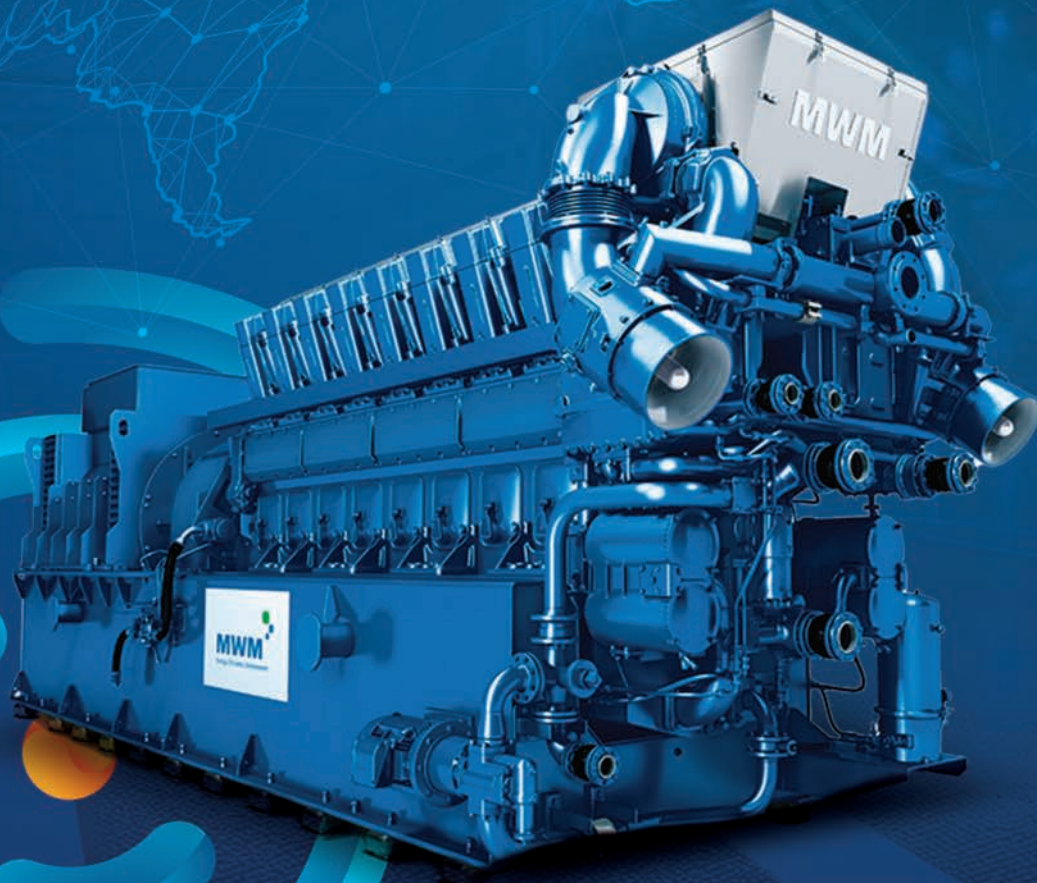


iL TEKNO

COGENERATION TRIGENERATION SYSTEMS



ADVANCED TECHNOLOGY
POSITIVE ENERGY

iltekno.com



With our **advanced technology solutions** and superior service quality, we provide **positive energy** for a **sustainable future** across the globe.



iL TEKNO

iltekno.com

**ADVANCED TECHNOLOGY
POSITIVE ENERGY**



İLTEKNO



İlteknö, as one of the five subsidiaries of **Enso Holding**, prioritizes customer satisfaction while providing engineering, design, procurement, installation, commissioning, and after-sales services.

With over 350 projects completed in 25 countries across 4 continents, it has achieved an installed capacity exceeding 2.400 MW.

İlteknö specializes in electricity generation, offering a comprehensive range of solutions including cogeneration (CHP) and trigeneration (CCHP) plants. The company designs and implements power generation systems that utilize fossil fuels like natural gas as well as renewable gases such as biogas, wastewater treatment plant (WWTP) gas, and landfill gas. Additionally, builds HFO and diesel power plants. The company also offers advanced power plant automation systems and solar power plants. In 2020, **İlteknö** was authorized as '**Recognized Solutions Provider**' by **MWM**.

In 2021, **İlteknö** expanded its portfolio by venturing into solar energy projects, successfully developing over 350 MW of capacity and installing solar power plants exceeding 45 MW. With 35 years of expertise, the company specializes in maintenance and commissioning services for power plants. Its globally distributed workshops and warehouses ensure rapid and efficient after-sales support. Furthermore, **İlteknö** has partnered with Petrol Ofisi to become the exclusive distributor of **Texaco** gas engine oils and antifreeze, one of the world's leading brands, for Türkiye and Cyprus.



ENERGY MEETS THE WORLD

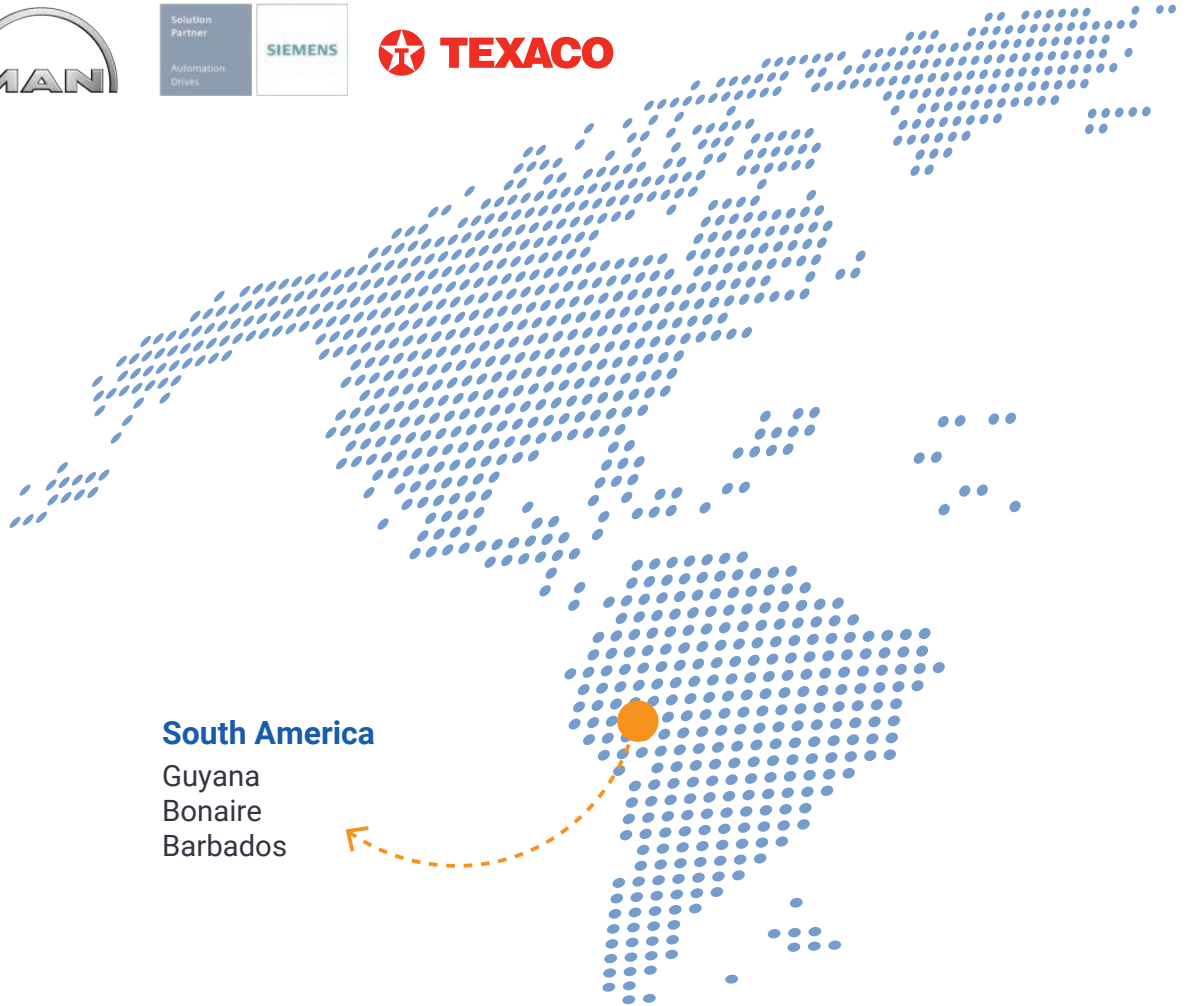
From our headquarters in İstanbul, İlteknö delivers comprehensive solutions for project design, implementation, and commissioning. With factories, project sites, and a service - maintenance network spanning various regions, we bring our positive energy to the global stage.

