*Powerful solutions for the future...*

# COGENERATION
## POWER PACKS

TEKSAN

# MILESTONES OF SUCCESS...

## WHENEVER YOU NEED POWER, WE ARE ALWAYS WITH YOU...
## SINCE 1994!

Since 1994, Teksan has been delivering high quality tailormade solutions that are designed accordingly to your requirements with strong after-sales technical support and maintenance services anytime and anywhere you need uninterrupted power supply. When your company is moving further ahead rapidly on the road to success, you always feel our continuous support as your reliable power solutions partner.

*Because Teksan is a member of your family…*


**1994**

*Established under the name "Deniz Mühendislik Ltd. Şti." and began its activities.*

**1996**

*Changed its name as Teksan Jeneratör Elektrik Sanayi ve Ticaret A.Ş.*

*Increased its product range upper limit from 880 kVA to 2250 kVA.*

**2000**

*Moved to Sancaktepe Plant.*

*Power upper limit was increased from 2250 kVA to 3550 kVA.*

**2003**

*With its special project with 2x3125 kVA - 11 kV alternators, Teksan produced the biggest generator sets in Turkey until today.*

**2004**

*R&D Department has been established.*

*Produced the first national natural gas generator set of Turkey.*

**2005**

*Teksan carried out the most comprehensive ERP project of the industry.*

**2007**

*Developed the first domestic production cogeneration systems of Turkey.*

*Teksan Generator started Teksan Production System (TÜS).*

**2011**

*Realised the first trigeneration system project with 4x500 kW gas engine.*

*Teksan was named among the in TIM's "Top 1000 Exporters of Turkey" list.*

**2012**

*Launched the power solutions that powered with biogas.*

*Increased the number of countries exported to 120.*

**2013**

*Innovated the first national Hybrid Power System in Turkey.*

**2014**

*Kocaeli factory has started to operate.*

*Being recognised as a R&D Centre by the Ministry of Science, Industry and Technology, Teksan Generator has become the first private R&D centre in the industry.*

*Ranked Fortune 500 Turkey list from the 469th place.*

**2015**

*Chosen for the TUBITAK-TEYDEB Success Stories Booklet with the first domestic Hybrid Generator Set of Turkey.*

*Launched the first and only "Hybrid Lighting Tower" of Turkey to its product range.*

*Ranked 436th in TIM 1000 and ISO 500 lists.*

*Moved up to the 97th place in the list of 250 leading R&D companies of Turkey.*

**2016**

*Awarded the Authorized Economic Operator (AEO) Certificate.*

*Has once again proved its quality and reliability by obtaining the UL Certificate.*

*Managed to enter the Turquality Brand Support Program.*

*Increased the number of countries exported to 130.*

**2017**

*Celebrated Its 25th years in the industry. Teksan UK was established.*

**2018**

**2019**









# COGENERATION SOLUTIONS

*Absorption Chiller*

*Cooling Tower*

*Dry Cooler*

*Plate Heat Exchanger*

*Exhaust Heat Boiler*

## STRONG SOLUTIONS FOR FUTURE

**TEKSAN, thanks to its solid experience and know-how, delivers high performing natural gas and biogas-based cogeneration-trigeneration solutions with energy efficiency up to 90%.**
**You can get your investment back in a short period of 4-5 years.**

# Cogeneration Solutions

*Today, it is the time to take action in the name of bequeathing a powerful heritage for the future…*

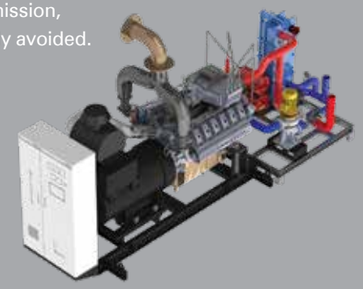
Cogeneration (Combined Heat and Power or CHP) is the simultaneous production of energy more than one form such as electricity and heat from fuel which is used. The basic and most fundamental principle of cogeneration is to benefit accumulated heat in the system to provide saving accordingly the electricity needs of the facilities.

