www.mwm.net

TCG 2032

Efficiency on a new level.

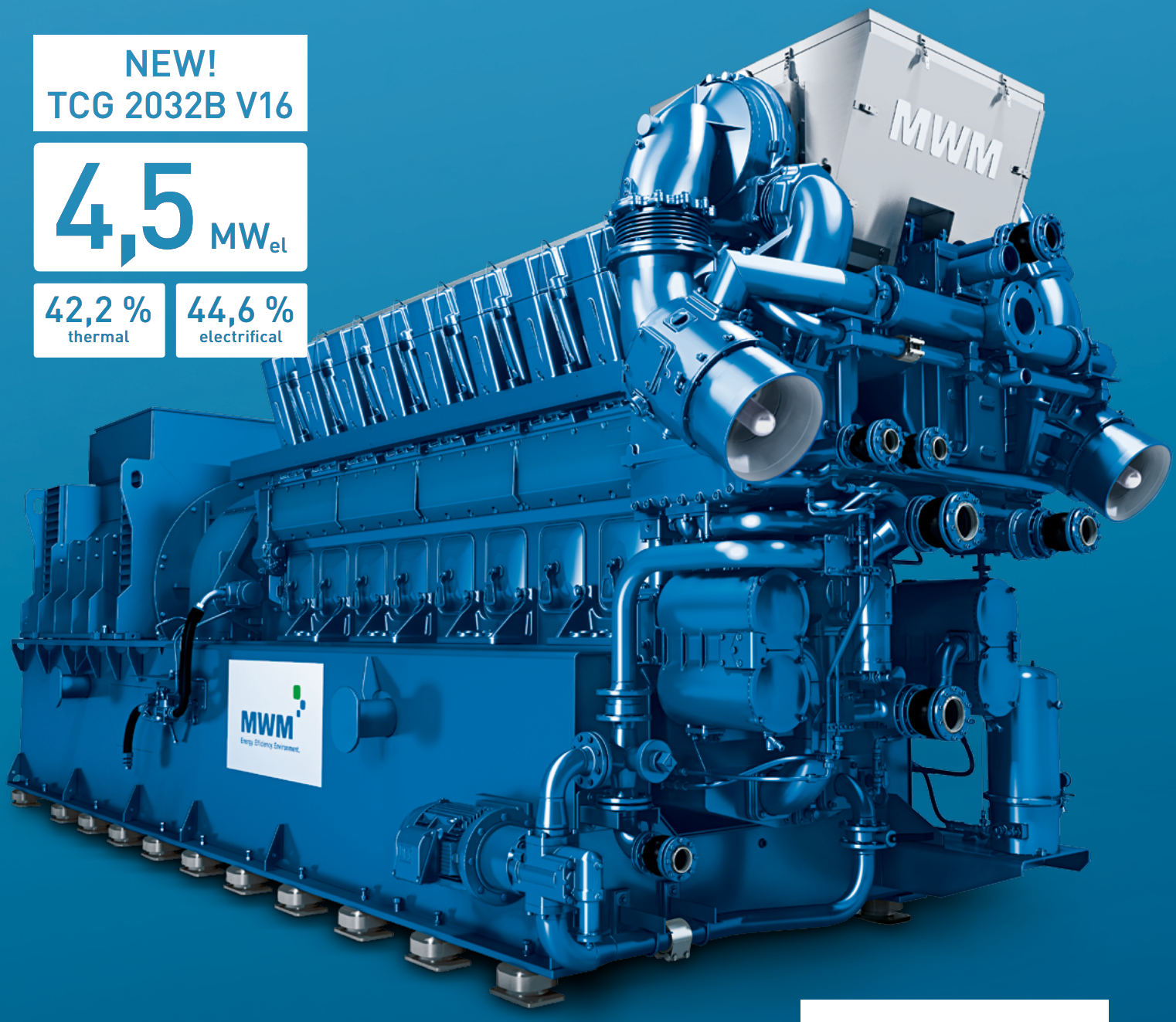
For Natural Gas and Biogas with an output from 3300 to 4500 kW_{el}

NEW!
TCG 2032B V16

4,5 MW_{el}

42,2 % thermal

44,6 % electrifical



MWM
Energy. Efficiency. Environment.

Our experience for your success.

Strong partner for your progress

With MWM you can benefit from 150 years of experience in gas engine technology and energy production. Since 2011 the traditional company, Motorenwerke Mannheim, has belonged to the worldwide network of Caterpillar Inc. This gives us an even more unique expertise that benefits you in the development of individual complete solutions.

Worldwide successful technology

MWM offers you the confidence and experience of a specialist who has already successfully installed hundreds of biogas systems with gas power plants within and outside of the European region. Efficiency and reliability are the decisive factors everywhere.

Competent, reliable, and uncomplicated

We want you to be satisfied with us in every phase of the project: That is why we clearly spell out all agreements in a written order confirmation with a detailed schedule. MWM stands for reliability and quality of planning, right down to commissioning.

