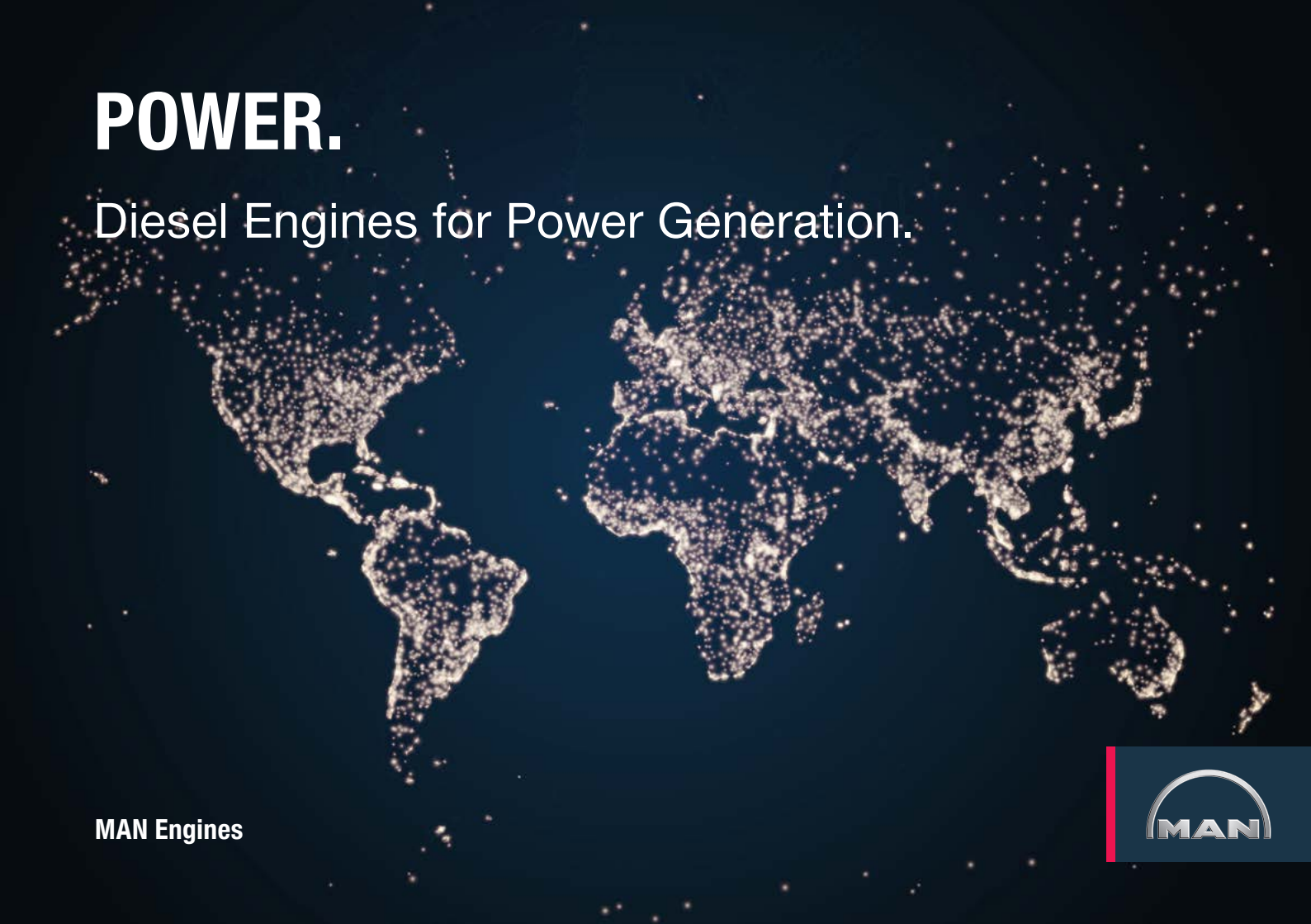
POWER.

Diesel Engines for Power Generation.



MAN Engines

POWER WHEREVER NEEDED.

MAN offers manufacturers of power generators all over the world a broad spectrum of 6- and 12-cylinder engines including radiators for peak load leveling as well as for supplying emergency power and base loads. Depending on their type of operation in ESP (Emergency Standby Power), LTP (Limited Time Power), PRP (Prime Power) or COP (Continuous Power) the engines can be run up to unlimited hours per year.

CONTENTS

BENEFITS

- MAN Engines – a strong and independent partner for packagers
- Eco-friendly operation as a result of lower consumption of fuel and lubricating oil
- MAN engines for standby operation to provide maximum power output with quick load acceptance in case of power shortage
- Ideal balance between compact design and robust construction allows smaller size of container gensets with high durability

PRODUCT RANGE

Diesel Engines

				Power rating (kW)			
Engine type	Cylinders	Arrangement	Capacity (l)	ESP	LTP	PRP	COP
D2676	6	in-line	12.4	415–440	396–415	360–377	270–283
D2862	12	V 90°	24.2	880–1 117	770–920	700–836	560–640

PEACE OF MIND FROM TAILORED SERVICE

MAN offers power-unit manufacturers a tailor-made servicing concept consisting of a comprehensive range of training courses. This is how MAN gives you the option of performing servicing for your end customers yourself, from start to finish. We customize our training courses to match your requirements by employing the in-depth and proven MAN expertise.

TYPES OF OPERATION

Emergency Standby Power (ESP)

- Power output available with varying load for the duration of an emergency outage. Average power output is 70% of the emergency standby power rating.
- Typical operation is 50 hours per year with maximum expected usage of 200 hours per year.
- Standby power in accordance with ISO 8528.
- Fuel stop power in accordance with ISO 3046.

Limited Time Power (LTP)

- Power output available with varying load for the duration of the interruption of the normal source power.
- Typical operation is 200 hours per year, with maximum expected usage of 50 hours per year, within the following limits of maximum operating time: 100% load 500 hours per year or 90% load 200 hours per year.
- No overload available.
- Fuel stop power in accordance with ISO 3046.

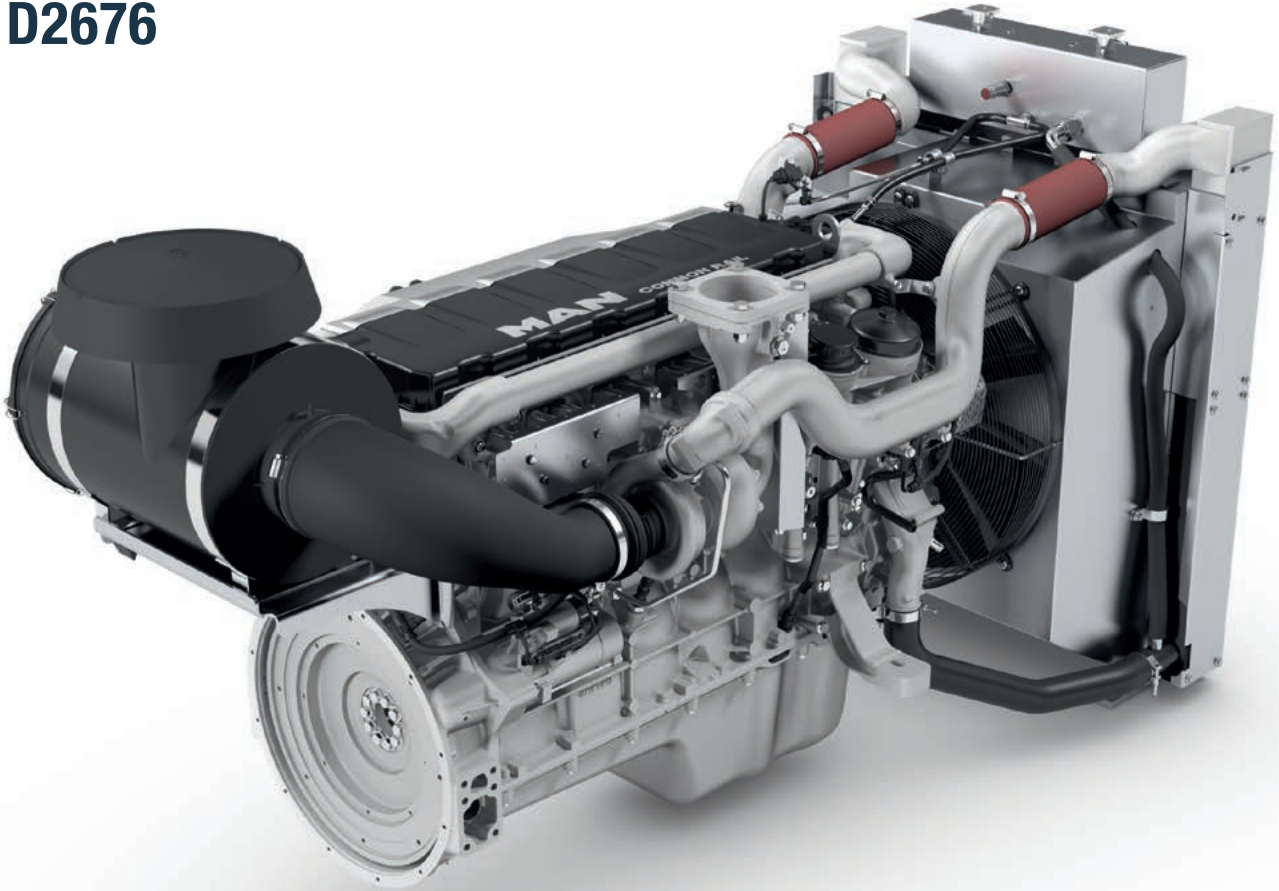
Prime Power (PRP)

- Power output available with varying load for unlimited time. Average power output is 80% of the prime power rating.
- With 10% overload capability for technical purposes for a maximum of one hour in twelve. Overload operation cannot exceed 50 hours per year.
- Prime power in accordance with ISO 8528.
- Fuel stop power in accordance with ISO 3046.

Continuous Power (COP)

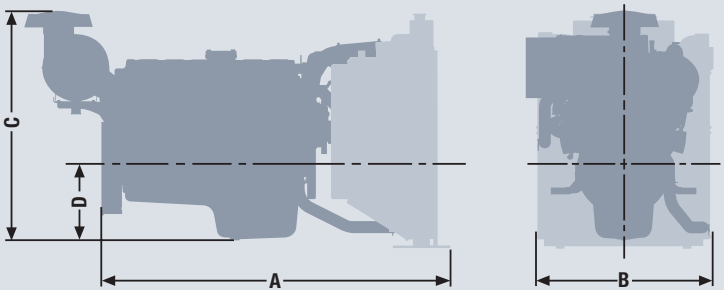
- Power output available without varying load for unlimited time. Average power output is 100% of the continuous power rating.
- With 10% overload capability for technical purposes for a maximum of one hour in twelve.
- Continuous power is in accordance with ISO 8528.
- Fuel stop power in accordance with ISO 3046.

D2676



Characteristics

- Cylinders: 6 cylinders in-line
- Mode of operation: Four-stroke diesel engine with direct fuel injection
- Turbocharging: Turbo charger with charge air cooling
- Engine cooling: Water circulation by means of attached rotary pump and front end combination radiator
- Injection: Common Rail injection system with an injection pressure of 1 800 bar
- Engine control: EDC7 control unit with engine management computer
- Monitoring: Operator panel available on request



Dimensions

Type designation		LE 223/LE 221/ LE 231/LE 241
A-Length with fan-cooled radiator	mm	2 518
B-Width with fan-cooled radiator	mm	1080
C-Height with fan-cooled radiator	mm	1406
D-Height of lower edge of engine to middle of crankshaft	mm	423
Dry weight with cooling system	kg	1165

D2676

Technical features

Mode of operation		ESP		LTP		PRP		COP	
at engine speed	min^{-1} (Hz)	1 500 (50)	1 800 (60)	1 500 (50)	1 800 (60)	1 500 (50)	1 800 (60)	1 500 (50)	1 800 (60)
Engine version		LE 223	LE 223	LE 221	LE 221	LE 231 [3] LE 221	LE 241 [3] LE 221	LE 221	LE 221
Bore	mm	126	126	126	126	126	126	126	126
Stroke	mm	166	166	166	166	166	166	166	166
Displacement	l	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
ISO net brake fuel stop rating IFN [1]	kW	440	415	396	415	–	–	–	–
Torque	Nm	2 801	2 200	2 521	2 200	–	–	–	–
ISO standard rating ICXN [1]	kW	–	–	–	–	360	377	270	283
Torque	Nm	–	–	–	–	2 292	2 000	1719	1500
Net genset rating [2]	kVA	510	470	450	470	410	420	300	310

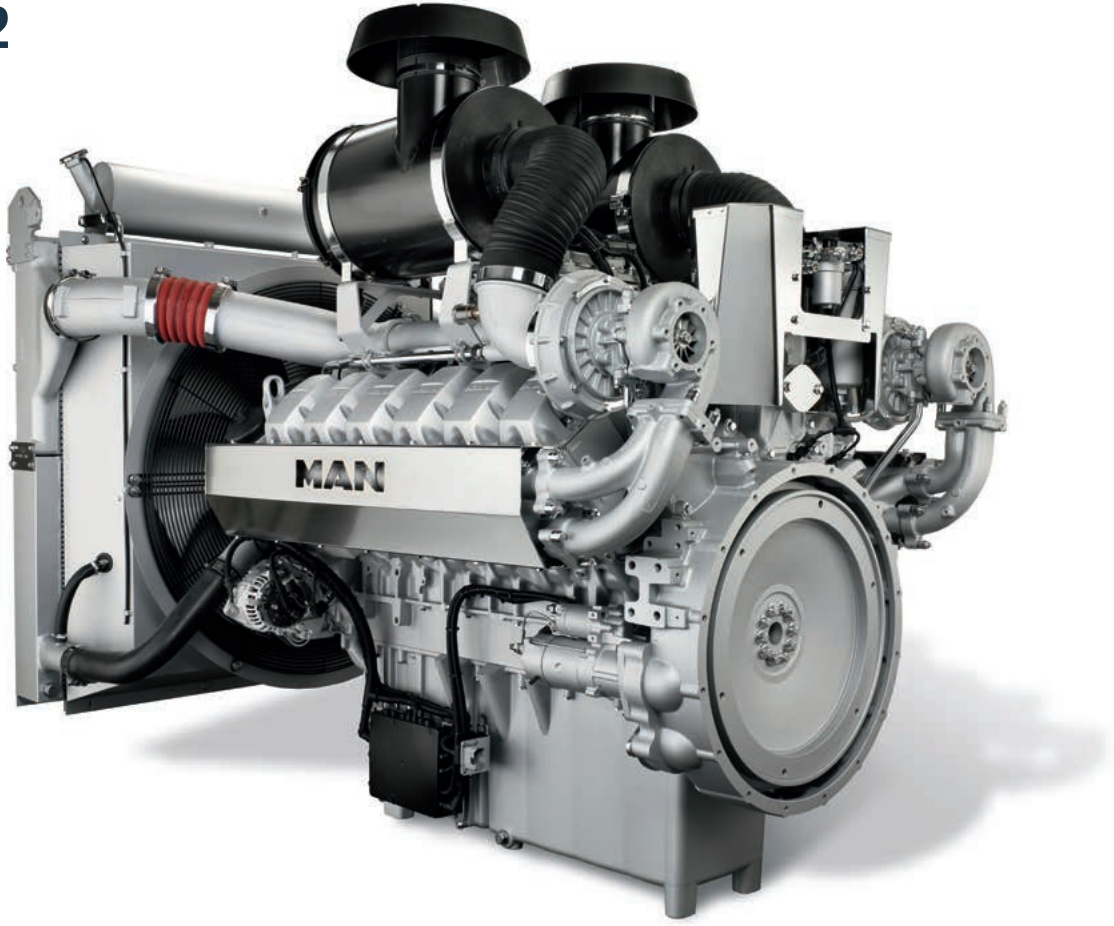
1) Engine performance according to DIN ISO 3046/1. Load deration due to ambient temperature and altitude taken into account. Power definitions according to ISO 8528-1.

