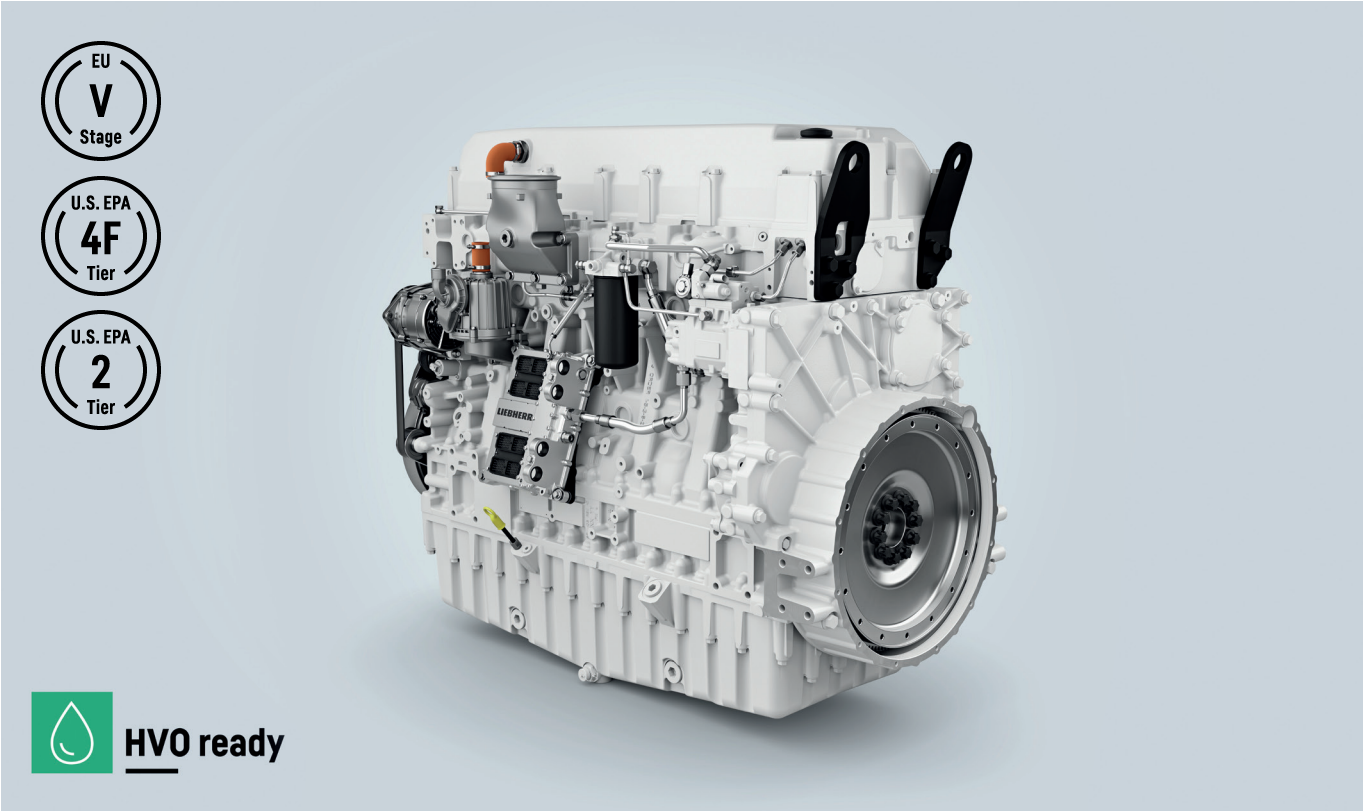
D976 engine for the power generation industry



Designed and manufactured by Liebherr, the D976 is a benchmark combustion engine engineered for mission critical power generation applications, particularly well-suited for PRP and COP operations while also supporting standby power requirements in stationary and mobile installations, including rental fleets and data centers.

Built on a robust platform and backed by Liebherr's proven engineering expertise, this 6-cylinder, 18-litre engine delivers up to 845 kW, offering outstanding flexibility across PRP and COP duty cycles, covering both constant and variable load profiles over extended running hours.

Combining high engine efficiency with optimised fuel consumption and controlled emissions performance, the D976 is designed to deliver reliable and cost effective power generation across demanding PRP and COP operating profiles. Extended service intervals, simplified maintenance and the advanced LiDIA diagnostic tool maximise reliability, minimise downtime and secure long term asset value.