Offices

- İstanbul, Türkiye - 1.000 m²
- Amsterdam, Netherlands - 100 m²
- Tashkent, Uzbekistan - 250 m²
- Tunis, Tunisia - 50 m²

Factories

- Kocaeli, Türkiye: Container Production Facility (2,000 m² indoor + 2,000 m² outdoor area)
- Kocaeli, Türkiye: Service and Automation Facility (2,000 m² indoor area + 800 m² office space)
- Gaziantep, Türkiye: Service, Maintenance and Stock Center (550 m² indoor area)
- Tashkent, Uzbekistan: Service, Maintenance and Stock Center (900 m² indoor area)



South America

Guyana
Bonaire
Barbados



İLTEKNO

4
CONTINENTS

25
COUNTRIES

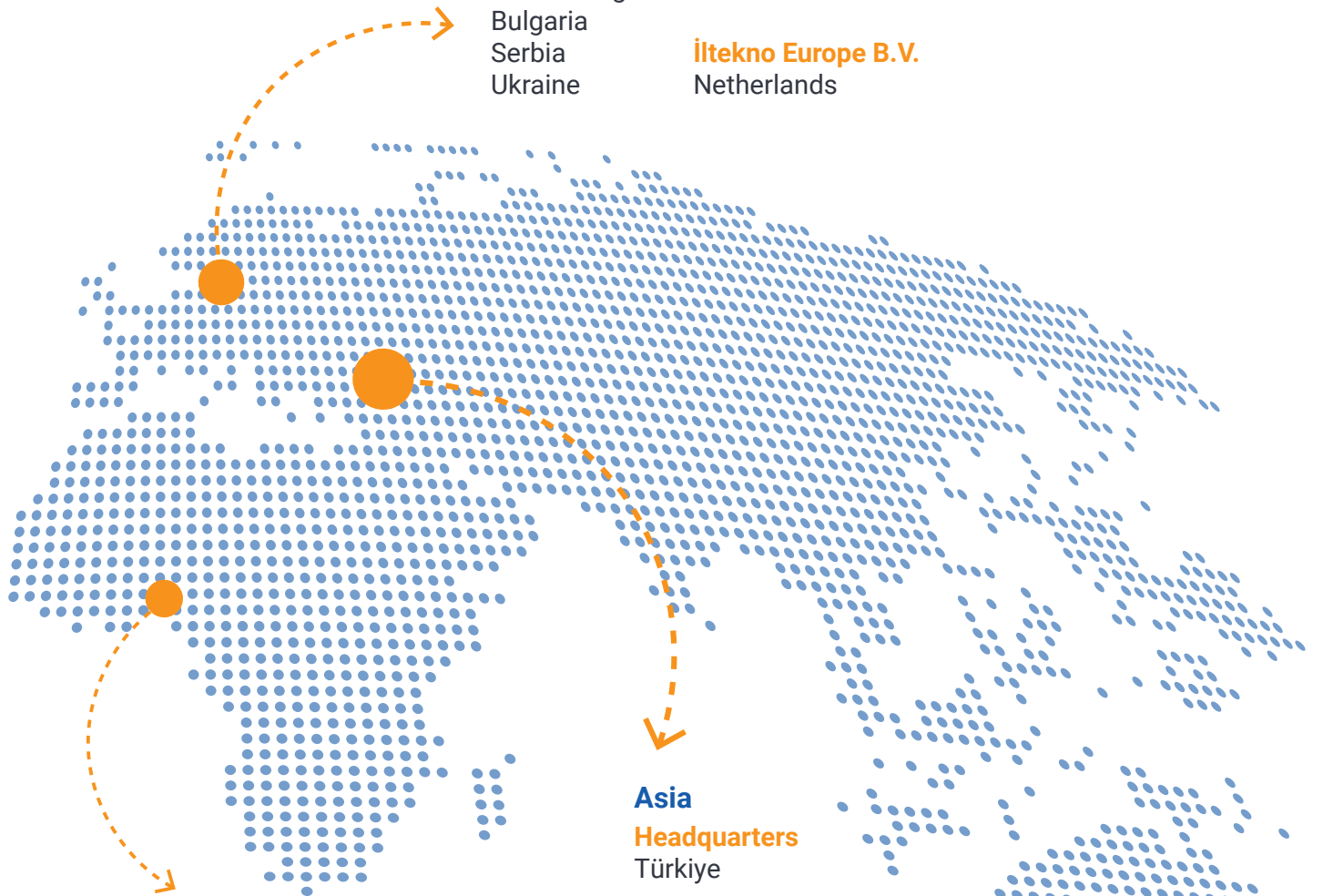
350
PROJECTS

OVER
2.400 MW
INSTALLED CAPACITY

Europe

United Kingdom
Bulgaria
Serbia
Ukraine

İlteknno Europe B.V.
Netherlands



Africa

Sierra Leone
Nigeria
Egypt
Mauritania
Algeria

Branch / Service

Guinea
Tunisia

Asia

Headquarters
Türkiye

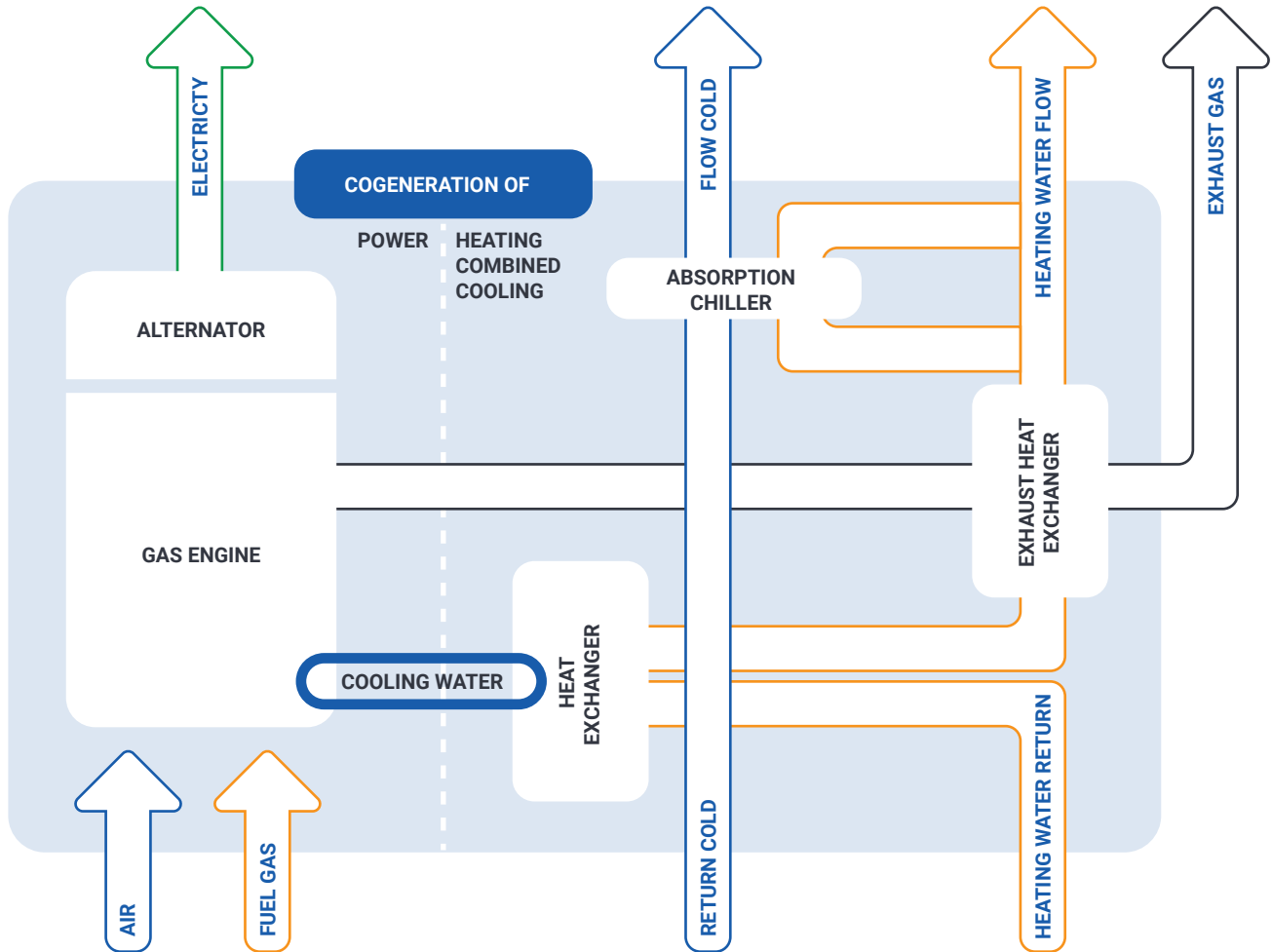
Iraq
Pakistan
Jordan
Georgia
Cyprus
Palestine
Kazakhstan

Branch / Service

Uzbekistan

COGENERATION SYSTEMS (CHP)

Cogeneration systems generate electricity and heat from a single fuel source, optimizing energy production with high efficiency. Trigeneration systems take this a step further by incorporating cooling functionality into the same production process, delivering a more comprehensive energy solution. By recovering energy, these systems provide an environmentally friendly option, making them ideal for facilities with high energy demands.



APPLICABLE FUEL TYPES

Biogas Natural Gas WWTP Landfill Hybrid
 Propane LNG LPG Flare Gas Mine Gas Hydrogen

EXHAUST GAS

450 °C

HOT WATER
HOT OIL
STEAM

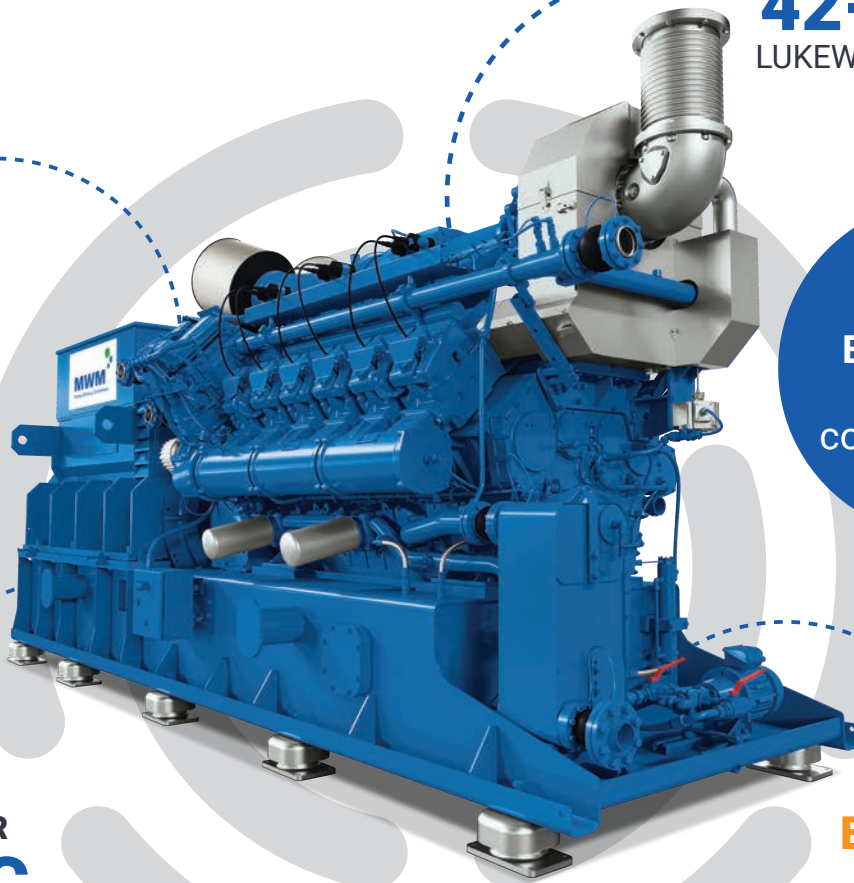
INTERCOOLER
42-45 °C
LUKEWARM WATER

%90
EFFICIENCY
with
combined heat
and power

~~**%63**
EFFICIENCY
with conventional
power production~~

ELECTRICITY
LV-MV

JACKET WATER
78-90 °C
HOT WATER



Traditional systems that generate energy separately from multiple sources can achieve efficiencies of up to 63% for electricity, heat, and cooling needs. In comparison, Iltekno's combined heat and power systems offer energy efficiencies of up to 90%, providing a more effective solution for these requirements.

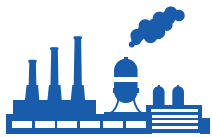
SYSTEM COMPONENTS

- Radiator/Dry Cooler Cooling Group