We stick to our agreements

If you put great value in an optimal return on your investment in a biogas system and smooth handling, MWM is a natural first choice. We offer comprehensive experience and always keep a close eye on the entire process. Seamless and turnkey ready – from initial consultation to handling the completed system by our customer service. We say what we do, and we do what we say.

The TCG 2032. Top performance from MWM – used successfully worldwide.

Precision Energy, Bangladesh

In 2010, MWM shipped 15 TCG 2032 V16s to Precision Energy Bangladesh within just three months. The gas engines produce a constant overall output of 60 MW_{el}. All of the electric energy that has been generated is fed into the public grid. More information about this project can be found in our MWM movie "60 MW Around the World" at www.mwm.net.

15 x MWM TCG 2032 V16 | Commissioning: 2009/2010

AMD Dresden, Germany

MWM engines were chosen for the energy supply center of the AMD chip factory in Dresden, since our system generates electricity of supreme quality. Moreover, the waste heat is used for heat supply and cold production, thus achieving very high primary energy utilization.

9 x MWM TCG 2032 V16 | Commissioning: 2005/2007

Italiana Coke, Italy

MWM engines were installed for the environmentally friendly utilization of the coke oven gas generated at the coke oven plant Italiana Coke. The electricity rebate, whose amount is determined by law, gives the operator a secure income from the sale of the electricity generated at the plant, in addition to the company's core business, the production of metallurgic coke.

5 x MWM TCG 2032 V16 | Commissioning: 2010

Optimized reliability for your success.

More profit

The optimized maintenance concept with cylinder units simplifies accessibility and, along with the reduction of the number of different parts, minimizes the time required for maintenance. This saves up to 20 % in service costs. At the same time you profit from up to 30 % less lubricating oil consumption compared to other engines.

Longer runtimes

Thanks to the extended service intervals, the TCG 2032 runs up to 200 hours longer per annum than comparable products. The major overhaul is scheduled after 80.000 operating hours.

Greater reliability

The particle-free combustion with chamber plugs extends the service intervals for the exhaust gas heat exchanger and reduces service costs compared to other combustion methods.

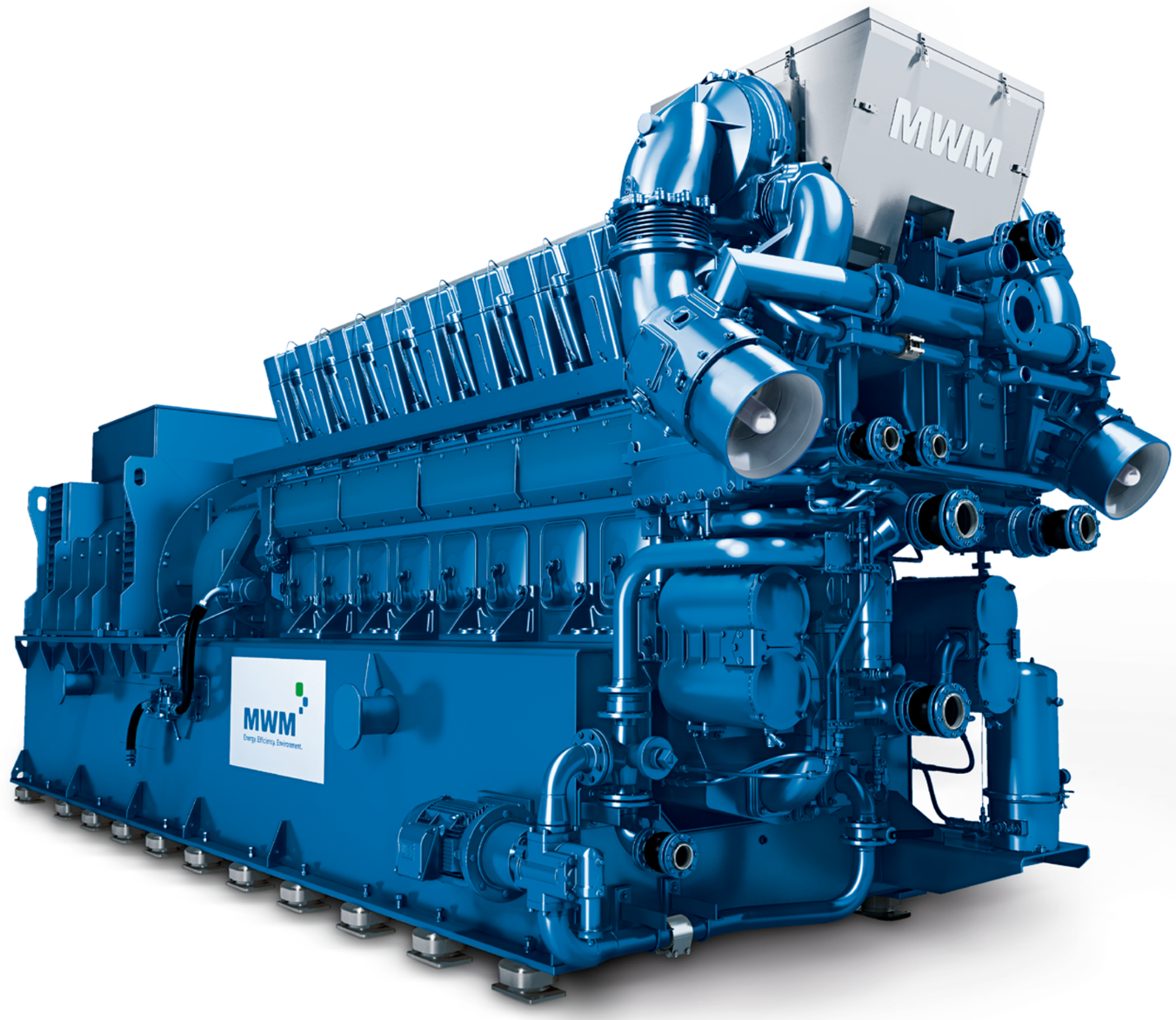
Major components like pistons, conrods, spark plugs or cylinder heads were improved to withstand the greater power output and deliver increased electrical efficiency.