System benefits for power generation packager

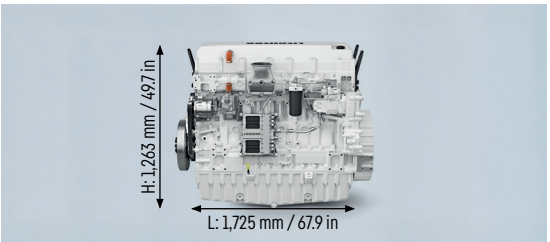
- Optimising package design with best in class power density and a benchmark kW per square metre footprint, enabling compact and competitive genset solutions.
- Simplifying system integration through a compact engine architecture and an industry leading power to weight ratio (kW/kg), supporting both mobile and stationary installations.
- Securing grid compliant operation across PRP and COP duty cycles with outstanding dynamic response under demanding load profiles (ISO 8528 5 G3 compliant).
- Enhancing system competitiveness through best in class engine efficiency and optimised fuel consumption, delivering an excellent euro per kW positioning in PRP and COP applications.
- Maximising long term asset value with extended service intervals, durable lifetime performance and advanced diagnostics supporting high availability.

LIEBHERR

Product features

Technical data

Country of manufacture		Switzerland
Configuration		6 cylinders in-line
Aspiration		Turbocharger
Fuel injection control system		High-Pressure Common Rail
Bore	mm (in)	148 (5.8)
Stroke	mm (in)	174 (6.9)
Displacement	L (in^3)	18 (1,098)
Compression ratio		16.5:1
Coolant capacity	L (US gal)	39.5 (10.3)
Lubricant capacity	L (US gal)	97 (25.6)
Estimated dry weight	kg (lbs)	1,830 (4,034)





Power ratings

50 Hz

COP			PRP			ESP		
kWm	**kWe**	**kVA**	**kWm**	**kWe**	**kVA**	**kWm**	**kWe**	**kVA**
565	537	671	675	641	802	760	722	903
Fuel optimized · Stage V			Fuel optimized · Stage V			Fuel optimized		

60 Hz

COP			PRP			ESP		
kWm	**kWe**	**kVA**	**kWm**	**kWe**	**kVA**	**kWm**	**kWe**	**kVA**
621	590	737	760	722	903	845	803	1,003
Fuel optimized · Tier 2 · Tier 4f			Fuel optimized · Tier 2 · Tier 4f			Fuel optimized · Tier 2		

Generator efficiency : 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)

Fuel optimized

Load	COP	PRP	ESP
100%	182 (117)	183 (141)	186 (157)
75%	184 (88)	183 (105)	182 (115)
50%	190 (61)	187 (72)	185 (109)
25%	211 (34)	204 (39)	200 (42)

60 Hz g/kWh (gall/h)

Fuel optimized

COP	PRP	ESP	Tier 2 ESP
186 (36.3)	189 (44.3)	191 (47.2)	194 (50.0)
188 (27.5)	187 (32.9)	186 (34.4)	208 (40.2)
186 (19.1)	192 (22.5)	191 (23.6)	212 (27.3)
221 (10.8)	212 (12.4)	210 (13.0)	218 (14.1)

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

Heat rejection*

50 Hz kW (BTU/min)

Fuel optimized

Heat rejection	COP	PRP	ESP
Charge air cooler	97 (5,516)	133 (7,564)	165 (9,384)
Exhaust	362 (20,587)	470 (26,729)	494 (28,065)
Coolant	235 (13,364)	277 (15,753)	284 (16,151)

60 Hz kW (BTU/min)

Fuel optimized

COP	PRP	ESP	Tier 2 ESP
133 (7,581)	177 (10,055)	193 (10,987)	208 (11,840)
467 (26,570)	555 (31,580)	584 (33,212)	632 (35,942)
225 (12,784)	243 (13,814)	247 (14,047)	261 (14,843)

Inlet air*

50 Hz

Fuel optimized

Inlet air	COP	PRP	ESP
Combustion air inlet flow kg/h (lb/h)	2,270 (5,004)	2,782 (6,133)	2,920 (6,437)
Max. allowable combustion air inlet temp, °C (°F)	60 (140)	60 (140)	60 (140)

60 Hz

Fuel optimized

			Tier 2
COP	PRP	ESP	ESP
2,922 (6,441)	3,450 (7,605)	3,762 (8,293)	3,773 (8,318)
60 (140)	60 (140)	60 (140)	60 (140)

Exhaust system*

50 Hz

Fuel optimized

Exhaust system	COP	PRP	ESP
Exhaust stack gas temperature °C (°F)	496 (924)	513 (955)	493 (920)
Exhaust gas flow rate, kg/h (lb/h)	2,369 (5,222)	2,782 (6,133)	3,054 (6,732)

60 Hz

Fuel optimized

			Tier 2
COP	PRP	ESP	ESP
484 (903)	493 (919)	501 (933)	512 (953)
3,039 (6699)	3,592 (7,919)	3,769 (8,309)	3,939 (8,684)

***Stage V and Tier 4f -** technical data will be available at a later stage.

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) refers to 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.

