

# Natural Gas Generator set data sheet (01-01-2018)



Prime 256kWe, Natural Gas



<b>Gas Generator Set Model:</b>	TPI320XG	<b>Gas Engine Model:</b>	PSI D146L	<b>Alternator Model:</b>	Leroy Somer LSA 46.3M8
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<b>60Hz 1800 r.p.m</b>	<b>3 Phase 4 Wires</b>	<b>Power Factor: Cos <math>\phi</math> = 0.8</b>	<b>Emissions Standard</b>	N/A
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RATINGS <sup>2)</sup>	Prime Power (PRP)		Continuous Power (COP)		Rated Current	Thermal Output	Efficiency	
	kW	kVA	kW	kVA			Electrical	Thermal <sup>3)</sup>
<b>Voltage (V)</b>	kW	kVA	kW	kVA	Amps	kW	$\eta$ (%)	
380/220	256	320	N/A	N/A	486.2	320	40.0%	50.0%
416/240	256	320	N/A	N/A	444.1	320		
<b>440/254</b>	<b>256</b>	<b>320</b>	<b>N/A</b>	<b>N/A</b>	<b>419.9</b>	<b>320</b>		
480/277	256	320	N/A	N/A	384.9	320		

### Conditions and Defintions:

- 1) COP are applicable for supplying continuous electrical power for full load operations, there is no overload available.
- 2) Engine output data under ISO8528/1, ISO3046/1, BS5541/1, DIN6271 conditions.

## Genset General Specifications

Gas Genset model	TPI320XG	Electrical efficiency	40.0%
Gas Engine model	D146L	Thermal efficiency	50.0%
Electrical output (kW/kVA)	256/320	Total efficiency	90.0%
Fuel	Natural gas	Speed regulating rate	0-5% Adjustable
Frequency (HZ)	60	Dimension (lengthxwidthxheight) (mm)	2850x1390x1820
Speed (rpm)	1800	Net Weight (kg)	2320

## Engine Specifications

Manufacturer	PSI
Model	D146L
Mechanical power	291 kWm
Speed	1800 rpm
Configuration / number of cylinders	V-type / 8
Bore / Stroke	128/142 mm
Displacement	14.6 L
Compression ratio	10.5:1
Firing Order	1-5-7-2-6-3-4-8-1
Direction of rotation	Counter clockwise from flywheel
Speed Governor	Electronic
Ignition system	Altronic
Spark plug	NGK
Induction system	Turbo charge air cooled
Combustion type	Spark ignition
Cooling mode	Radiator

### Cooling system

Total coolant capacity (engine only)	43.2 Litres
Total coolant capacity (engine with radiator)	127 Litres
Engine coolant flow	680 Liters/min
Standard thermostat range	71-85°C
Maximum allowable top tank temperature	104-110 °C

### Lubrication system

Engine oil capacity (min-max)	25-31 Litres
Oil filter capacity	7.1 Litres
Oil consumption	≤1.0 g/kW.h
Maximum allowable oil temperature	121 °C
Oil grade	API CD/CF or higher, SAE 15W-40

### Exhaust system

Maximum permissible restriction	10.2 kPa
Exhaust gas flow	53.6 m <sup>3</sup> /min
Exhaust gas temperature	750°C

### Air induction system

Maximum allowable Intake Air Restriction with Air Cleaner	
- Clean	1.24 kPa
- Dirty	3.74 kPa
Combustion air required (entire engine)	19 m <sup>3</sup> /min

### Fuel system

Maximum EPR rated pressure	6.9 kPa
Minimum running pressure to EPR	1.7 kPa
Minimum gas supply pipe size	2 x 1-1/4" NPT
Lower calorific value	34.71 MJ/Nm <sup>3</sup>
Gas consumption at 100% standby	86.7 Nm <sup>3</sup> /h
Gas consumption at 100% load	78.8 Nm <sup>3</sup> /h
Gas consumption at 75% load	59.1 Nm <sup>3</sup> /h
Gas consumption at 50% load	39.4 Nm <sup>3</sup> /h
Gas consumption at 25% load	19.7 Nm <sup>3</sup> /h

### Electrical system

Charging generator	24V x 45A alternator
Starting motor	24V x 7kW
Battery voltage	24V
Ignition controller	12 or 24V DC

### Thermal Data

Heat rejected to cooling water at rated Load	16.2 kW
Heat rejection per CAC	46.9 kW

## Alternator Specifications

60Hz/1800R.P.M

Manufacture / Brand	Leroy-Somer
Model	LSA46.3M8
AVR model	R250
Coupling / Bearing	Direct /Single bearing
Phase	3 Phase
Power factor	Cos $\phi$ = 0.8
Winding pitch - code	2/3 - (wdg6)
Drip proof	IP 23
Excitation	Shunt