- Waste Heat Recovery System (Plate heat exchangers, Boilers; hot water, steam, thermal oil)
- Gas Train/Pipeline Systems
- Exhaust Ducts and Stacks
- Pre-Lubrication System
- Ventilation System
- Control and Automation Systems
- Absorption Chiller and Cooling Tower Systems (Trigeneration)

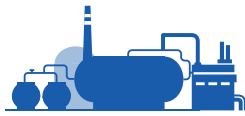
MAIN SECTORS

Cogeneration and trigeneration systems offer optimal solutions for energy efficiency in facilities and sectors with high demands for electricity, heat, and cooling. By facilitating the recovery of waste energy in areas of intensive consumption, these systems minimize energy losses and reduce operational costs.

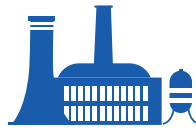
Both systems support sustainability goals by lowering carbon emissions, playing a strategic role in sectors where energy efficiency is a priority and environmentally friendly practices are encouraged.



Factories



Waste Water Treatment Plant (WWTP)



Biogas Powerplant



Mining



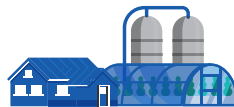
Independent Power Plants



Hotels



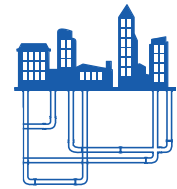
Shopping Malls



Greenhouses



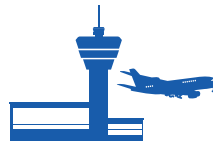
Office Complexes



District Heating



Hospitals



Airports



Landfill



SYSTEM ADVANTAGES

- Simultaneous production of electricity and heat from a single source.
- Higher efficiency and lower natural gas consumption compared to natural gas-fired thermal power plants.
- Reliable and uninterrupted supply of stable electricity, unaffected by fluctuations in grid frequency.
- Reduced losses through shorter electricity transmission and distribution distances.
- Lower energy costs and high savings.
- Environmentally friendly energy production with a reduced carbon footprint.
- Ability to support the regional electrical grid by feeding excess electricity back into the network.
- On-site production of electricity and heat in areas without access to the electrical grid.
- Enhanced national security by generating electricity closer to consumption points through smaller cogeneration plants rather than relying on large central power plants.
- Additional electricity production in regions with infrastructure suitable for district heating systems.



