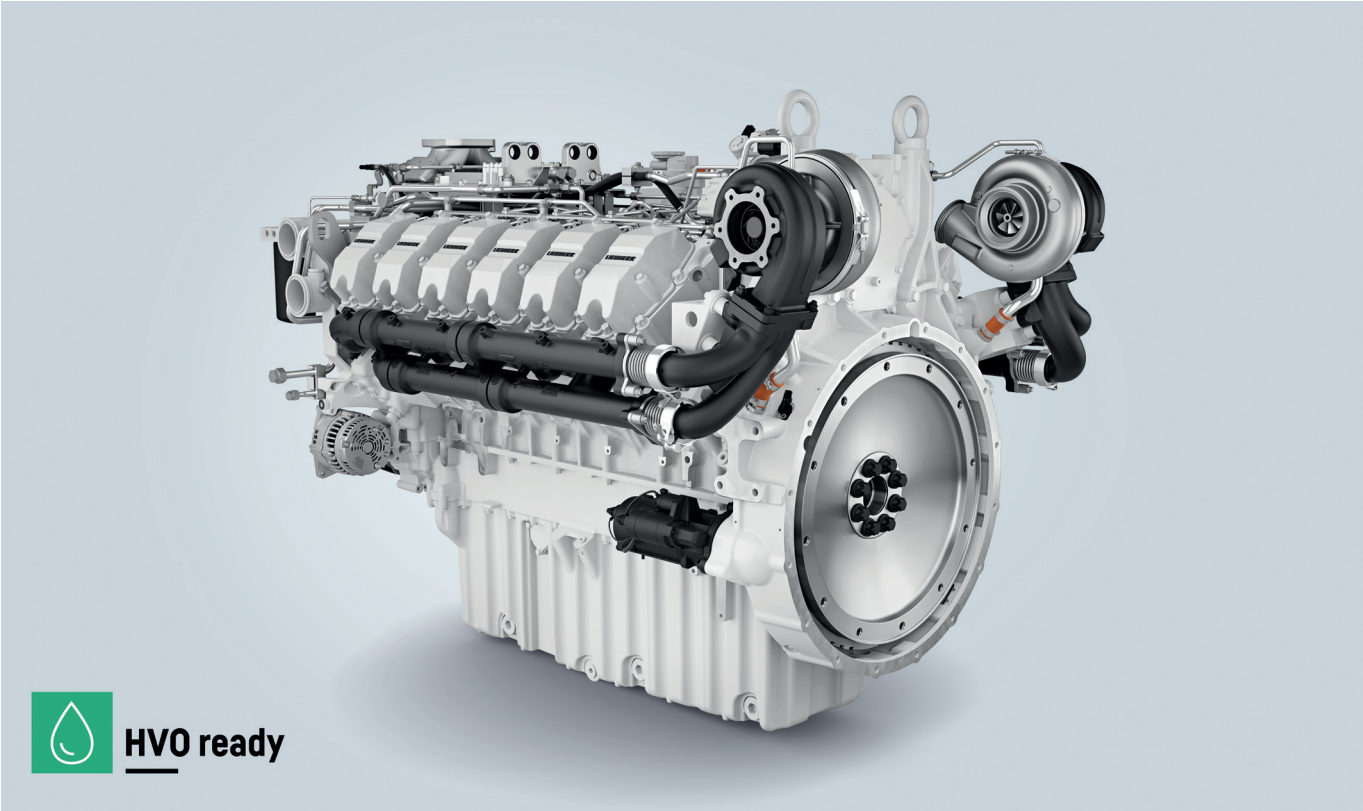
D9612 engine for the power generation industry



Designed and manufactured by Liebherr, the D9612 is a highperformance combustion engine engineered for missioncritical power generation applications, particularly wellsuited for PRP and COP operations, while also supporting standby power requirements in stationary and mobile installations, including data centers.

