

Perkins based INDUSTRIAL GAS ENGINES

Technical Data

QES450NG G

Spark Ignition Gas Engine
Generating set



Basic technical data

Engine Manufacture	Perkins
Engine Model	4006trs2
Number of cylinders	6
Cycle	Four stroke
Induction system	Turbocharged and charge cooled
Compression ratio	12:1
Bore	160 mm
Stroke	190 mm
Cubic capacity	22.921 litres
Direction of rotation (view from front)	Clockwise
Firing order	1,5,3,6,2,4
Alternator Manufacture	Stamford
Phase	3 Phase
Voltage	400-415V
Assumed Power factor	1

Dimensions and Connections

Hot water Flow	DN65 Flange
Hot Water Return	DN65 Flange
Intercooler connections	DN50 Flange
Gas Connection (natural gas (Biogas))	DN50 Flange DN65 Lange
Exhaust Connection	6"
Drain and condensation connections	1" BSP
Condensation should have a trap included to prevent exhaust gases escaping, done by customer	

Overall dimensions (close fit canopy)

Height	2100 mm
Length	4000 mm
Width	2000 mm
Weight	6,600kg(approx.)

If the engine is to operate in ambient conditions other than those of the test conditions, suitable adjustments must be made for the changes. For full details, contact QES or KVT

General installation		Units
Fuel Type	Natural gas	
Fuel heat input	990	kW
Electrical output	375	kWe
	468	kVA
Natural gas flow	102.2	M3/hr
Exhaust gas outlet temperature	485	°C
Hot water flow (max)	96	°C
Jacket water exit temperature (max)	45	°C
Charge cooler entry temperature (max)	38	%
Electrical efficiency	400-415	V
Power factor	1	pf

Actual alternator efficiency	93	% @ pf 1
Emissions	CO mg/Nm3	<800
	NOX mg/Nm3	<500

Caution: The airflows shown in this table will provide acceptable cooling for an open power unit operating in ambient temperatures of up to 53 °C (127 °F) or 46 °C (114.8 °F) if a canopy is fitted. If the power unit is to be enclosed totally, a cooling test should be done to check that the engine cooling is acceptable. If there is insufficient cooling, contact us.

Construction

- Rigid base frame made of profiled steel including engine bund.
- Direct coupled engine and generator assembly with flexible drive plate.
- Engine generator assembly flexibly mounted on the base frame.
- Heat dump/radiator mounted on generator frame. On the larger sets radiator may be disconnected and shipped loose to fit inside ISO shipping container for export.

Exhaust System

Primary exhaust silencer is mild steel and is rated at industrial sound level (85DBA @1 meter) and will be supplied loose.

Gas train

Includes; Manual shut off valve, Filter, Double block solenoid, 30-50mbar pressure regulator.

High pressure train available on request.

Canopy (Optional)

- Highly effective sound enclosure in packs of sheet steel construction, powder coated, Handles on each side part, insulation thickness 75 mm, Constructed from 2 mm steel plate, and perforated galvanized steel. Air passages acoustically lined and waterproof.

Heat recovery system (Optional)

- Comprising a variable speed water pump, pressure expansion vessel, pressure relief valve and drain valves.
- Heat recovery from the engine and exhaust heat exchanger to a stainless steel plate heat exchanger.
- Temperature control achieved by varying the water pump speed and a 3 port divert valve to an external heat dump circuit.
- The secondary circuit monitors flow and return temperatures and operates a 3 port mixing valve to maintain flow temperature to a setpoint. Excess heat not recovered is diverted to the heat dump radiator in the primary circuit.

Control Panel

Sheet metal enclosure floor mounted (1800x600x400mm). Deepsea electronics PLC based system enables auto and manual control for start/stop, voltage control, mains synchronization, load control. Remote control Data access through Ethernet (customer connection required). Control and load cables not supplied, and connection will be required between panel and engine sub panel once installed.