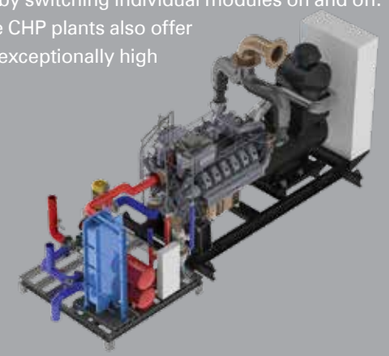
Cogeneration optimizes the energy supply to all types of consumers, with increased efficiency of energy conversion and use, lowering emissions to the environment, saving costs significantly, providing additional competitiveness for industrial and commercial users, and offering affordable heat for domestic users.

Distributed combined heat and power generation is an obligation for cleaner environment. With Kyoto Protocol, many industrialized countries entered into an international agreement committing a reduction of 30% in $CO_2$ emissions as of 2010. If this objective is to be achieved, it is vital that significant savings be made on the primary energy side. The generation of power and heat that is close to the location of consumption, is energy-efficient hence the supply can optimally be adapted according to demand and transmission, distribution losses are also largely avoided.

Reduction in the $CO_2$ available with Teksan gas engine based cogeneration modules employed in CHP plants amount to more than 50% comparing to conventional oil-fired heating stations and coal-fired power stations. Teksan gas engines satisfy the twin requirements of low-emission and cost-efficient energy generation. Our CHP packs can be used in municipal utilities and public authorities, power generating facilities, industrial, engineering and food processing companies as well as hotels. Operating as reliable electricity providers, they simultaneously serve to generate the heating energy for indoor swimming pools, sports centers, hospitals and clinics, schools and other public buildings.

According to system's thermal and electricity requirements, CHP plants can be designed as multimachine systems. System adaptation to the prevailing electrical and thermal demand profile is implemented by switching individual modules on and off. Multi-machine CHP plants also offer the benefit of exceptionally high availability.





# TEKSAN POWER PACKS

*You have the control...*

Teksan Cogeneration modules are called as “Power Packs”. They are high efficient, fully functional power units with all the auxiliaries and components that a power production unit requires. For industrial, commercial and domestic self generation, small utilities, which don’t have major construction and project handling resources, a complete power production unit requiring minimum work on site, is the answer. The installation of a Power Pack is quick and easy like a “plug and play” system. Start up is so fast and also operation and maintenance require minimum staff on site and remote monitoring is possible. The standardized design of Power Packs also lifts the concept of “stepwise” investment to new heights.

Inspite of starting with a single Power Pack, you can easily expand the installation by adding new and interconnected packs as the demand for power grows in your plant.

### Advantages of Teksan Cogeneration Systems:

- Durable to work for many years, design that make its dynamic and static analysis and calculations
- High efficiency due to its equipment designed specially for cogeneration system
- Convenience in layout and maintenance course due to its compact design,
- Investment return in short time thanks to feasibility calculations accurate analysis and suitable system design,
- Ease of augmentation of system capacity upon demand and simultaneous operation with diesel generators
- Low maintenance costs,
- In Teksan cogeneration systems, heat can be offered to the client in various ways. Along with standard hot air outlet, project based superheated steam and hot oil, cold water can be distributed too, in such projects which need cooling, via absorption chillers. Along with these, in greenhouses and projects that are demanding $CO_2$ usage, exhaust emissions are also utilisable.

## TRIGENERATION POWER PACKS

Trigeneration is the process of procuring cooling in addition to the electrical and heat outlets of cogeneration systems. In trigeneration systems, hot water or exhaust, exhaust, that are gathered from the engine, are being used to obtain cold water via absorption chillers.

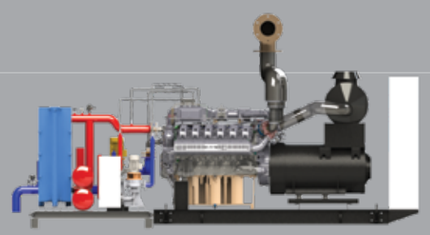
The trigeneration system is recommended in such implementations when the heat demand is used seasonally or in such implementations where cooling demand is higher than that of heating demand.

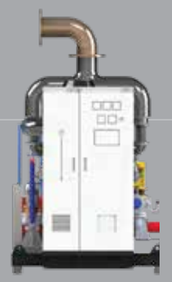
Sole or double effect absorption can be recommended depending on the cooling demand. In system absorption chillers provide cycle efficiency between 0,7 - 1,4 COP, depending on it’s working principles.

In Teksan Trigeneration Systems, in addition to the cogeneration packs; absorption chiller, cooling tower and cooling pumps are also presented to the client.