Built on a robust platform and backed by Liebherr's proven engineering expertise, this 12 cylinder, 27 litre engine delivers up to 1,100 kW, providing stable and predictable performance across PRP and COP duty cycles under demanding operating conditions.

Combining reliable efficiency with optimised fuel consumption and controlled emissions performance, the D9612 is designed to deliver dependable and costeffective power generation for missioncritical applications. Rapid load acceptance and controlled transient response secure compliance with ISO 85285 and NFPA 110 requirements, while extended service intervals, simplified maintenance and advanced diagnostics with LiDIA maximise reliability, minimise downtime and protect longterm asset value.

System benefits for power generation packager

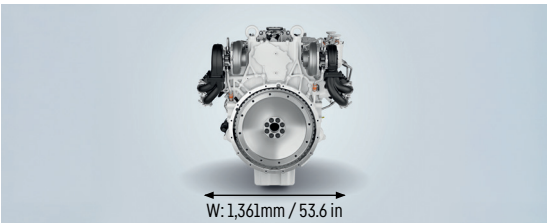
- Enabling missioncritical genset solutions with controlled and predictable power behaviour across a wide range of operating profiles.
- Facilitating system integration with a favourable powertoweight ratio (kW/kg) and an engine footprint optimised for demanding stationary and mobile genset configurations
- Securing compliant and predictable operation with rapid load acceptance and controlled transient response in line with ISO 85285 and NFPA 110 requirements.
- Enhancing system reliability and availability through stable dynamic behaviour under demanding load profiles and controlled operation across PRP and COP duty cycles.
- Maximising longterm asset value with extended service intervals, simplified maintenance concepts and advanced diagnostics supporting reduced downtime.

LIEBHERR

Product features and technical data

D9612

Country of manufacture		Switzerland
Configuration		12 cylinders V line
Aspiration		Turbocharger
Fuel injection control system		High-Pressure Common Rail
Bore	mm (in)	135 (5.3)
Stroke	mm (in)	157 (6.2)
Displacement	L (in^3)	27 (1,647)
Compression ratio		15:1
Coolant capacity	L (US gal)	55 (14.5)
Lubricant capacity	L (US gal)	101 (26.7)
Estimated dry weight	kg (lbs)	2,300 (5,070)



Power ratings

50 Hz

Tier 0

COP			PRP			ESP		
kWm	**kWe**	**kVA**	**kWm**	**kWe**	**kVA**	**kWm**	**kWe**	**kVA**
742	705	881	890	846	1,057	979	930	1,163

Tier 4f / Stage V

In development

60 Hz

Tier 0

COP			PRP			ESP		
kWm	**kWe**	**kVA**	**kWm**	**kWe**	**kVA**	**kWm**	**kWe**	**kVA**
844	802	1,002	1,013	962	1,203	1,114	1,058	1,323

Tier 2

						1,114	1,047	1,309

Tier 4f / Stage V

In development

Generator efficiency (typical): 95%
kWm = kiloWatt mechanical, net with fan*; kWe = kiloWatt electrical = kWm x Generator eff.; kVA = kiloVoltAmpere calculations based on a 0.8 power factor = kWe / 0.8 1 kW = 1 hp x 1.36; 1 hp = 1 kW x 0.7355

Power standards
The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271. The technical data applies to an engine without cooling fan and operating on a fuel with a calorific value of 42.7 MJ /kg (18360 BTU/lb) and a density of 0.84 kg/liter (7.01 lb/US gal), also where this involves a deviation from the standards. Ratings are based on ISO 8528. Engine speed governance in accordance with ISO 8528-5 G3.

