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The MWM Container

Energy, efficiency, ecology –
all under one roof.



Profit

Service

Complete systems



140 years of experience with energy.

Thinking ahead about energy

Ever since 1871, MWM has been developing and building engines and gensets in Mannheim that can supply electricity, heat, and cooling highly efficiently. Our customers enjoy economical cost-to-performance throughout the entire lifecycle of the equipment. This applies not only to generating energy from traditional fossil resources. MWM is one of the world's leading specialists in special gases such as biogas, mine gas, and landfill gas.

Thinking ahead about efficiency

MWM's efficiency benefits pay off long-term for all of our customers. That's because components configured and tuned to their particular requirements provide the maximum possible efficiency. To this end we offer a comprehensive range of services that guarantee long-term efficiency.

Thinking ahead about ecology

Thanks to its fuel-saving technology, MWM is almost unequalled in the way it deals with natural resources. At MWM, ecology goes hand in hand with economy. Our objectives are responsibility and sustainability, and that pays off for our customers.



Everything under one roof: the MWM Container.

Ingeniously built:

- Welded steel construction with separate wall segments
- Container floor acts as an oil catch pan if required
- Heat and noise insulation to meet the most demanding standards, while saving space
- Slimline, smooth wall design enables maximum utilization of interior space
- Noise-insulated, air-conditioned switchgear room
- Circulating air facilitates ideal interior temperatures, even if outside temperatures are below 0 °C
- Cables routed beneath switchgear cabinets. Media connections for gas, lubricating oil, and heating water integrated into side-wall (DIN 2633 – PN16)
- Self-supporting roof frame. Pre-assembled in one piece for simple transport and fast erection

Quality from a single source:

- Container quality – made in Germany
- All components, control circuits, and regulatory circuits are perfectly matched
- Can be extended to form a complete solution, e.g. by including gas preprocessing and exhaust gas post-processing to meet emission requirements, as well as project-specific switchgear solutions
- International approvals, e.g. compliant with CE, GOST (Russia), CSA (Canada)

Worldwide service:

- Low-maintenance, service-friendly construction, standardized at 3 x 3 m (W x H)
- All installed equipment is easily accessible at all times
- Components for time-saving maintenance: rails for the quick installation and removal of the genset, and trusses for securing lifting gear
- Practical front door concept: the air intake can also be used to remove the genset quickly

The heart: MWM genset – ecology and economy in one.

Highly efficient – maximum profits

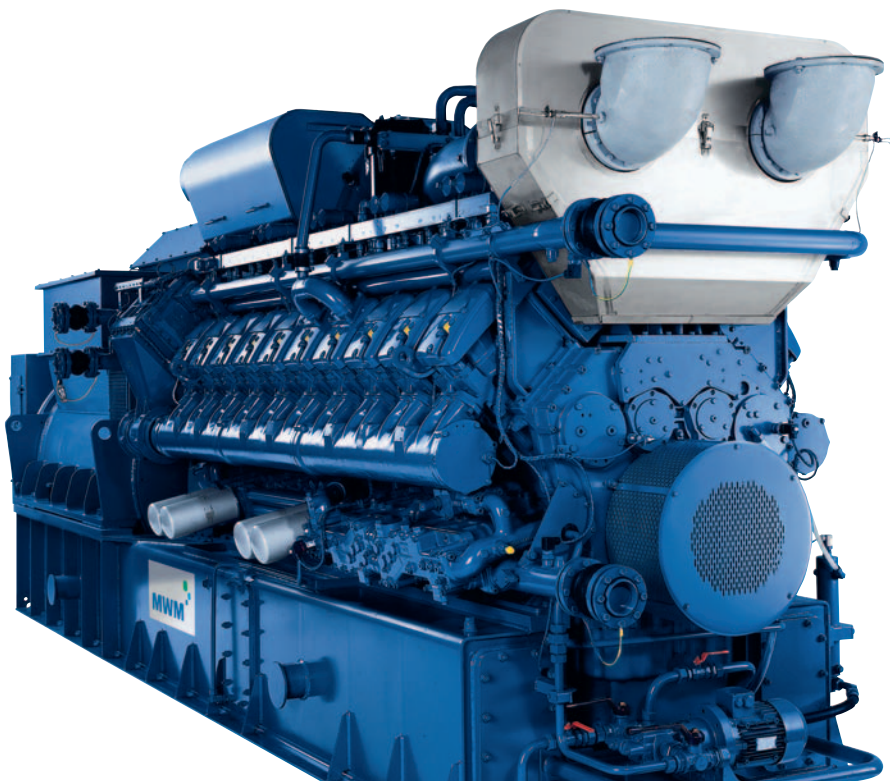
MWM gensets are reliable and highly efficient thanks to the way the intake duct, combustion chamber, and spark plugs are optimized. As a result you can save up to 15 % annually in fuel costs. Optimized engine parts also mean up to 50 % less lubricating oil is used than in other similar gensets.