Prime output power	272kW/340kVA
Insulation class	H
Voltage regulation	± 0,5 %
Totale harmonic distortion THD <sub>no load</sub>	<2.5% - on load <2.5%
Number of wires	12
Wave form : NEMA = TIF - (*)	< 50
Altitude	≤ 1000 m
Overspeed	2250 min <sup>-1</sup>
Air flow	0.58 m <sup>3</sup> /s

## Control Panel

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- Deep sea DSE7320 controller
  - Digital control panel
  - Volts, current, frequency, rpm (instruments)
  - Genset running hours
  - Battery voltage and charging
  - Over speed pre-alarm & shutdown
  - High water temp. pre-alarm & shutdown
  - Low oil pressure pre-alarm & shutdown
  - Low voltage pre-alarm & shutdown
  - Overcurrent pre-alarm & shutdown
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## Standard Features

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- High efficient water cooled gas engine with radiator
- Brushless alternators (Class H, with AVR.)
- Heavy duty rubber anti-vibration mountings
- Starter batteries and connecting cables
- Separate engine-drive battery charging alternator
- Industrial silencer for open type generator sets
- Circuit breaker - 3 pole (MCCB)
- Maintenance free battery
- Low coolant level sensor
- Oil filter - Air filter
- Fully welded steel baseframe
- Ignition system
- Gas train: ball valve, gas filter, gas pressure regulator, pressure gauge, electromagnetic valve;
- Wiring with IEC standard
- Factory test certificate
- Operation & Maintenance manual & Diagrams
- Worldwide product / Technical support

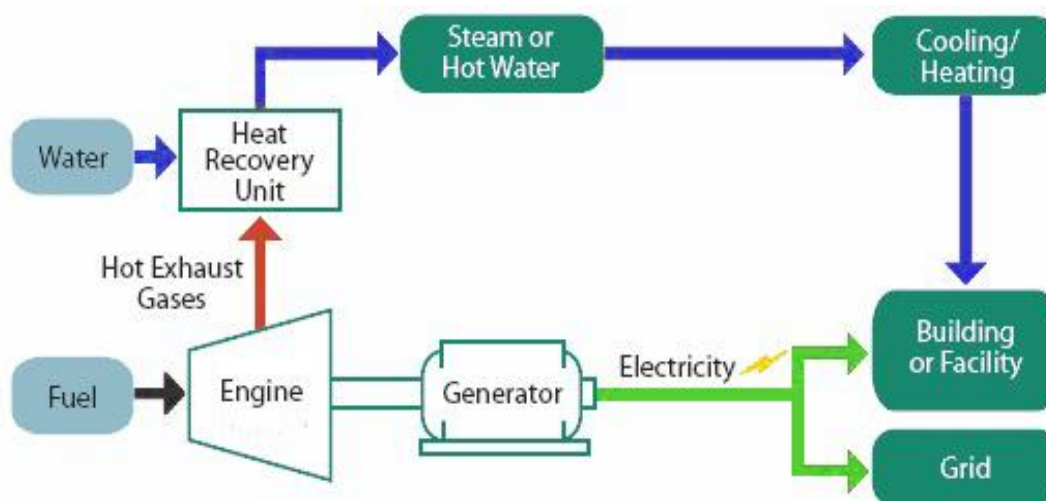
## Optional

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- Automatic Transfer Switch (ATS)
- Canopy/Enclosure
- Water heater for severe cold weather
- Lub-oil heater for severe cold weather
- Silent containerised
- Residential silencer
- Panel for auto synchronization with Mains
- Extra air filters for time-maintenance
- Automatic oil supply system
- Extra oil filters for time-maintenance
- Parallel cabinet
- Full range of attachments and options available for alternator
- Flame arrester in gas train
- Desulfurization system
- Gas pretreatment system
- Dehydration system
- Genset Commissioning / Testing on site

## Combined Heat and Power Systems

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We offer Combined Cooling Heating and Power (CHP and CCHP) packages for our gas generator sets. It can recover 75%-90% combined electrical and thermal efficiency, resulting in major reductions in your overall energy costs. In the past years we have supplied CHP systems to Germany, Russia, Indonesia etc. We have the experience and capabilities to meet your total energy requirements.

## Warranty

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The goods of Tide Power Technology are under warranty against defects in materials and workmanship for period 1 year or 2000 hours operation time whichever come first from the date of delivery to the end user (except the damageable spare parts of genset caused by incorrect man-made operation), and that the aforementioned warranty for the same token is back up by the engine (8750 hours for continuous duty which should not exceed 75% of the prime power rating) & alternator manufactures and their global distributors.