### Teksan Test Facilities:

- Low and high voltage testing
- Emission tests
- Fuel consumption test
- Thermal analysis
- Static and dynamic analysis
- Vibration tests





# TEKSAN COGENENATION EQUIPMENTS

## STANDARD EQUIPMENT

### Engine Equiqment

- Electric coolant pumps for 1 T 8 HT circuits
- Ignition system
- Carburetor type combustion gas/air mixer
- Electronic speed controller with on – engine actuator
- Intake air filter with replaceable element
- Lubricating oil pressure , coolant temperature , speed sensors

### System Equiqment

- The chassis which can include the engine, alternator and framework system
- Alternator, designed specifically for highly efficient cogeneration system
- Anti – vibration dempers
- Cable installations
- Emergency LT/HT radiator
- Output Swicht
- Oil cooler
- Intercooler

### Heat Recovery

- Jacket heat exchangers, 3-way volves, expansion tanks and exhaust piping
- 316 L stainless exhaust heat exchangers
- Temperature and pressure sensors
- Overpressure safety valves
- The purge air discharge
- Analog pressure and temperature gauges
- Butterfly valves

### Gas System

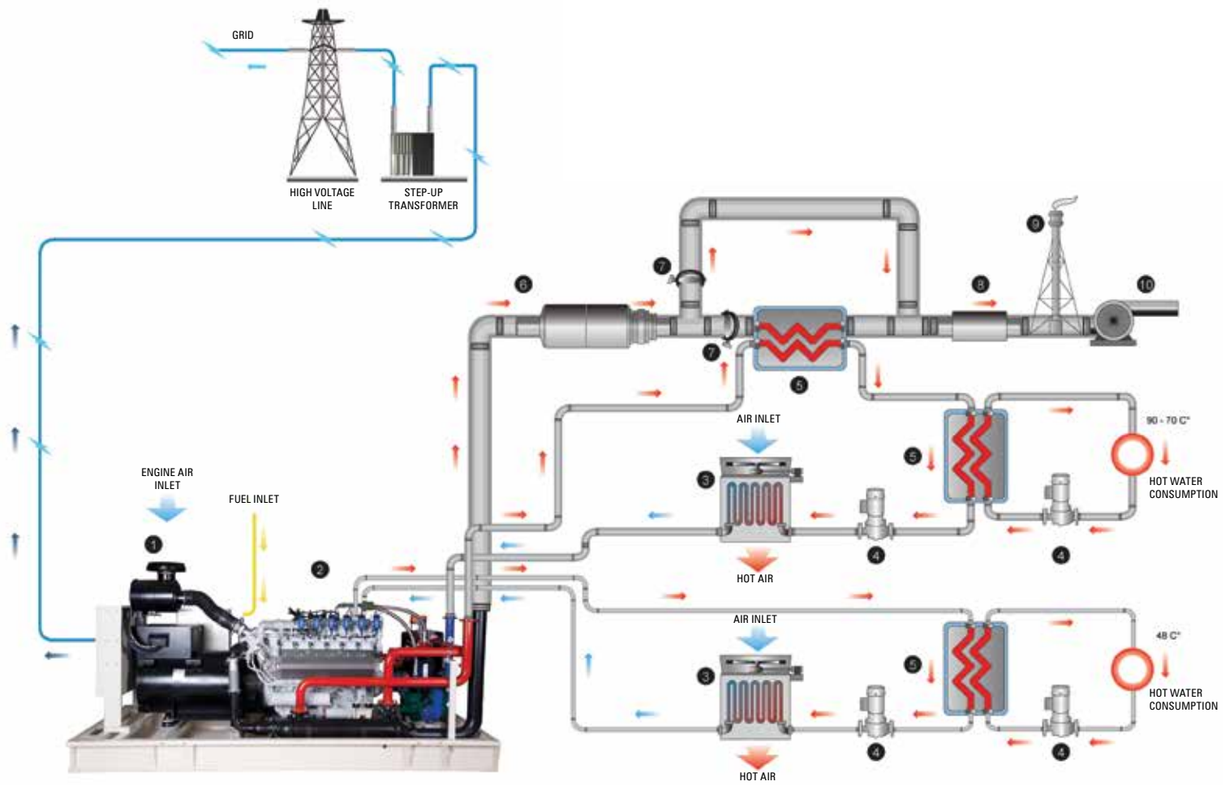
- Filter , double solenoid valve and gas regulator
- Preostats, globe valve, flexible connection

