant cut down of electric power consumption (reduced operation costs in comparison to the conventional compressor cooling).
- Nonelectric source of cold doesn't load the electrical distribution mains, particularly during the peak-tariff period.
- Absorption cooling is typical of very low noise, low service demands and high durability.

## Application

Trigeneration units can be operated wherever heat is in excess, and where the produced cold can be used, for example, for air conditioning of production, office, and residential premises. The production of technological cold is possible too. Trigeneration is frequently used to produce heat in winter months and cold in summer. However, simultaneous production of all the three forms of energy at the same time is also possible.

## References

### Multifunction Hall GONG, Dolní Vítkovice, Czech Republic

The TEDOM Cento CHP units complement the heating part of the Energy Centre and produce the power. In case of need, it can be also used as a backup power source (emergency mode). If the cold demand is higher, the electric compressor cooling is also in operation, apart from the absorption unit.

The trigeneration system reduces the consumption of heat from the district heating plant exchanger, generates the power that can be used directly in the installation site, and reduces the costs for the power necessary for the air conditioning of inner premises. The cooling absorption unit allows maximum utilization of both CHP units in the summer months.



- In operation since: 2012
- CHP unit type: 2 x TEDOM Cento T200 SPE
- Electrical output: 2 x 200 kW
- Heat output: 2 x 225 kW



- Absorption unit type: 1 x BROAD BDH
- Cooling capacity: 380 kW
- Function: all-year air conditioning of Multifunction Hall GONG and the „World of Technique”

### Küçükçekmece Belediyesi Administrative Building, Turkey

TEDOM Cento CHP units produce the power necessary for the administrative building operation, the heat in cooling absorption units is transformed into the cold needed for the building's air conditioning.



- In operation since: 2014
- CHP unit type: 2 x TEDOM Cento T200 SPE
- Electrical output: 2 x 200 kW
- Heat output: 2 x 265 kW



- Absorption unit type: 3 x BROAD BDH
- Cooling capacity: 3 x 170 kW
- Function: air conditioning of the public administrative building

### QANTAS Jet Base, Airport Energy Centre in Sydney, Australia

The Energy Centre in the Sydney Airport is based on the trigeneration system composed of two CHP units of a total electrical output of 2 x 4 300 kW, two exhaust cooling absorption units of a total cooling capacity of 2 x 3 310 kW and one hot-water cooling absorption unit of a cooling output of 2 646 kW. Cold is used for air conditioning of the airport lounges, and the electrical power from CHP units operated in the peak-tariff period, is supplied into the power grid. This contributes significantly to reducing the costs for the production of cold.



- In operation since: 2013
- CHP unit type: 2 x TEDOM Quanto D4000 SPE
- Electrical output: 2 x 4 300 kW
- Heat output: 2 x 4 580 kW



- Absorption unit type: 2 x WE CHP100H  
1 x WE HWAR-L825H
- Cooling capacity: 9 266 kW
- Function: air conditioning of the part of International Airport in Sydney