Fuel consumption

50 Hz g/kWh (L/h)

Tier 0

Load	COP	PRP	ESP
100%	184 (163)	184 (195)	184 (215)
75%	186 (123)	184 (147)	184 (161)
50%	192 (85)	189 (100)	187 (109)
25%	212 (47)	205 (54)	202 (59)

60 Hz g/kWh (gall/h)

Tier 0			Tier 2
COP	**PRP**	**ESP**	**ESP**
181 (48)	181 (57)	182 (63)	202 (70)
184 (36)	182 (43)	181 (47)	207 (54)
194 (25)	189 (30)	187 (32)	220 (38)
226 (15)	215 (17)	209 (18)	253 (22)

Tolerances on nominal specific fuel consumption declaration are valid for Diesel fuel fulfilling standard EN 590. Fuel density: 840 gr/L

Heat rejection

50Hz kW (BTU/min)

Tier 0

Heat rejection	COP	PRP	ESP
Charge air cooler	123 (6,994)	175 (9,952)	210 (11,942)
Exhaust	537 (30,538)	593 (33,723)	660 (37,533)
Coolant	262 (14,899)	315 (17,913)	338 (19,221)

60Hz kW (BTU/min)

Tier 0			Tier 2
COP	**PRP**	**ESP**	**ESP**
184 (10,463)	259 (14,330)	252 (14,330)	260 (14,785)
579 (32,927)	670 (38,102)	810 (46,063)	892 (50,727)
293 (16,662)	356 (20,245)	367 (20,870)	404 (22,975)

Inlet air

50 Hz

Tier 0

Inlet air	COP	PRP	ESP
Combustion air inlet flow kg/h (lb/h)	3,654 (8,054)	3,876 (8,545)	4,250 (9,366)
Max. Allowable Combustion Air inlet temp, °C (°F)	60 (140)	60 (140)	60 (140)

60 Hz

Tier 0			Tier 2
COP	**PRP**	**ESP**	**ESP**
4,407 (9,717)	4,870 (10,733)	5,160 (11,377)	5,160 (11,377)
60 (140)	60 (140)	60 (140)	60 (140)

Exhaust system

50Hz

Tier 0

Exhaust system	COP	PRP	ESP
Exhaust stack gas temperature °C (°F)	467 (872)	490 (914)	485 (905)
Exhaust gas flow rate, kg/h (lb/h)	3,798 (8,372)	4,046 (8,921)	4,430 (9,763)

60Hz

Tier 0			Tier 2
COP	**PRP**	**ESP**	**ESP**
428 (802)	444 (831)	500 (932)	530 (986)
4,571 (10,079)	5,116 (11,277)	5,300 (11,684)	5,385 (11,871)

Product specifications and options

Product specifications

- Liebherr Engine Control Unit
- Liebherr high-performance injection system (2000 bar)
- Hydrogenated vegetable oil (HVO) compatible

Options

- Cold start (-25 °C)
- Coolant inlet & outlet (90° elbow)
- Closed CCV
- Oil level sensor
- Top air inlet elbows
- Exhaust outlet elbow
- Fan drive
- Redundancy starter
- LiDIA diagnostic tool

Rating Definition Powergen

Ratings definition in accordance with ISO 8528 and ISO 3046

CONTINUOUS POWER (COP) refers to the maximum power output that a diesel engine can deliver continuously under constant load and rated speed for an unlimited number of hours per year, under standard operating conditions. This rating assumes regular maintenance and compliance with the manufacturer's specifications.

PRIME POWER (PRP) refers to the maximum power that a diesel engine can supply for an unlimited number of hours per year under variable load conditions. Unlike continuous power, PRP allows for load fluctuations, but the engine must not be overloaded beyond its specified limit (a 10% overload capability for governing purposes is available for this rating).

STAND-BY POWER (ESP) s the maximum power a diesel engine can supply during a power outage or emergency situation. It is intended for use only when the main power source fails and is limited to a maximum of 200 hours per year depending on the standard. No overload capability is permitted, and it is not designed for continuous or variable load operation.

DATA CENTRE POWER refers to the total electrical capacity required to operate all systems within a data center, including IT equipment, cooling infrastructure, power distribution and facility support. It must ensure continuous, reliable power delivery with redundancy and backup systems to maintain uptime.

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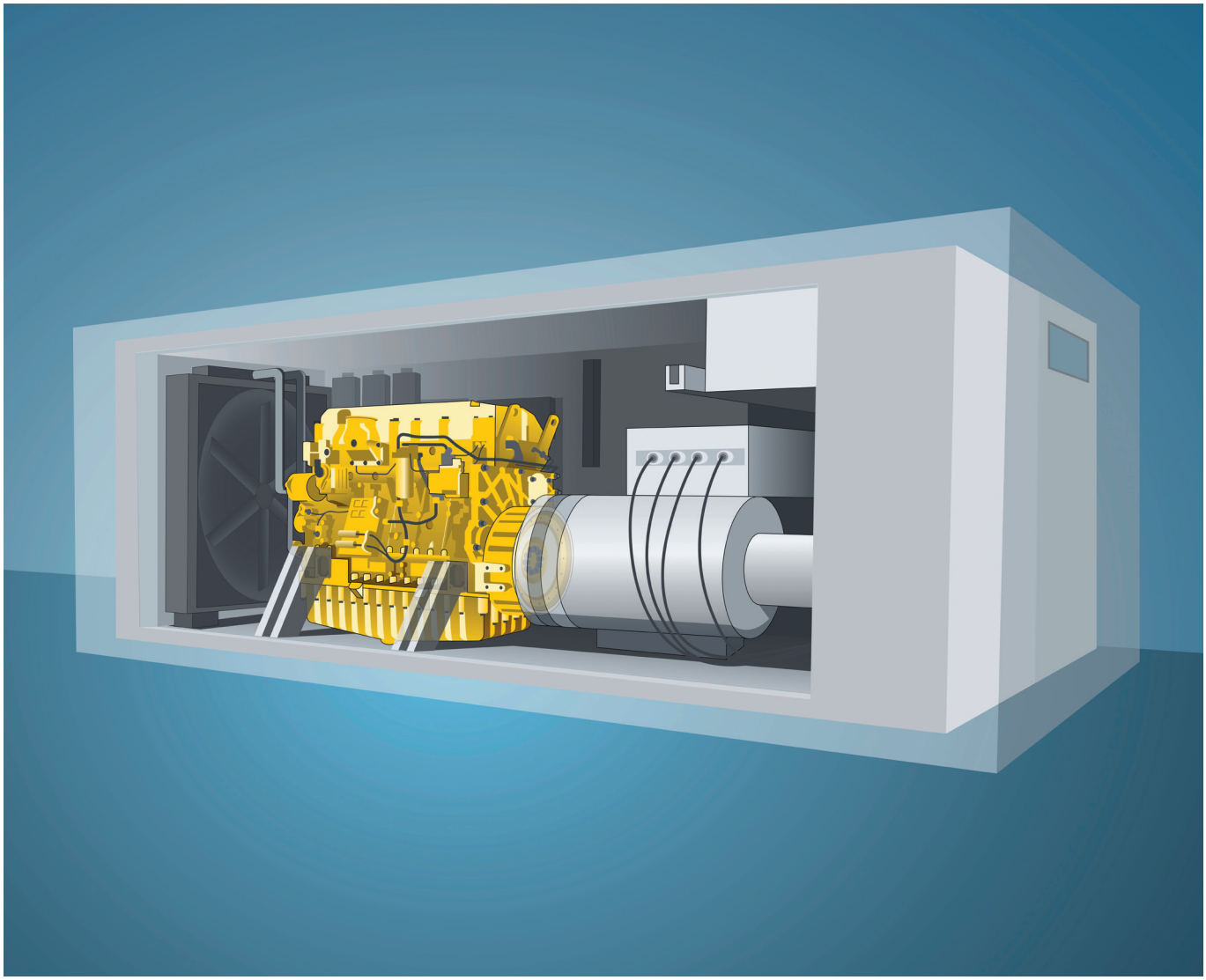

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