## OPTIONAL EQUIPMENT

- PMG
- Alternator dehumidifiers
- Differential protection
- Alternator diode protection
- Sound isolation booths and containers
- Three- way catalysator converter
- Clinder knock control equipment
- Active AFR control
- Remote monitoring through internet
- Automatic oil discharge and completion
- Reverse Osmosis water purification system
- Medium voltage equipment
- Sprinkling tropical type heat mediator
- Seismic warning system
- Control panel heater
- Surge relay (ROCOF) and detonation system
- Availability Assurance

### Documentation

- Operation and maintenance guide
- Spare parts catalogue
- System drawing and design




**POWER PACKS**

1. Alternator
2. Gas Engine
3. Emergency Remote Radiator
4. Electric Motor Pumps
5. Heat Exchanger
6. 3 Way Catalytic Converter
7. Butterfly Emergency bypass dampers
8. Silencer Chimenea
9. Flare Stack
10. Blower

# POWERFUL SOLUTIONS FOR DIFFERENT SECTORS

**Tuzla State Hospital** / Istanbul

2 x 400 kW
Trigeneration System


**ACITY OUTLET CENTER** / Ankara

4 x 500 kW
Trigeneration System

**T.I.G.E.M.** / Eskisehir

1 x 250 kW
Biogas Cogeneration System


**Izmir Bornova State Hospital** / Izmir

2 x 400 kW
Trigeneration System

**T.P.A.O. Silivri** / Istanbul


1 x 1240 kVA
Diesel Generator Set

**Shymkent Kus TOO** / Kazakhstan

1 x 1240 kVA
Diesel Generator Set

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**A.S.K.I** / Ankara
3 x 1000 kW
Biogas Cogeneration System

**GATA Hospital** / Ankara
2 x 600 kW
Trigeneration System
4 x 1650 kVA
Synchronized Diesel Generator Sets

**Kepez State Hospital** / Antalya
4 x 1650 kVA
Synchronized Diesel Generator Sets
2 x 400 kW Trigeneration System

**M.Akif Ersoy State Hospital** / Canakkale
2 x 500 kW
Trigeneration System
5 x 1130 kVA
Synchronized Diesel Generator Sets

**Dicle University** / Diyarbakır
1 x 7 kW
Biogas Cogeneration System

**Edirne Sultan 1. Murat State Hospital** / Edirne
2 x 430 kW
Trigeneration System

**Bioarma Energy Biogas Plant** / Gaziantep
2 x 499 kW
Biogas Cogeneration System

**Gaziantep State Hospital** / Gaziantep
2 x 800 kW
Trigeneration System
4 x 1900 kVA
Synchronized Diesel Generator Sets

**Beylikduzu State Hospital** / Istanbul
2 x 400 kW
Trigeneration System
3 x 1130 kVA
Synchronized Diesel Generator Sets

**Buyukcekmece State Hospital** / Istanbul
2 x 600 kW
Cogeneration System

**Istanbul Technical University** / Istanbul
1 x 30 kW
Biogas Cogeneration System

**Sariyer State Hospital** / Istanbul
2 x 430 kW
Trigeneration System
5 x 1130 kVA
Synchronized Diesel Generator Sets

**Izmir Torbalı State Hospital** / Izmir
2 x 350 kW
Trigeneration System

**Izmir Odemis State Hospital** / Izmir
2 x 350 kW
Trigeneration System
3 x 826 kVA
Synchronized Diesel Generator Sets

**Foca Criminal and Execution Institution** / Izmir
1 x 350 kW
Biogas Cogeneration System

**Kocaeli State Hospital** / Kocaeli
3 x 1425 kVA
Synchronized Diesel Generator Sets
2 x 260 kW
Trigeneration System

**Kiziltepe Wastewater Treatment Plant** / Mardin
2 x 500 kW
Biogas Cogeneration System

**Mugla State Hospital** / Mugla
2 x 500 kW
Trigeneration System
5 x 1130 kVA
Synchronized Diesel Generator Sets

**Nigeria Seplat Petroleum** / Nijerya
1 x 375 kVA
Diesel Generator Set

**Van Women's Diseases Hospital** / Van
2 x 880 kW
Trigeneration System

TEKSAN

KST-EN-DVB-1218-V06

AUTHORIZED DISTRIBUTOR

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