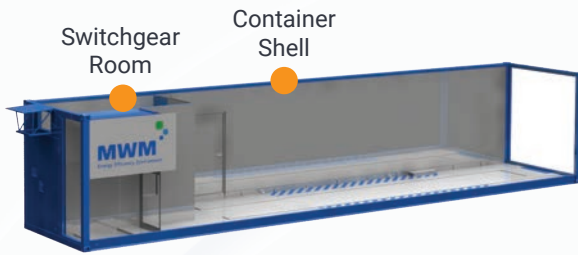
PROJECT OPERATIONS

- Preliminary feasibility study
- Project drawings
- Detailed feasibility for facilities and sites
- Detailed project design (electrical - mechanical)
- Turnkey site assembly
- Testing and commissioning
- Technical team training program
- Maintenance and long term service agreement (LTSA)



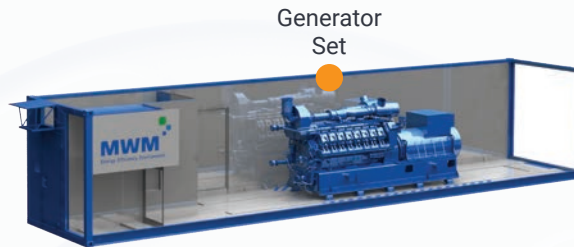
CAPABILITIES & ENGINEERING

CONTAINERIZATION AND MODULAR SOLUTIONS TIMELINE

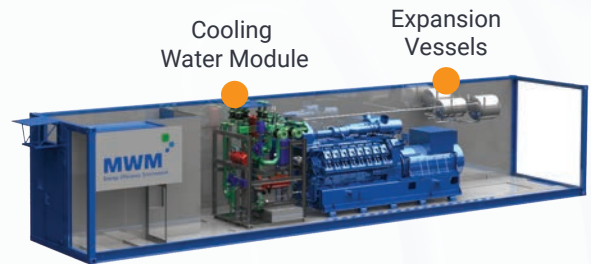


Preparation of Container
Week 2/8

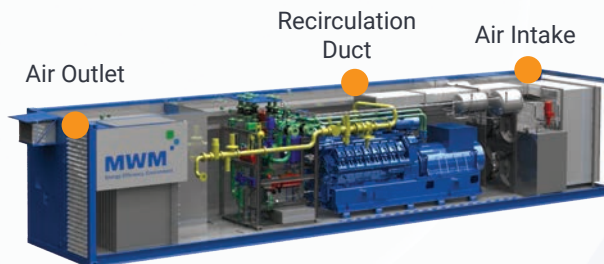
Installation of Genset
Week 3/8



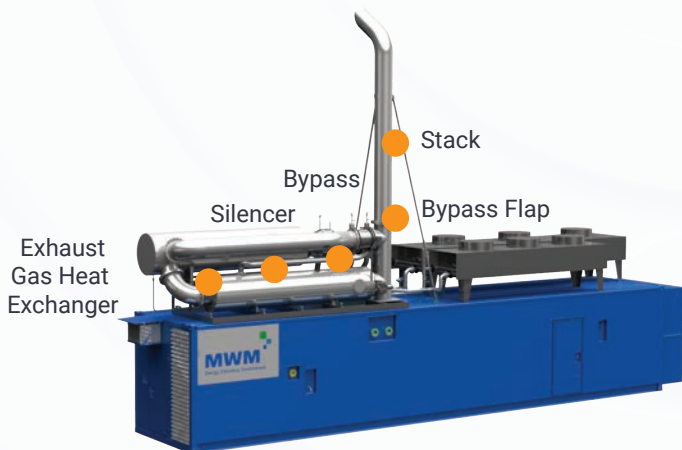
Installation of Skid
Week 5/8 – Simple Cycle



Installation of Auxiliary
Week 6/8



Installation of HRS
Week 7/8



Complete Plug & Play
Week 8/8 – Heat Recovery



Simple Package, Easy Transportation

In areas without energy infrastructure, integrating mobile energy production systems allows us to provide a continuous and reliable energy source. Containerized gas generators, along with mobile cogeneration and trigeneration units, enable facilities to meet their energy needs independently, without dependence on regional energy networks, utilizing a single fuel source. These systems are customizable based on environmental conditions and can be rapidly deployed in emergencies to support the region's energy infrastructure.



CONTROL PANELS

Ensuring continuous and efficient electricity production requires careful inspection and protection of generators and auxiliary systems, both of which are critically important. Iitekno has extensive experience in control, security, and monitoring systems for power plants and industrial facilities.



Our control panels enable you to increase system efficiency by utilizing advanced technologies in power management, synchronization, energy, and process automation.

AUTOMATION SYSTEMS

Iitekno provides tailored SCADA and process automation systems designed to automate critical processes such as energy distribution, load management and generator protection in power plants and industrial facilities. Customized to meet the specific needs of each facility, these systems ensure reliable and efficient operation.

Energy Automation & SCADA Systems

- Power Distribution Control Systems
- Alarm Warning Systems
- Synchronization Systems
- Load Management Systems
- Automatic Voltage Regulator (AVR) Control Systems
- Generator Protection Systems
- Hybrid Automation Systems
- Solar Power Plant SCADA Systems

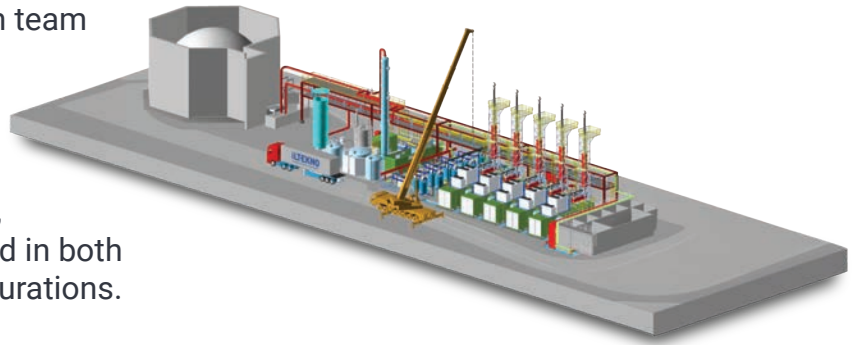
Process Automation and Control Systems

- Boiler Control Systems
- Chiller Control Systems
- Production Line Control Systems
- Storage Tank Control Systems



DESIGN SOLUTIONS

İlteknö's project management and design team specializes in developing state-of-the-art energy production facilities across various industries. Project designs are entirely managed by İlteknö, from initial concept to commissioning. Furthermore, medium-sized generators can be installed in both containerized cabins and building configurations.



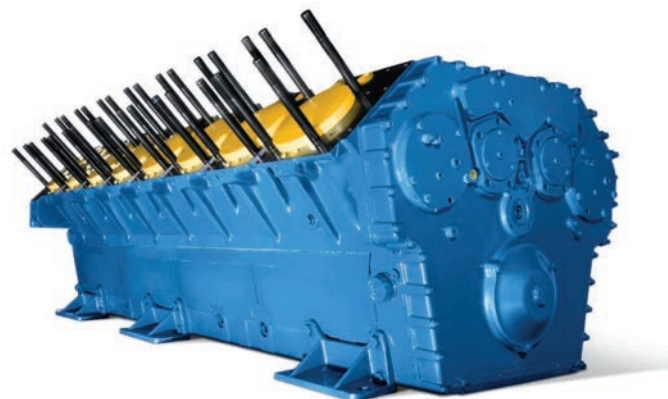
AFTER-SALES SERVICES

İlteknö Service Department, backed by an experienced team authorized by MWM and a strong commitment to customer satisfaction, delivers uninterrupted and high-quality service for MWM gas engines through our 11 service points worldwide.