Different engine derivatives to meet your needs

We can supply you with the engine that suits your needs perfectly. When it comes to power and available fuels, MWM engines can be adapted to a wide range of qualities of natural gas, biogas, and other special gases, depending on what you are going to use them for.

Performance-maximizing control concept

TEM (Total Electronic Management) controls not only the engine but the whole system, including the heat supply from cogeneration. Temperature monitoring for each cylinder and anti-knock control ensure the best possible utilization of fuel and maximum power output, even if gas composition fluctuates.



The MWM Container: used successfully all over the world.

BGA Anderlingen-Ohrel, Germany

The company Burfeindt-Tomforde Energieerzeugung relies on MWM. A TCG 2016 V08 C producing 400 kW_{e,l} generates 3,200 MWh of electricity and 2,552 MWh of heat each year. It is used to operate a biogas plant and to supply a district heating network. An integrated biogas processing system from MWM secures the emission reduction bonus provided by Germany's Renewable Energy Law.



Taiyuan City Coal Mine, China

MWM equipped Taiyuan's state coal mine with a total of three Type TCG 2020 V20 units. The system utilizes gases from the mine in order to generate electricity. This process obtained CDM certification and generates additional revenues from the sale of CO₂ certificates. The MWM Container made a good impression – and the operator has since ordered another four of the TCG 2020 V20.



Mannheim Sewage Works, Germany

Mannheim Sewage Works invested in an additional MWM Container fitted with the TCG 2020 V12 in order to convert its sewage gas into energy. In dual-gas operation – natural gas and sewage gas – it generates 1 MW_{e,l}. The heat generated heats the digestion tanks, thus reducing energy costs. The sewage works now has 5 MWM gensets, generating a total of 4.5 MW_{e,l}.



3 in 1: the MWM Container for biogas.

Enjoy triple efficiency: the MWM Container offers an efficient all-around package comprising biogas genset, standard container, and biogas preprocessing. The components can of course be used for setting up a plant inside a building as well.

MWM biogas genset:

- Ideally designed for the specialized requirements of biogas operation
- The chamber spark plugs and special piston are perfectly balanced, improving efficiency substantially
- Utilizes an exhaust turbocharger and controlled gas system designed by MWM especially for biogas gensets
- Advanced TEM controller for the complete genset

MWM standard container:

- 3 x 3 m (W x H) container with genset, peripheral equipment, and switchgear
- For efficient cogeneration applications: cooling water and exhaust gas heat exchanger in the heating circuit
- Can be fitted with a connection for propane fueling if required
- Roof fittings can be pre-fitted for truck transport and quick assembly, or supplied in modular form for containerized transport, for the lowest possible logistics costs

MWM biogas processing:

- Special gas processing system for biogas operation
- The advantage: increased life-span and low emission figures
- Compliance with the TA-Luft exhaust gas regulations
- Emission reduction bonus (using Germany as an example) for limiting formaldehyde by means of gas cool drying, compression (if necessary), active carbon desulfurization, and catalyzer



Technical data – TCG 2020

Natural gas applications

$\text{NO}_x \leq 500 \text{ mg/m}_n^3$

dry exhaust manifolds

Engine type		TCG 2020 V12		TCG 2020 V16		TCG 2020 V20	
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
Electrical power ¹⁾	kW	1200	1200	1560	1550	2000	2000
Thermal output ²⁾	±8 % kW	1197	1210	1586	1590	1990	2003
Electrical efficiency	%	43.7	43.1	43.3	42.8	43.7	43.2
Thermal efficiency	%	43.5	43.5	44.0	43.9	43.3	43.2

Biogas applications

$\text{NO}_x \leq 500 \text{ mg/m}_n^3$

Sewage gas (65 % CH_4 / 35 % CO_2)

Biogas (60 % CH_4 / 32 % CO_2 , rest N_2)

Landfill gas (50 % CH_4 / 27 % CO_2 , rest N_2)