Engine control

Start/stop, engine speed control, monitoring for engine coolant inlet and outlet temperatures and exhaust temperature. Circulating pump operating status and variable speed control to maintain cylinder head temperature.

Alternator control

Control of the alternator mounted AVR for voltage output, power output and Power Factor.

Emergency stop

Canopy mounted push button with external link.

If external EST operated engine will stop./

If Canopy ESB operated only the engine will stop

Critical points

T1 Engine coolant outlet temperature

T2 Engine coolant inlet temperature

T3 Exhaust temperature

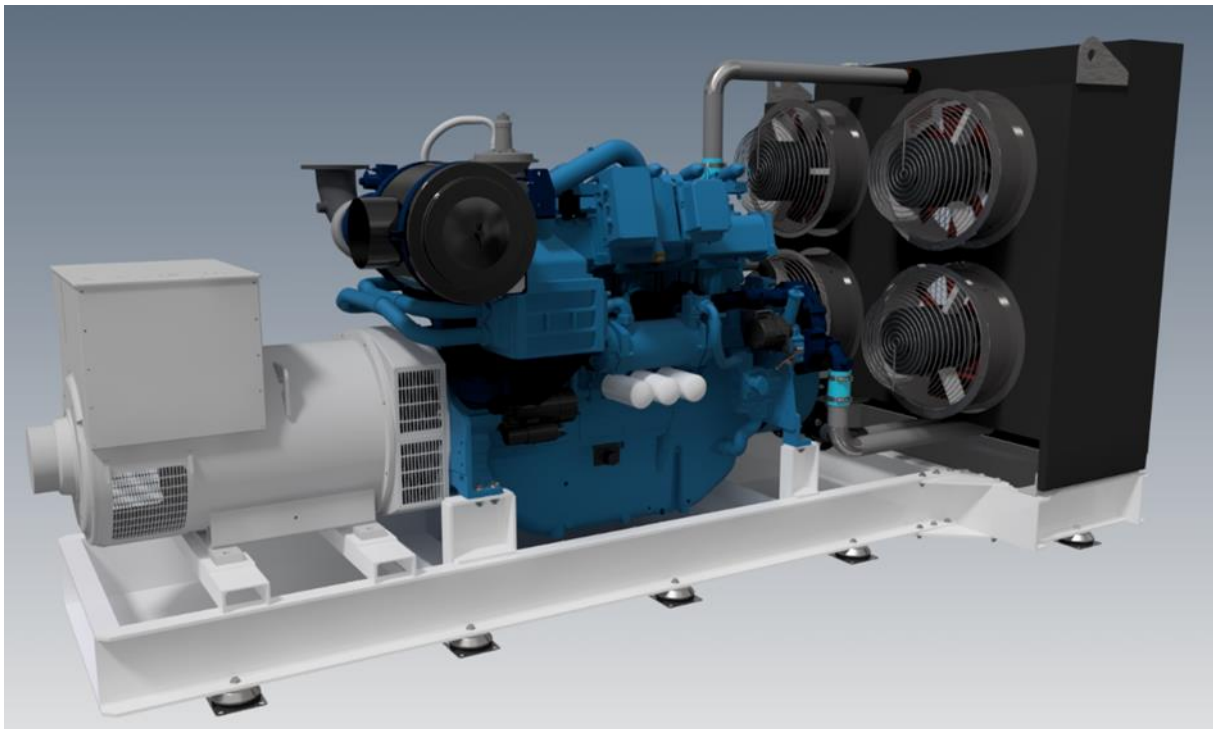
T4 Secondary water feed temperature

V1 Primary circuit divert valve position 0 -100%

V2 Secondary circuit mixing valve position 0-100%

Emissions reduction (Optional)

Standard 3 way catalyst can be add at time of order to reduce the NOX and CO2 for site requirement or regulation (naturally aspirated) For turbocharged or lean-burn engines SCR low NOX systems can be added.



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MANUFACTURED BY:

