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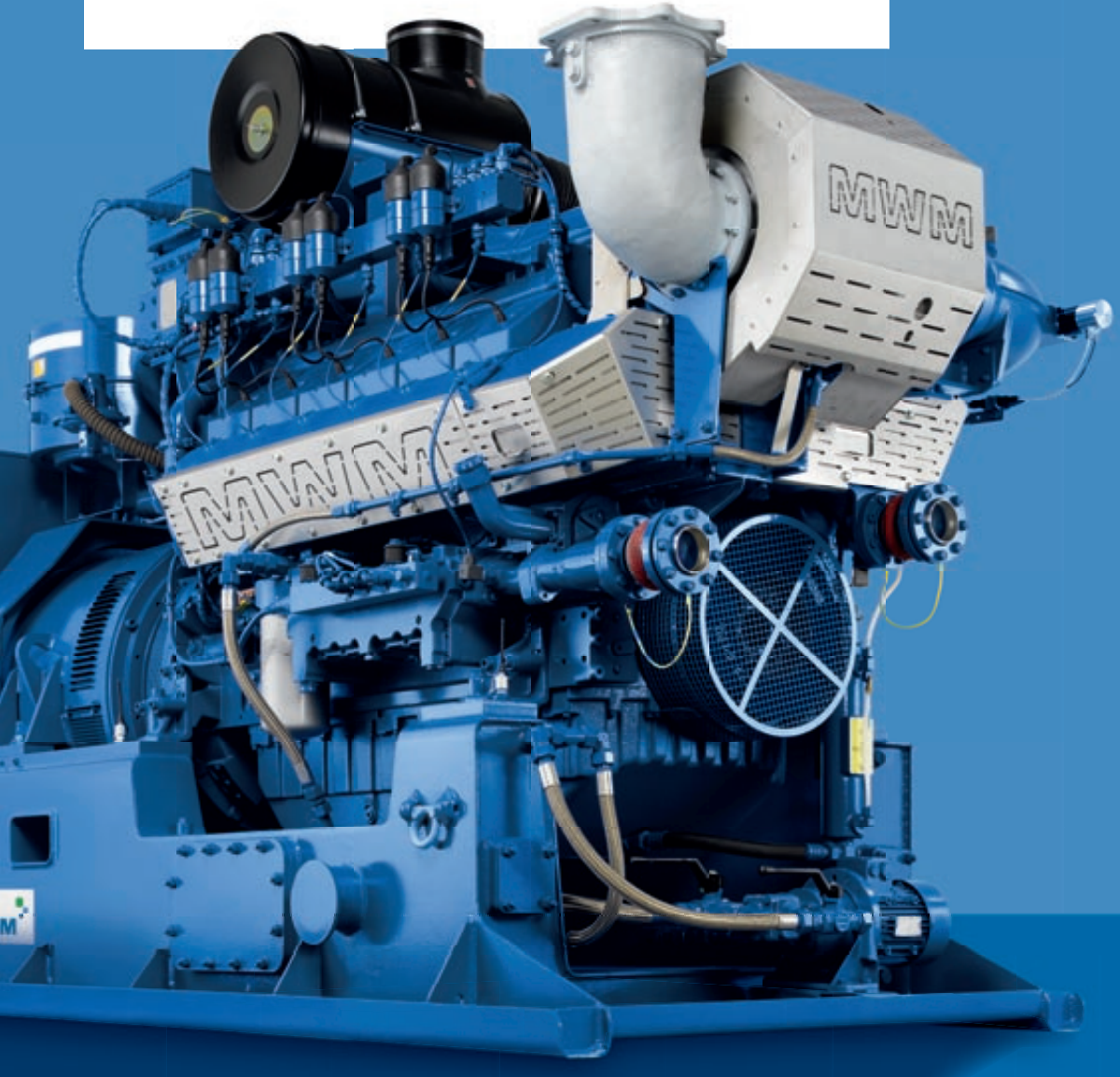
TCG 2016

Efficiency straight down the line.

MWM
Energy. Efficiency. Environment.



Reliability

System

Service

Profit

The TCG 2016. Top performance from MWM – used successfully worldwide.

Friedrichshagen CHP plant, Germany

This project was completed very quickly in collaboration with SES Energiesysteme GmbH Berlin. A Type TCG 2016 V16 gas engine efficiently undertakes basic load operation for the local combined heat and power plant. What is special about this low-emission CHP plant is that the boilers' efficiency is increased by preheating the air current to them using the heat from the mixture cooling circuit along with the radiant heat of the gas engine. The result is that gas consumption is reduced by as much as 176,000 m^3/a.