Our service quality has been certified with the highest scores through success certificates awarded based on evaluations conducted among MWM's distributors worldwide.

Our Service Solutions

- Long-Term Service Contracts
- Commissioning Services
- Maintenance Services
- Major Overhauls
- Remote Support (24/7)
- Spare Parts Supply
- Lubricating Oil and Antifreeze Supply
- Feasibility Consulting
- Facility Operation Training



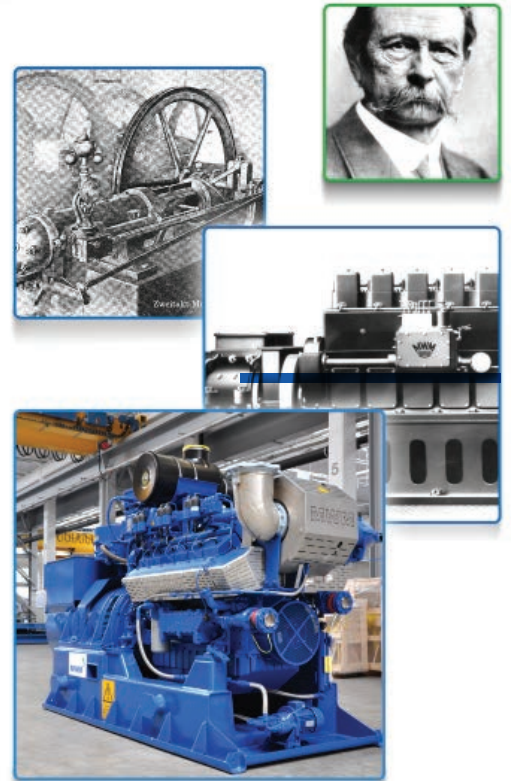
Major Brand With 150 Years of Experience in Distributed Energy Generation

150  years of continuous innovation

Since 1871, we have been developing and producing sustainable gas engines and gensets in Mannheim. With its MWM brand, Caterpillar Energy Solutions can look back on a tradition more than 150 years old, always guided by the pioneer spirit of our founders, Carl Benz and August Ritter. The enthusiasm and innovative strength of our engineers have always continued to yield new cutting-edge solutions. They contributed to MWM's becoming what it is today, one of the leading and most renowned brands in the field of gas engines and gensets.

We thus continued to improve the output rating, efficiency and reliability of the MWM cogeneration systems and gas engines that are distributed from Mannheim throughout the globe today. The result: We have become one of the world's leading suppliers of highly efficient and eco-friendly complete systems for distributed energy and heat generation (combined heat and power, cogeneration systems).

With our deep understanding of the entire value chain, we are a reliable partner in the development of customized and efficient energy solutions.



Energy on a new level.

Efficient, eco-friendly solutions for decentralized energy generation.



TCG 3016

Robust. Efficient. Digital

Developed from scratch, this series features greatly reduced operating and installation costs and a fully digitized power plant control.

TCG 2032

Available, reliable, uncomplicated

Along with low installation costs. All gas types: natural gas, landfill gas, sewage gas, mine gas, coking gas, biogas. Especially for large IPP projects with up to 100 MW_{el}.

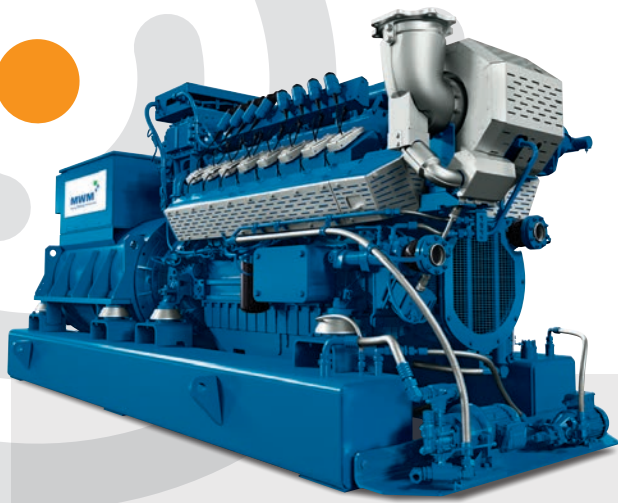
TCG 3020

The all-round talent

State-of-the-art technology ensures improved performance and efficiency along with a compact design and focus on flexibility. Equipped with the smart and secure TPEM (Total Plant & Energy Management) control, the new TCG 3020 series delivers maximum profitability and reliability.

TPEM. The door to the digital age.

- ✓ Reliable system monitoring and control, also via remote access
- ✓ Used in the new series for all numbers of cylinders and all designs, with a wide range of functions
- ✓ Ensures high profitability through an expanded product scope, standardized hardware, and quick, guided commissioning
- ✓ Ready for quick and easy scaling



Robust. Efficient. Digital.

The TCG 3016 is the first of a new generation: State-of-the-art components and the TPEM (Total Plant & Energy Management) control ensure maximum reliability and availability. The improved oil management and optimized cylinder and turbochargers set new standards in terms of durability and reliability.

Technical data 50 Hz

| Engine type | TCG 3016 | V08 | V12 | V16 | V16 |
|----------------------|-------------------|---------|---------|---------|---------|
| Bore/stroke | mm | 132/160 | 132/160 | 132/160 | 132/160 |
| Displacement | dm ³ | 17.5 | 26.3 | 35.0 | 35.0 |
| Speed | min ⁻¹ | 1,500 | 1,500 | 1,500 | 1,500 |
| Mean piston speed | m/s | 8.0 | 8.0 | 8.0 | 8.0 |
| Length ¹⁾ | mm | 3,100 | 3,830 | 4,200 | 4,200 |
| Width ¹⁾ | mm | 1,780 | 1,780 | 1,780 | 1,780 |
| Height ¹⁾ | mm | 2,150 | 2,150 | 2,150 | 2,150 |
| Dry weight genset | kg | 5,720 | 7,000 | 8,070 | 8,560 |

Natural gas applications

NO_x ≤ 500 mg/Nm³²⁾

| Engine type | TCG 3016 | V08 | V12 | V16 | V16 |
|-------------------------------------|----------|-----------------|-----------------|-----------------|-----------------|
| Configuration | | P ⁵⁾ | P ⁵⁾ | P ⁵⁾ | S ⁶⁾ |
| Electrical power ³⁾ | kW | 400 | 600 | 800 | 1,000 |
| Mean effective pressure | bar | 18.9 | 18.9 | 18.8 | 23.5 |
| Thermal output ⁴⁾ | ±8% kW | 404 | 617 | 819 | 1,123 |
| Electrical efficiency ³⁾ | % | 43.1 | 43.4 | 43.6 | 41.5 |
| Thermal efficiency ³⁾ | % | 43.6 | 44.6 | 44.6 | 46.6 |
| Total efficiency ³⁾ | % | 86.7 | 88.0 | 88.2 | 88.1 |

Biogas applications

NO_x ≤ 500 mg/Nm³²⁾

Sewage gas (65% CH₄ / 35% CO₂)

Biogas (60% CH₄ / 32% CO₂, Rest N₂)

Landfill gas (50% CH₄ / 27% CO₂, Rest N₂)

Minimum heating value H_U = 5.0 kWh/Nm³

| Engine type | TCG 3016 | V08 | V12 | V16 |
|-------------------------------------|----------|-----------------|-----------------|-----------------|
| Configuration | | X ⁷⁾ | X ⁷⁾ | X ⁷⁾ |
| Electrical power ³⁾ | kW | 400 | 600 | 800 |
| Mean effective pressure | bar | 18.9 | 18.9 | 18.8 |
| Thermal output ⁴⁾ | ±8% kW | 394 | 598 | 790 |
| Electrical efficiency ³⁾ | % | 42.8 | 42.9 | 43.2 |
| Thermal efficiency ³⁾ | % | 42.2 | 42.8 | 42.7 |
| Total efficiency ³⁾ | % | 85.0 | 85.7 | 85.9 |

1) Transport dimensions for gensets, components set up separately must be taken into consideration.