Optimum efficiency

The interaction of all components has been improved even further. All components relevant for efficiency and power output are monitored by the TEM (Total Electronic Management). Especially the new, upgraded Wastegate ensures a more efficient operation with changing conditions. This is also true when the gas composition is fluctuating – thanks to fast response times due to the temperature monitoring for each cylinder. TEM not only controls the engine, but the entire system, including heat extraction.

Full turbo power

The high-pressure turbocharger A140 with an improved wastegate allows the operation in a broader range in of intake air temperature and site altitude.



TCG2032B V16

Technical data 50 Hz

Engine type	TCG 2032	V12	V16
Bore/stroke	mm	260/320	260/320
Displacement	dm^3	203.9	271.8
Speed	min^{-1}	1000	1000
Mean piston speed	m/s	10.7	10.7
Length [1]	mm	7860	9200
Width [1]	mm	2660	2690
Height [1]	mm	3390	3390
Dry weight genset	kg	43100	51200

Natural gas applications

NO_x ≤ 500 mg/m_n [2]
Dry exhaust manifolds

Engine type		TCG 2032	V12	TCG 2032B	V16
Electrical power [3]		kW	3333		4500
Mean effective pressure		bar	20,0		20,3
Thermal output [4]	±8 %	kW	3238		4176
Electrical efficiency [5]		%	43,9		44,6
Thermal efficiency [5]		%	42,6		42,2
Total efficiency [5]		%	86,5		86,8

Biogas applications

NO_x ≤ 500 mg/m_n [2]
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 2032	V16
Electrical power [3]		kW	3770
Mean effective pressure		bar	17,0
Thermal output [4]	±8 %	kW	3470
Electrical efficiency [5]		%	43,0
Thermal efficiency [5]		%	39,9
Total efficiency [5]		%	82,9

1) Transport dimensions for gensets, components set up seperately must be taken into consideration.
2) NO_x - emissions: NO_x ≤ 0,5 g NO_2/Nm^3 exhaust gas dry at 5 % O_2.
3) According to ISO 8525-1 at U = 11 kV, cosphi = 1,0 for 50 Hz and a minimum methane number of MN 70.
4) Exhaust gas cooled to 120 °C for natural gas and 180 °C for biogas.
5) According to ISO 3046/1 at U = 11 kV, cosphi = 1,0 for 50 Hz and a minimum methane number of MN 70.

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.

Technical data 60 Hz

Engine type	TCG 2032	V12	V16
Bore/stroke	mm	260/320	260/320
Displacement	dm^3	203,9	271,8
Speed	min^{-1}	900	900
Mean piston speed	m/s	9,6	9,6
Length [1]	mm	8000	9420
Width [1]	mm	2660	2690
Height [1]	mm	3390	3390
Dry weight genset	kg	40650	53300

Natural gas applications

NO_x ≤ 500 mg/m_n [2]
Dry exhaust manifolds

Engine type		TCG 2032	V12	V16
Electrical power [3]		kW	3000	4000
Mean effective pressure		bar	18,1	18,1
Thermal output [4]	±8 %	kW	2877	3866
Electrical efficiency [5]		%	43,9	43,8
Thermal efficiency [5]		%	42,1	42,4
Total efficiency [5]		%	86,0	86,2

Biogas applications

NO_x ≤ 500 mg/m_n [2]
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 2032	V16
Electrical power [3]		kW	3510
Mean effective pressure		bar	17,0
Thermal output [4]	±8 %	kW	3125
Electrical efficiency [5]		%	43,3
Thermal efficiency [5]		%	38,5
Total efficiency [5]		%	81,8

1) Transport dimensions for gensets; components set up separately must be taken into consideration.
2) NO_x - emissions: NO_x ≤ 0,5 g NO_2/Nm^3 exhaust gas dry at 5 % O_2.
3) According to ISO 8525-1 at U = 4,16 kV, cosphi = 1,0 for 60 Hz and a minimum methane number of MN 80.
4) Exhaust gas cooled to 120 °C for natural gas and 180 °C for biogas.
5) According to ISO 3046/1 at U = 4,16 kV, cosphi = 1,0 for 60 Hz and a minimum methane number of MN 80.

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.

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