Gut Kletkamp CHP plant, Germany

Nawaro Kletkamp GmbH & Co. KG runs a biogas combined heat and power plant. Around 20 tons of corn silage are used as an input fuel each day. The heat produced by the engine is used to dry grain and to heat the plant's own buildings, and even to heat parts of the neighboring town of Lütjenburg. After the fermentation process is finished, the substrate remnants are used as a fertilizer. The plant saves the equivalent of 4,000 tons of CO_2 per year.

Nong Bua Farm biogas plant, Thailand

Nong Bua livestock farm in Thailand takes its liquid pig manure, a substance often left unused as a waste product, and uses it as an important source of electricity. It is sufficient to fuel an MWM biogas plant incorporating two Type TCG 2016 V16 gas engines, each producing 700 kW_{el} of electricity.

Mölme CHP plant, Germany

A biogas CHP plant has been constructed in Mölme in collaboration with SEVA Energie AG. The electricity generated from the renewable substances corn and manure is fed into the local mains grid. The heat generated is used mainly by the plant itself in order to maintain the temperature in the fermentation tanks. This ensures maximum biogas production and an optimum gas yield.

Strong arguments for a strong brand: MWM.

MWM has 140 years of experience

MWM has made a tradition out of innovation. We have been developing and building engines and gensets for a wide range of uses since 1871. Our global success is founded on having invented the most advanced four-stroke diesel engines. And, 30 years ago, we became one of the first manufacturers to revolutionize generator technology using high-performance gas engines. To this day we continue to work constantly on making our systems more efficient.

MWM understands what's really needed

Today, cost-effectiveness is crucial! MWM offers cooperation all along the line, which pays off right across the process chain. We are the complete partner to our customers: from the selection of the system layout for the project, all the way to service and repair.

MWM offers the most economical service concepts

With its worldwide service network, long service intervals and low maintenance costs, MWM Service is an important factor for lasting efficiency. Innovative offerings such as remote diagnosis, remote parameter configuration and the generation of operating values can be provided cheaply anywhere in the world using the Internet. The new MWM Logistics Centre also means fast deliveries and low spares costs. Shortblocks can be delivered and assembled easily, so your system will be ready for operation in the shortest possible time. Another benefit is that our own training centre offers top-level, practically oriented courses for your technicians.

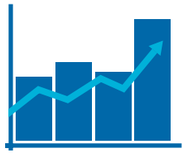
MWM thinks in terms of the complete solution

Only if all of the components in your system are selected and configured perfectly for your needs will you achieve optimum overall efficiency. We have the experience, the technology and the capacity. Our engineers can develop tailor-made complete solutions especially for you. From comprehensive cogeneration concepts for electricity, heat and cooling, to containerized solutions, to turn-key systems – MWM can develop complete concepts to suit your needs, and implement them reliably too. All in all, system engineering just the way you want it.

You can rely on MWM

Clear statements, transparent offers: we keep our promise. We are always there when you need us. Test us – on site, at your plant.

MWM's compact performer. Economical long-term.

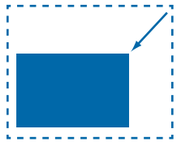


More profit

The TCG 2016 is highly efficient thanks to its optimized camshaft, combustion chamber and spark plugs. Save as much as 15 % per annum on fuel costs – and increase your plant's profitability.

Less overall costs

With its optimized engine components, the TCG 2016 requires up to 50 % less lubricating oil than other similar gensets. In terms of efficiency that means long-term savings.