2) NO_x ≤ 500 mg/Nm³; exhaust gas dry at 5% O₂.

3) According to ISO 3046-1 at U = 0.4 kV, cosφ_{hi} = 1.0 for 50 Hz, a minimum methane number of MN 70 (V08, V12, V16) and MN 80 (V16 Configuration S) for natural gas and MN 134 (sewage gas) for biogas applications.

4) Exhaust gas cooled to 120 °C for natural gas and 150 °C for biogas.

5) P = High Efficiency. Optimized for high electrical efficiency.

6) S = High Density. Increased power density.

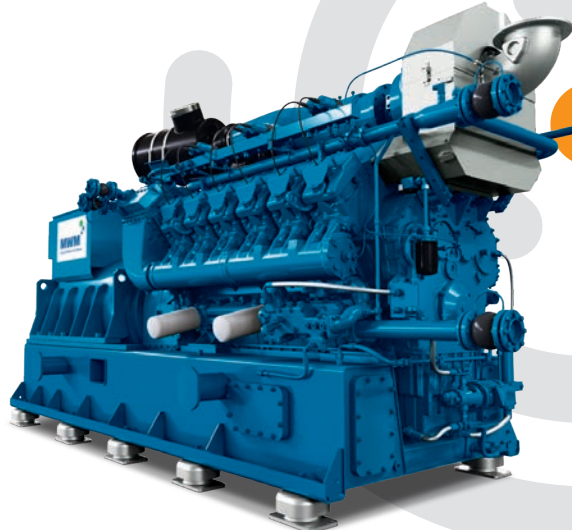
7) X = Biogas. Optimized for operation with biogases.

Data for special gases and dual gas operation on request.

The values given on these datasheets are for information purposes only and not binding. The information given in the offer is decisive.

Our experience for your success.

The TCG 2020. Top performance from MWM - used successfully worldwide.
For natural gas and biogas with an output from 1,000 to 1,560 kWel
Top marks for ecology and economy.



Technical data 50 Hz

| Engine type | TCG 2020 | V12 | V12 K1 | V12 K | V12 | V16 K | V16 |
|----------------------|-------------------|---------|---------|---------|---------|---------|---------|
| Bore/stroke | mm | 170/195 | 170/195 | 170/195 | 170/195 | 170/195 | 170/195 |
| Displacement | dm ³ | 53.1 | 53.1 | 53.1 | 53.1 | 70.8 | 70.8 |
| Speed | min ⁻¹ | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| Mean piston speed | m/s | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 |
| Length ¹⁾ | mm | 4,660 | 4,660 | 4,790 | 4,790 | 5,430 | 5,430 |
| Width ¹⁾ | mm | 1,810 | 1,810 | 1,810 | 1,810 | 1,810 | 1,810 |
| Height ¹⁾ | mm | 2,210 | 2,210 | 2,210 | 2,210 | 2,210 | 2,210 |
| Dry weight genset | kg | 11,200 | 11,200 | 11,700 | 11,700 | 13,300 | 13,300 |

Natural gas applications

NO_x ≤ 500 mg/Nm³²⁾

| Engine type | TCG 2020 | V12 | V12 K1 | V12 K | V12 | V16 K | V16 |
|-------------------------------------|----------|------------------|------------------|-----------------|-----------------|-----------------|-----------------|
| Configuration | | RW ⁵⁾ | KW ⁶⁾ | K ⁷⁾ | R ⁸⁾ | K ⁷⁾ | R ⁸⁾ |
| Electrical power ³⁾ | kW | 1,000 | 1,000 | 1,125 | 1,200 | 1,500 | 1,560 |
| Mean effective pressure | bar | 15.5 | 15.5 | 17.4 | 18.6 | 17.5 | 18.1 |
| Thermal output ⁴⁾ | ±8% kW | 1,056 | 1,191 | 1,267 | 1,189 | 1,688 | 1,576 |
| Electrical efficiency ³⁾ | % | 43.0 | 40.0 | 40.7 | 43.7 | 40.8 | 43.3 |
| Thermal efficiency ³⁾ | % | 45.4 | 47.6 | 45.8 | 43.3 | 45.9 | 43.8 |
| Total efficiency ³⁾ | % | 88.4 | 87.6 | 86.6 | 87.0 | 86.7 | 87.1 |

Biogas applications

NO_x ≤ 500 mg/Nm³²⁾

Sewage gas (65% CH₄ / 35% CO₂)

Biogas (60% CH₄ / 32% CO₂, Rest N₂)

Landfill gas (50% CH₄ / 27% CO₂, Rest N₂)

| Engine type | TCG 2020 | V12 | V12 | V16 |
|-------------------------------------|----------|------------------|------------------|------------------|
| Configuration | | XW ⁹⁾ | X ¹⁰⁾ | X ¹⁰⁾ |
| Electrical power ³⁾ | kW | 1,000 | 1,200 | 1,560 |
| Mean effective pressure | bar | 15.5 | 18.6 | 18.1 |
| Thermal output ⁴⁾ | ±8% kW | 1,035 | 1,192 | 1,566 |
| Electrical efficiency ³⁾ | % | 42.6 | 43.0 | 42.7 |
| Thermal efficiency ³⁾ | % | 44.1 | 42.7 | 42.9 |
| Total efficiency ³⁾ | % | 86.7 | 85.7 | 85.6 |

1) Transport dimensions for gensets, components set up separately must be taken into consideration.

2) NO_x ≤ 500 mg/Nm³; exhaust gas dry at 5% O₂

3) According to ISO 3046-1 at U = 0.4 kV, cosφ = 1.0 for 50Hz and a methane number of MN 80 (TCG 2020) or MN 70 (TCG 2020K) for natural gas.

4) Exhaust gas cooled to 120 °C for natural gas and 150 °C for biogas.

5) RW = High Response for Requested Power. Optimized for high total efficiency at requested power.

6) KW = Robustness for Requested Power. Optimized for robustness and low CAPEX at requested power.

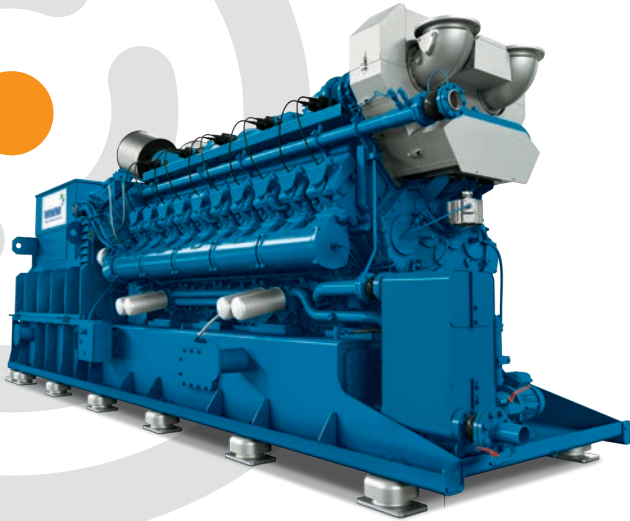
7) K = Robustness. Optimized for robustness and low CAPEX.

8) R = High Response. Optimized for high total efficiency.

9) XW = Biogas for Requested Power. Optimized for operation with biogas at requested power.

10) X = Biogas. Optimized for operation with biogas.

