Natural Gas Engines

LP6E77NG1 Natural Gas Engine

PRIME 140kW @1500 RPM

PRIME 140kW @1800 RPM

Remark: Photos are for reference only, please refer to the actual product

ENGINE BASIC DATA

Type	4-stroke-cycle, in-line, 6 cylinders
Bore / Stroke (mm)	110 / 135
Piston displacement (L)	7.7
Compression Ratio	10.5 : 1
Aspiration	Turbocharged intercooled
Rated speed (rpm)	1500/1800
Direction of rotation (flywheel end)	CCW
Flywheel housing	SAE3
Flywheel diameter	11.5"
Number of flywheel teeth	130
Ignition system	Digital ignition
Ignition order	1-5-3-6-2-4
Governor type	ECU

WEIGHTS AND DIMENSIONS

Net weight (kg)	620
Length X Width X Height (mm)	1600×1000×1350

ENGINE PERFORMANCE DATA

Load (%)	100	75	50
Input gas energy (kW)	373.3	281.5	189.2
Engine power (kW)	140	105	70
Brake mean effective pressure (bar)	13	9.8	6.5
Gas consumption (m^3/h)	40.7	30.7	20.6
Air to fuel ratio	12 : 1	12 : 1	11 : 1
Heat rejection to jacket water (kW)	59.7	46.7	32.2
Heat rejection to aftercooler (kW)	28.0	21.1	14.2
Heat rejection to exhaust (kW)	121.3	89.8	58.6
Heat rejection to atmosphere (kW)	24.3	18.9	14.2

EFFICIENCY

Mechanical efficiency (%)	37.5	37.3	37
Thermal efficiency (%)	48.5	48.5	48
Total efficiency (%)	86	85.8	85

ENGINE EMISSIONS DATA

NOx @(5% oxygen content, 100% load)	<500 mg/Nm^3
CO @(5% oxygen content, 100% load)	<650 mg/Nm^3

GASEOUS FUEL SYSTEM

Gaseous fuel type	Natural gas
Acceptable gas fuel	Pipeline quality natural gas
Combustion system type	Standard
Minimum fuel supply pressure (kPa)	⩾20
Maximum fuel supply pressure (kPa)	<80
Maximum fuel pressure variation	+/-3%
Maximum fuel temperature (℃)	⩽40
Minimum Gas methane number (MN)	80
Minimum low heat value (LHV, MJ/m^3)	33

INTAKE AND EXHAUST SYSTEM

Combustion air inlet flow rate (m^3/h)	610
Maximum allowable intake air restriction (kPa)	6.5
Intake manifold pressure (kPa)	129
Exhaust gas flow rate (m^3/h)	1464
Exhaust stack temperature (°C)	680
Exhaust system backpressure (maximum allowable) (kPa)	10±1

LUBRICATION SYSTEM	
Oil pressure @ low idle (kPa)	100~250
Oil pressure @ rated speed (kPa)	250~450
Maximum allowable oil temperature (℃)	120
Lube oil consumption (g/kW·h)	≤0.6
Total system capacity (including filter) (L)	18
COOLING SYSTEM	
Engine coolant capacity (L)	9
Radiator coolant capacity (L)	19
Total coolant capacity (L)	28
ENGINE NOISE DATA - @ 100% LOAD	
Noise level @ 1 m	≤96 dB (A)

*Note: Due to the difference in gas composition, the above data is for reference only.

Technical parameters:

Applicable standards:	Based on ISO-3046	
Standard conditions:	Air pressure:	1000 mbar or 100 m above sea level
	Air temperature:	25°C or 298 K
	Relative humidity:	30%
Engine output derating:	for plants installed at > 500 m above sea level and/or intake temperature > 30°C, the reduction of engine power is determined for each project.	
Gas quality:	according to TA	
	Gas flow pressure:	mbar

Ratings Definitions

Standby

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby rated kWe. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Prime

Output available with varying load for an unlimited time. Average power output is 70% of the prime rated kWe. Typical peak demand is 100% of prime rated kWe with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

Continuous

Output available with non-varying load for an unlimited time. Average power output is 70-100% of the continuous rated kWe. Typical peak demand is 100% of continuous rated kWe for 100% of the operating hours.

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