Lower installation costs

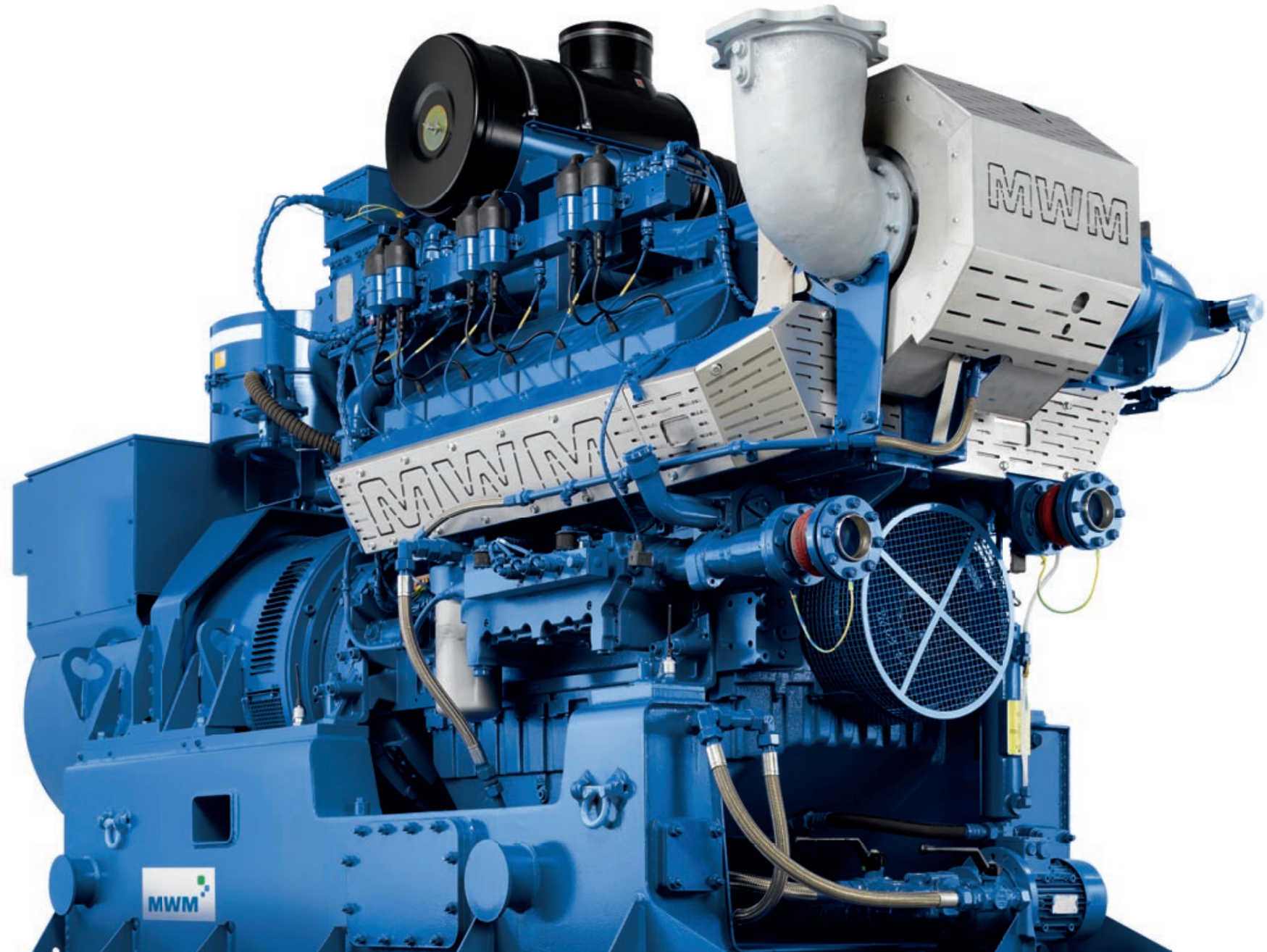
Thanks to its smaller dimensions (width x length), the TCG 2016 demands up to 50 % less space than comparable systems. For you that means lower installation costs.

Optimum control concept

TEM (Total Electronic Management) controls not just the engine but the entire 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.

Flexible usage

The latest technology such as our gas-mixer and TEM allows you to use a wide variety of gases. Even the most problematic gases such as colliery gas, landfill gas and sewage gas can be used without difficulty.



Technical data 50 Hz

Engine type			TCG 2016 V08 C	TCG 2016 V12 C	TCG 2016 V16 C
Bore/stroke		mm	132/160	132/160	132/160
Displacement		dm^3	17.5	26.3	35.0
Speed		min^{-1}	1500	1500	1500
Mean piston speed		m/s	8.0	8.0	8.0
Length		mm	3090	3680	4060
Width		mm	1480	1480	1480
Height		mm	2280	2280	2280
Dry weight genset		kg	4650	5870	6530

Natural gas applications

NO_X ≤ 500 mg/m_n^3 1) **dry exhaust manifolds**

Engine type			TCG 2016 V08 C	TCG 2016 V12 C	TCG 2016 V16 C
Electrical power 2)		kW	400	600	800
Mean effective pressure		bar	19.0	18.9	18.9
Thermal output 3)	±8 %	kW	427	654	855
Electrical efficiency		%	42.2	42.0	42.3
Thermal efficiency		%	45.0	45.7	45.2
Total efficiency		%	87.2	87.7	87.5

Biogas applications

NO_X ≤ 500 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 kWh/m_n^3
dry exhaust manifolds

Engine type			TCG 2016 V08 C	TCG 2016 V12 C	TCG 2016 V16 C
Electrical power 2)		kW	400	600	800
Mean effective pressure		bar	19.0	18.9	18.9
Thermal output 3)	±8 %	kW	398	608	810
Electrical efficiency		%	42.5	42.5	42.5
Thermal efficiency		%	42.3	43.0	43.0
Total efficiency		%	84.8	85.5	85.5

1) NO_X emissions: NO_X ≤ 0.5 g NO_2/m_n^3 dry exhaust gas at 5 % O_2.
2) According to ISO 3046/1 at U = 0.4 kV, cosphi = 1 for 50 Hz, at U = 0.48 kV, cosphi = 1 for 60 Hz.
3) Exhaust gas cooled to 120 °C with natural gas and 150 °C with biogas.