2) A typical generator efficiency of 92–96 % and cos (φ) = 0.8 taken into account.

3) Exhaust emissions according to EU 97/68 EC Stage 2

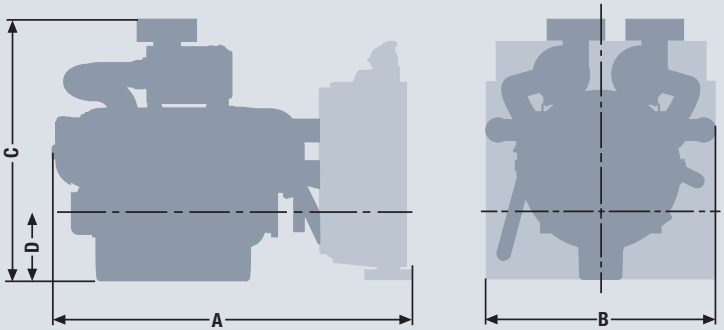

En-Syst

D2862



Characteristics

- Cylinders: 12 cylinders in 90° V arrangement
- Mode of operation: Four-stroke diesel engine with direct fuel injection
- Turbocharging: Turbo charger with charge air cooling
- Engine cooling: Water circulation by means of attached rotary pump and front end combination radiator
- Injection: Common Rail injection system with an injection pressure of 1 600 bar
- Engine control: EDC7 control unit with engine management computer
- Monitoring: Operator panel available on request



Dimensions

Type designation		LE 223/LE 221/ LE 231/LE 233
A-Length with fan-cooled radiator	mm	2 660
B-Width with fan-cooled radiator	mm	1540
C-Height with fan-cooled radiator	mm	1920
D-Height of lower edge of engine to middle of crankshaft	mm	594
Dry weight with cooling system	kg	2240