Data for special gas and dual gas operation on request. The values given on these datasheets are for information purposes only and not binding. The information given in the offer is decisive.



Flexible in application. Consistent in efficiency.

State-of-the-art components providing more power: the compact design, a focus on a wide range of applications and high efficiency values make sure of that. Controlled by the smart and secure TPEM (Total Plant & Energy Management), the new TCG 3020 series offers highest profitability and reliability.

Technical data 50 Hz (NO_x ≤ 500 mg/Nm³)

| TCG 3020 Series | | V12 | V12 | V16 | V16 | V20 | V20 | V20 | V20 |
|----------------------|-------------------|---------|--------|--------|--------|--------|--------|--------|--------|
| Bore/stroke | mm | 170/195 | | | | | | | |
| Displacement | dm ³ | 53.0 | 53.0 | 71.0 | 71.0 | 89.0 | 89.0 | 89.0 | 89.0 |
| Engine speed | min ⁻¹ | 1,500 | | | | | | | |
| Mean piston speed | m/s | 9.8 | | | | | | | |
| Length ⁶⁾ | mm | 5,080 | 5,080 | 6,100 | 6,100 | 6,600 | 6,600 | 6,983 | 6,983 |
| Width ⁶⁾ | mm | 1,815 | | | | | | | |
| Height ⁶⁾ | mm | 2,190 | 2,190 | 2,190 | 2,190 | 2,190 | 2,190 | 2,385 | 2,385 |
| Dry weight genset | kg | 12,900 | 12,900 | 17,400 | 17,400 | 21,400 | 21,400 | 16,965 | 16,965 |

Natural gas applications

| TCG 3020 Series | | V12 | V12 | V16 | V16 | V20 | V20 | V20 | V20 |
|-------------------------------------|--------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|
| Configuration | | P ²⁾ | R ³⁾ | P ²⁾ | R ³⁾ | P ²⁾ | R ³⁾ | PV ⁴⁾ | RV ⁵⁾ |
| Electrical power ⁷⁾ | kW | 1,380 | 1,380 | 1,840 | 1,840 | 2,300 | 2,300 | 2,000 | 2,000 |
| Mean effective pressure | bar | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 18.6 | 18.6 |
| Thermal output ⁸⁾ | ±8% kW | 1,296 | 1,369 | 1,755 | 1,824 | 2,164 | 2,281 | 1,949 | 2,026 |
| Electrical efficiency ⁷⁾ | % | 45.0 | 44.0 | 44.7 | 44.0 | 45.0 | 44.0 | 44.4 | 43.7 |
| Thermal efficiency ⁷⁾ | % | 42.3 | 43.6 | 42.6 | 43.6 | 42.3 | 43.6 | 43.3 | 44.2 |
| Total efficiency ⁷⁾ | % | 87.3 | 87.6 | 87.3 | 87.6 | 87.3 | 87.6 | 87.7 | 87.9 |

Biogas applications

Sewage gas (65% CH₄ / 35% CO₂)
Biogas (50% CH₄ / 50% CO₂)
Landfill gas (50% CH₄ / 27% CO₂, Rest N₂)

| TCG 3020 Series | | V12 | V16 | V20 | V20 |
|-------------------------------------|--------|-----------------|-----------------|-----------------|-------------------|
| Configuration | | X ⁹⁾ | X ⁹⁾ | X ⁹⁾ | XV ¹⁰⁾ |
| Electrical power ⁷⁾ | kW | 1,380 | 1,840 | 2,300 | 2,000 |
| Mean effective pressure | bar | 21.5 | 21.5 | 21.5 | 18.6 |
| Thermal output ⁸⁾ | ±8% kW | 1,351 | 1,802 | 2,254 | 2,015 |
| Electrical efficiency ⁷⁾ | % | 43,6 | 43,6 | 43,6 | 43,2 |
| Thermal efficiency ⁷⁾ | % | 42,7 | 42,7 | 42,9 | 43,5 |
| Total efficiency ⁷⁾ | % | 86.3 | 86.3 | 86.5 | 86.7 |

Propane gas applications

| TCG 3020 Series | V20 |
|-------------------------------------|----------------------|
| Bore/stroke | 170/195 |
| Displacement | 89.0 |
| Engine speed | 1,500 |
| Mean piston speed | 9.8 |
| Length ⁶⁾ | 6,500 |
| Width ⁶⁾ | 1,815 |
| Height ⁶⁾ | 2,190 |
| Dry weight genset | 17,980 |
| Configuration | Z ¹¹⁾ |
| Electrical power ⁷⁾ | 1,880 ¹²⁾ |
| Mean effective pressure | 17.5 |
| Thermal output ⁸⁾ | 2,063 |
| Electrical efficiency ⁷⁾ | 41.8 |
| Thermal efficiency ⁷⁾ | 45.9 |
| Total efficiency ⁷⁾ | 87.7 |

1) NO_x ≤ 250 mg/Nm³; exhaust gas dry at 5% O₂
2) P = High Efficiency. Optimized for high electrical efficiency.
3) R = High Response. Optimized for high total efficiency.
4) PV = High Efficiency for Requested Power. Optimized for high electrical efficiency at requested power.
5) RV = High Response for Requested Power. Optimized for high total efficiency at requested power.
6) Transport dimensions for gensets, components set up separately must be taken into consideration.

7) According to ISO 8528-1 at U = 0.4 kV, cosphi = 1.0 for 50 Hz, a methane number of MN 80 for natural gas, MN 34 for propane and MN 134 (sewage gas) for biogas applications.
8) Exhaust gas cooled to 120 °C for natural gas and 150 °C for biogas.
9) X = Biogas. Optimized for operation with biogases.
10) XV = Biogas for Requested Power. Optimized for operation with biogases at requested power.

11) Z = Propane. Optimized for operation with propane.
12) 1,880 kW_e is also achieved with natural gas applications.

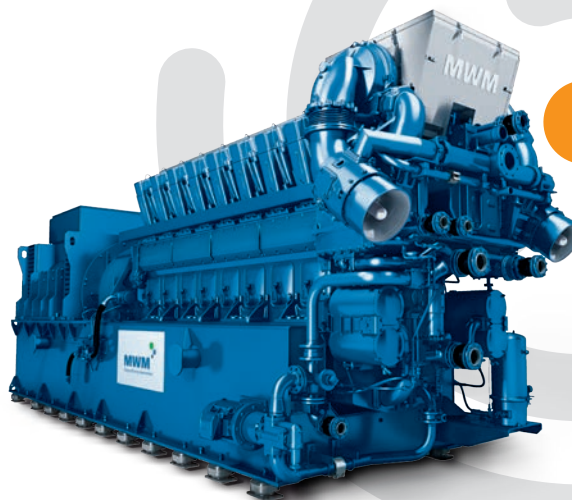
Data for special gases and dual gas operation on request.

The values given on these datasheets are for information purposes only and not binding. The information given in the offer is decisive.

TCG 2032

Efficiency on a new level.

The TCG 2032. Top performance from MWM – used successfully worldwide. For natural gas and biogas with an output from 3,300 to 4,500 kWel. Optimized reliability for your success.