Specifications for special gases and two-gas operation on request.

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

Technical data 60 Hz

Engine type			TCG 2016 V08 C	TCG 2016 V12 C	TCG 2016 V16 C
Bore/stroke		mm	132/160	132/160	132/160
Displacement		dm^3	17.5	26.3	35.0
Speed		min^{-1}	1800	1800	1800
Mean piston speed		m/s	9.6	9.6	9.6
Length		mm	3090	3680	4060
Width		mm	1480	1480	1480
Height		mm	2280	2280	2280
Dry weight genset		kg	4650	5870	6530

Natural gas applications

NO_X ≤ 500 mg/m_n^3 1) **dry exhaust manifolds**

Engine type			TCG 2016 V08 C	TCG 2016 V12 C	TCG 2016 V16 C
Electrical power 2)		kW	400	600	800
Mean effective pressure		bar	15.8	15.7	15.7
Thermal output 3)	±8 %	kW	447	680	892
Electrical efficiency		%	41.2	41.1	41.5
Thermal efficiency		%	46.0	46.6	46.2
Total efficiency		%	87.2	87.7	87.7

Biogas applications

NO_X ≤ 500 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 kWh/m_n^3
dry exhaust manifolds

Engine type			TCG 2016 V08 C	TCG 2016 V12 C	TCG 2016 V16 C
Electrical power 2)		kW	400	600	800
Mean effective pressure		bar	15.8	15.7	15.7
Thermal output 3)	±8 %	kW	424	645	845
Electrical efficiency		%	41.5	41.3	41.6
Thermal efficiency		%	43.9	44.4	44.0
Total efficiency		%	85.4	85.7	85.6

1) NO_X emissions: NO_X ≤ 0.5 g NO_2/m_n^3 dry exhaust gas at 5 % O_2.
2) According to ISO 3046/1 at U = 0.4 kV, cosphi = 1 for 50 Hz, at U = 0.48 kV, cosphi = 1 for 60 Hz.
3) Exhaust gas cooled to 120 °C with natural gas and 150 °C with biogas.

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MWM GmbH
Carl-Benz-Straße 1
DE-68167 Mannheim
T +49 621 384-0
F +49 621 384-8800
info@mwm.net

MWM Energy Australia Pty. Ltd.
21 McDonalds Lane
AU-3170 Mulgrave, Victoria
T +61 3 9262-3000
F +61 3 9262-3033
info-energy-australia@mwm.net

MWM Benelux B.V.
Soerweg 13
NL-3088 GR Rotterdam
T +31 10 2992-666
F +31 10 2992-677
info-benelux@mwm.net

MWM Energy Hungaria Kft.
Ezred u.1-3
HU-1044 Budapest
T +43 5242 21300
F +43 5242 21300-600
info-hungaria@mwm.net

MWM Austria GmbH
Münchner Straße 22
AT-6130 Schwaz
T +43 5242 21300
F +43 5242 21300-600
info-austria@mwm.net

MWM Energy España S.A.
Avda de los Artesanos, 50
ES-28950 Tres Cantos/Madrid
T +34 91 80745-00
F +34 91 80745-47
info-energy-espana@mwm.net

MWM Latin America Soluções
Energéticas Ltda.
Av. Dr. José Bonifácio C. Nogueira
214 sala 418
BR-CEP 13091-611 Campinas/SP
T +55 19 3396-5777
info-latin-america@mwm.net

MWM Canada Inc.
210 Willmott St., Unit 4B
P.O. Box 1120
CA-K9A 4W5 Cobourg, Ontario
T +1 905 377 1273
F +1 905 248 3168
info-canada@mwm.net

MWM of America, Inc.
1750 Breckinridge Parkway
Suite 500
US-Duluth, GA 30096
T +1 770 279 6720
F +1 770 279 6719
info-america@mwm.net

MWM (Beijing) Co. Ltd.
CITIC Building
Unit 2-02
Jianguomenwai Road 19,
CN-100004 Beijing, P.R. China
T +86 10 6528 5116
F +86 10 6528 9316
info-mwm-beijing@mwm.net

MWM France SAS
Péripark Gennevilliers
99/101 Avenue Louis Roche Bât E5
FR-92230 Gennevilliers
T +33 14790 7780
F +33 14790 7781
info-france@mwm.net

MWM Asia-Pacific Pte. Ltd.
11 Kian Teck Road
SG-628768 Singapore
T +65 6268 5311
F +65 6266 3039
info-asia-pacific@mwm.net

Version 05-11/EN

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Performance