D2862

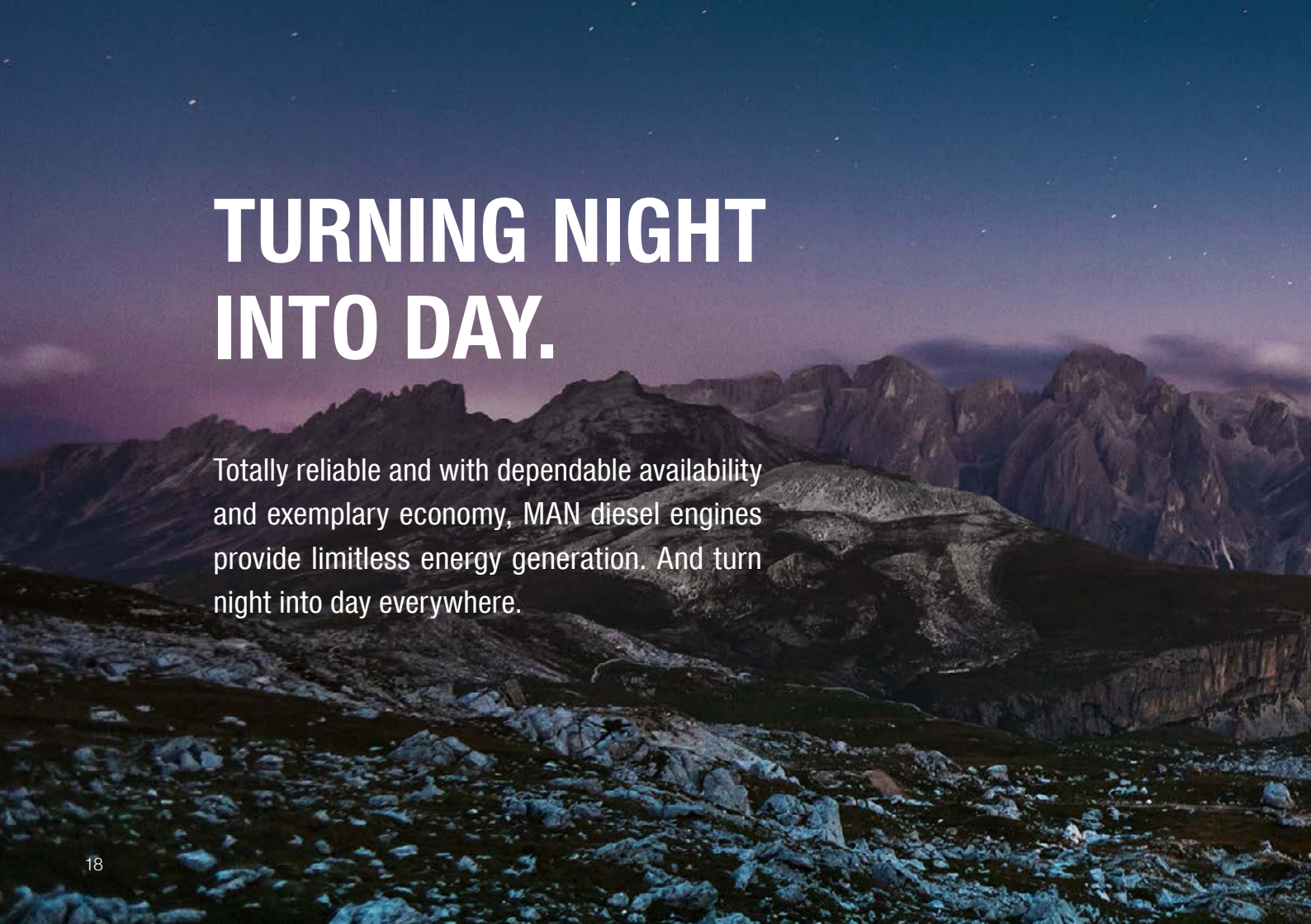
Technical features

Mode of operation		ESP				LTP		PRP	
at engine speed	min^{-1} (Hz)	1 500 (50)	1 800 (60)	1 500 (50)	1 800 (60)	1 500 (50)	1 800 (60)	1 500 (50)	1 800 (60)
Engine version		LE 223	LE 223	LE 231 LE 233	LE 231 LE 233	LE 221	LE 221	LE 221	LE 221
Bore	mm	128	128	128	128	128	128	128	128
Stroke	mm	157	157	157	157	157	157	157	157
Displacement	l	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2
ISO net brake fuel stop rating IFN [1]	kW	880	1117	880	920	770	920	–	–
Torque	Nm	5 603	5 926	5 602	4 881	4 902	4 880	–	–
ISO standard rating ICXN [1]	kW	–	–	–	–	–	–	700	836
Torque	Nm	–	–	–	–	–	–	4 457	4 435
Net genset rating [2]	kVA	1000	1250	1 000	1 000	880	1030	800	930

1) Engine performance according to DIN ISO 3046/1. Load deration due to ambient temperature and altitude taken into account. Power definitions according to ISO 8528-1.

2) A typical generator efficiency of 92–96% and cos (φ) = 0.8 taken into account.

	PRP		COP		
	1 500 (50)	1 800 (60)	1 500 (50)	1 500 (50)	1 800 (60)
	LE 231	LE 231	LE 221	LE 231	LE 221 LE 231
	128	128	128	128	128
	157	157	157	157	157
	24.2	24.2	24.2	24.2	24.2
	–	–	–	–	–
	–	–	–	–	–
	800	836	560	600	640
	5 093	4 435	3 565	3 820	3 395
	905	930	630	680	700



TURNING NIGHT INTO DAY.

Totally reliable and with dependable availability and exemplary economy, MAN diesel engines provide limitless energy generation. And turn night into day everywhere.

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