Product specifications and options

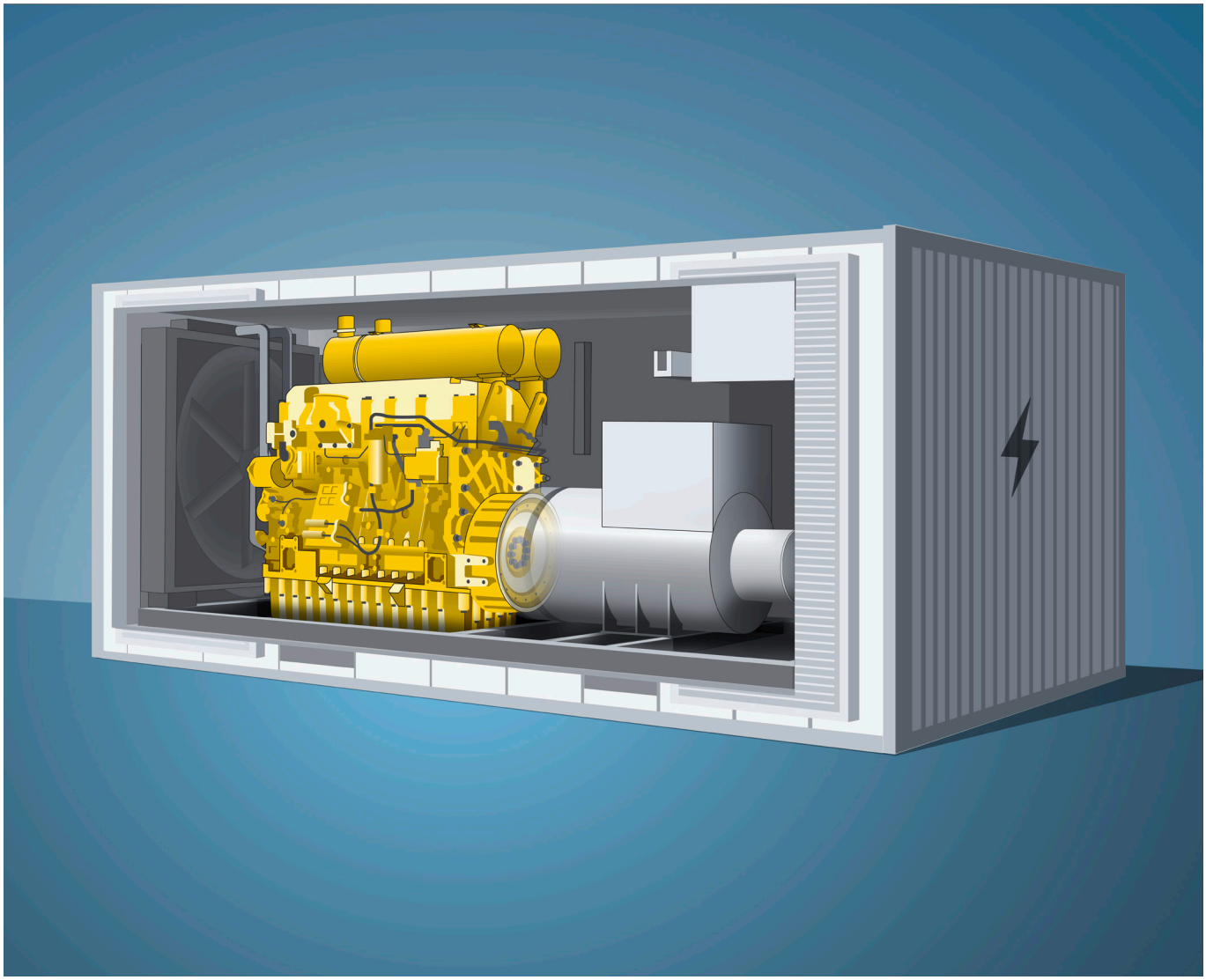
Product specifications

- Twin-scroll turbocharger
- Integrated closed crankcase ventilation system (maintenance-free)
- Liebherr Engine Control Unit
- Liebherr high-performance injection system (2,000 bar)
- Hydraulic valve adjuster (maintenance - free)
- Hydrogenated vegetable oil (HVO) compatible

Options

- Air compressor
- Cold start (-25 °C)
- Remote oil filter
- Coolant inlet & outlet (90° elbow)
- Oil pan (flat or deep)
- Remote fuel filter
- Generator 24 V (140 or 180 A)
- A/C compressor upon request
- Flywheel housing SAE1 & SAE0
- Oil level sensor
- Fan drive
- 2x power take-off
- LiDIA diagnostic tool

D976 engine
for the power generation industry



Want to know more?
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