Technical data 50 Hz

| Engine type | TCG 2032 | V12 | V16 | TCG 2032B V16 |
|----------------------|-------------------|---------|---------|---------------|
| Bore/stroke | mm | 260/320 | 260/320 | 260/320 |
| Displacement | dm ³ | 203.9 | 271.8 | 271.8 |
| Speed | min ⁻¹ | 1,000 | 1,000 | 1,000 |
| Mean piston speed | m/s | 10.7 | 10.7 | 10.7 |
| Length ¹⁾ | mm | 7,860 | 9,271 | 9,272 |
| Width ¹⁾ | mm | 2,660 | 2,790 | 2,790 |
| Height ¹⁾ | mm | 3,390 | 3,390 | 3,390 |
| Dry weight genset | kg | 43,100 | 51,200 | 51,400 |

Natural gas applications

NO_x ≤ 500 mg/Nm^{3 2)}

| Engine type | TCG 2032 | V12 | V16 | TCG 2032B V16 |
|-------------------------------------|-----------|-----------------|-----------------|-----------------|
| Configuration | | R ⁵⁾ | R ⁵⁾ | R ⁵⁾ |
| Electrical power ³⁾ | kW | 3,333 | 4,300 | 4,500 |
| Mean effective pressure | bar | 20.0 | 19.4 | 20.3 |
| Thermal output ⁴⁾ | ±8% kW | 3,238 | 4,164 | 4,361 |
| Electrical efficiency ³⁾ | % | 43.9 | 44.1 | 44.6 |
| Thermal efficiency ³⁾ | % | 42.6 | 42.7 | 43.2 |
| Total efficiency ³⁾ | % | 86.5 | 86.8 | 87.8 |

Biogas applications

NO_x ≤ 500 mg/Nm^{3 2)}

Sewage gas (65% CH₄ / 35% CO₂)

Biogas (60% CH₄ / 32% CO₂, Rest N₂)

Landfill gas (50% CH₄ / 27% CO₂, Rest N₂)

Minimum heating value H_U = 5.0 kWh/Nm

| Engine type | TCG 2032 | V16 |
|-------------------------------------|-----------|-----------------|
| Configuration | | X ⁶⁾ |
| Electrical power ³⁾ | kW | 3,770 |
| Mean effective pressure | bar | 17.0 |
| Thermal output ⁴⁾ | ±8% kW | 3,487 |
| Electrical efficiency ³⁾ | % | 42.9 |
| Thermal efficiency ³⁾ | % | 39.7 |
| Total efficiency ³⁾ | % | 82.7 |

1) Transport dimensions for gensets, components set up separately must be taken into consideration.

2) NO_x ≤ 500 mg/Nm³; exhaust gas dry at 5% O₂.

3) According to ISO 8528-1 at U = 11 kV, cosphi = 1.0 for 50 Hz and a minimum methane number of MN 70 for natural gas.

4) Exhaust gas cooled to 120 °C for natural gas and 180 °C for biogas.

5) R = High Response. Optimized for high total efficiency.

6) X = Biogas. Optimized for operation with biogases.

Data for special gases and dual gas operation on request.

The values given on these datasheets are for information purposes only and not binding. The information given in the offer is decisive.

REFERENCE PROJECTS

COGENERATION - TRIGENERATION

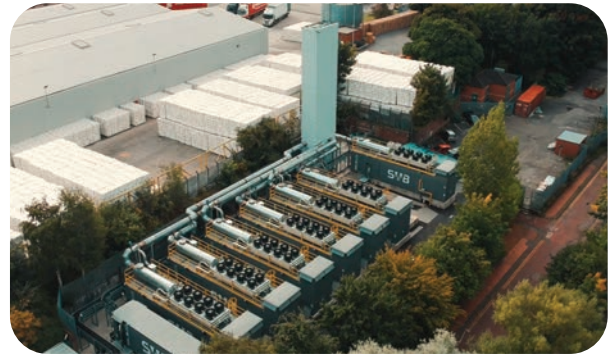
With 35 years of experience, İlteknö has successfully completed over 350 projects across 25 countries on 4 continents, achieving an installed capacity exceeding 2,400 MW. Prioritizing customer satisfaction in every project, we aim to maximize energy efficiency and sustainability. With our references, we strive to stay ahead and make a difference in every project.

British American Tobacco Trigeneration Project in Samsun



- 3rd largest fast moving consumer goods company in the Turkish Industry. Exports to 18 countries in the Middle East and North Africa.
- Genset: 3 x MWM TCG 2020 V16 that are containerized.
- Capacity of Power Plant in Facility: 4800 kWe / hour

SW Cogen Balance Power Plant in Liverpool



- The balance power plant consists of 7 x MWM TCG 2020 V20 gas engines.
- The installed capacity of the power plant is 14 MW in containerized form.
- The plant was completed for operation in 2020 which will be supporting the peak loads in the UK grid.

Çırağan Palace Kempinski Trigeneration Plant in Istanbul



- The Çırağan Palace project was commissioned in 2017 with 1 x MWM TCG 2020 V16 gas engine.
- The installed power is 1560 kWe.

Amman Power Generation Landfill Project in Jordan



- The installed power is 4,8 MW with a total number of 3 engines with the 2020 series.
- The landfill plant is located southeast of Amman, the capital of Jordan.

İLTEKNO

COGENERATION SYSTEMS

Cogeneration is a form of energy production that generates electricity and heat together, providing energy efficiency from a single fuel source. In this system, the heat generated during electricity production is utilized as hot water, steam, or hot oil to meet the thermal energy needs of the facility/building. Cogeneration can be utilized in buildings like hospitals, airports, malls.



ADVANCED TECHNOLOGY
POSITIVE ENERGY

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REFERENCE PROJECTS

OTHER BUSINESS AREAS

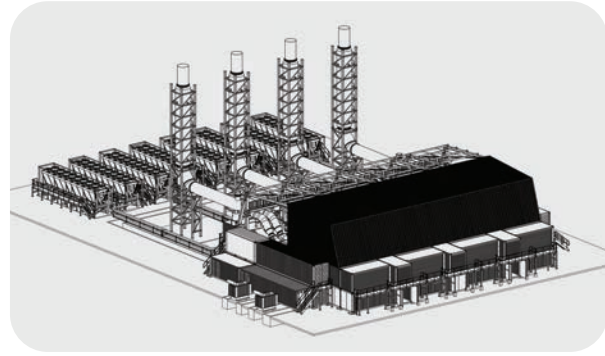
In addition to applications of gas engine cogeneration and trigeneration systems, we implement solar power plants (SPP), turnkey (EPC), and automation projects. We carry out feasibility preparation, project design, site assembly, testing, and commissioning phases tailored to your needs. Subsequently, we support your projects sustainably with technical team training programs and long-term maintenance and service agreements.

Ford Motor Automation Project Tank Storage Systems



We have developed a reliable monitoring and automation infrastructure for different types of chemicals and fuels that require precise storage.

Aggreko Engineering Solutions Modular Power Plant Detailed Design



- 4 x B36:45V20AG Bergen Engines
- Containerized power plant solution comprised by standard 20" and 40" containers
- Short installation duration compared to conventional type power plants

Aksa Energy EPC Project Bukhara 270 MW Relocation CCPP



Capacity: 270 MW
Engine: 28 x 20V34SG (Wartsila)
Turbine: 2 x 13 MW ST

Gümüşdoğa Solar Power Plant Ankara



- 36.107,5 kWp / 26.600,00 kWe capacity
- 65.650pcs. Schmid Pekintaş 550 Wp Bifacial PV Panels
- 80pcs. Sungrow 350 HX Inverters
- 5pcs. Astor 6.000 kVA Transformers
- 56.316.000 kWh Expected Annual Energy Production



HUMAN RIGHTS



LABOUR



ENVIRONMENT



ANTI-CORRUPTION

WE SUPPORT

OUR PRINCIPLE, MOVE FORWARD TOGETHER

İlteknö prioritizes customer satisfaction by providing an environmentally friendly and safe work environment that aligns with the integrated management system of ISO 9001, ISO 14001 and ISO 45001 standards. Since 2019, İlteknö has been a member of the United Nations Global Compact, the world's largest corporate sustainability initiative, which has over 20,000 signatories in more than 160 countries. Through its annual reports, İlteknö reaffirms its commitment to respecting human rights, protecting the environment, and combating corruption. The company takes proactive measures to prevent workplace accidents and environmental risks, continuously enhancing quality through regular audits and training to deliver sustainable solutions to its stakeholders.



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