Minimum heating value (LHV) $H_u = 5,0 \text{ kWh/m}_n^3$
dry exhaust manifolds

Engine type		TCG 2020 V12		TCG 2020 V16		TCG 2020 V20	
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
Electrical power ¹⁾	kW	1200	1200	1560	1550	2000	2000
Thermal output ²⁾	±8 % kW	1255	1268	1655	1662	2085	2107
Electrical efficiency	%	42.0	41.5	41.7	41.1	42.0	41.5
Thermal efficiency	%	43.9	43.9	44.2	44.1	43.8	43.7

Container dimensions (W x H x L)

TCG 2020 V12: 3.0 x 3.0 x 13.5 m

TCG 2020 V16: 3.0 x 3.0 x 14.0 m

TCG 2020 V20: 3.2 x 3.2 x 15.0 m

1) Electrical power as per ISO 3046; $\text{cos}\phi = 1.0$, generator voltage of $U = 0.4 \text{ kV}$ at 50 Hz or $U = 0.48 \text{ kV}$ at 60 Hz and a minimum methane number of MZ 80 for natural gas or a minimum heating value of 5.0 kWh/m_n^3 for biogas.

2) Exhaust gas cooled to $120 \text{ }^\circ\text{C}$ with natural gas and $150 \text{ }^\circ\text{C}$ with biogas.

Data for special gas and dual gas operation on request.

The values given in these data sheets are for information purposes only and not binding.

The information given in the offer is decisive.

Technical data – TCG 2016 C

Natural gas applications

$\text{NO}_x \leq 500 \text{ mg/m}_n^3$ ¹⁾

dry exhaust manifolds

Engine type		TCG 2016 V08 C		TCG 2016 V12 C		TCG 2016 V16 C	
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
Electrical power ²⁾	kW	400	400	600	600	800	800
Thermal output ³⁾	±8 % kW	427	447	654	680	855	892
Electrical efficiency	%	42.2	41.2	42.0	41.1	42.3	41.5
Thermal efficiency	%	45.0	46.0	45.7	46.6	45.2	46.2

Biogas applications

$\text{NO}_x \leq 500 \text{ mg/m}_n^3$ ¹⁾

Sewage gas (65 % CH_4 / 35 % CO_2)

Biogas (60 % CH_4 / 32 % CO_2 , rest N_2)

Landfill gas (50 % CH_4 / 27 % CO_2 , rest N_2)

Minimum heating value (LHV) $H_u = 5,0 \text{ kWh/m}_n^3$
dry exhaust manifolds

Engine type		TCG 2016 V08 C		TCG 2016 V12 C		TCG 2016 V16 C	
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
Electrical power ²⁾	kW	400	400	600	600	800	800
Thermal output ³⁾	±8 % kW	398	424	608	645	810	845
Electrical efficiency	%	42.5	41.5	42.5	41.3	42.5	41.6
Thermal efficiency	%	42.3	43.9	43.0	44.4	43.0	44.0

Container dimensions (W x H x L)

TCG 2016 V08 C: 3.0 x 3.0 x 10.973 m

TCG 2016 V12 C: 3.0 x 3.0 x 12.192 m

TCG 2016 V16 C: 3.0 x 3.0 x 12.192 m

1) NO_x emissions: $\text{NO}_x \leq 0.5 \text{ g NO}_2/\text{m}_n^3$ dry exhaust gas at 5% O_2 .

2) As per ISO 3046/1 at $U = 0.4 \text{ kV}$, $\cos\phi = 1$ for 50 Hz, at $U = 0.48 \text{ kV}$, $\cos\phi = 1$ for 60 Hz.

3) Exhaust gas cooled to 120 °C with natural gas and 150 °C with biogas.

Data for special gas and dual gas operation on request.

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



The big plus with the MWM Container: everything from a single source.

Complete, turnkey systems:

- Planning, configuration, installation, service – everything from a single source and tailored precisely to your needs
- Can be used for natural gas, biogas, landfill gas, sewage gas, mine gas, and other special gases
- Comprehensive concepts such as systems that include gas preprocessing
- Easy to transport, quick to erect

Reliable efficiency:

- Quality – made in Germany
- Worldwide references
- 140 years of experience
- Leading cogeneration expertise
- Customized designs for use under all kinds of conditions
- Long service intervals

Includes top-level service:

- TEM enables direct online access to current engine readings during operation. This means faults can be diagnosed instantly
- Complete service directly from the manufacturer of the genset
- Service-friendly design
- Worldwide service network and logistics
- Time-saving maintenance concept

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