Perkins based
INDUSTRIAL GAS ENGINES

Technical Data ElectropaK H2 KVT-E70-Hydrogen

Gas Engine

Basic technical data

Number of cylinders 6
Cylinder arrangement ... ...Vertical, In line
Cycle . ... 4 stroke, spark ignition
Induction system ... ... Turbocharged
Compression ratio . ...LC piston
Bore... ... ...105 mm
Stroke ... ...135 mm
Cubic capacity... ... ... 7,0 litres
Direction of rotation ... ... Anti-clockwise viewed on flywheel
Firing order 1, 5, 3, 6, 2,4
Cylinder 1 .. ..Furthest from flywheel
Total weight of electro unit (engine only)
- estimated total weight (dry). ... ...788 kg

Overall dimensions

Height .. ..1142 mm
Length ... ...1763 mm
Width. ... ...756 mm

Moments of inertia (mk²)

Engine flywheel... ... ... 0.27 kgm^2

Centre of gravity

Wet engine	Unit	Wet engine
Forward from rear of block	mm (in)	476 mm(15,8)
Above centre line of block	mm (in)	176 mm(7,4)
Offset to Rhs of centre line	mm (in)	16 mm(1,6)

Performance

All data based on operation to ISO 14396, ISO 3046/1 standard reference conditions.
Speed variation at constant load ... ... ISO 8528 G2 (Mech) ± 5 %

Test conditions

-Air temperature.. ... ...25 °C (77 °F)
-barometric pressure .. .. 100 kPa (29.5 in hg)
-relative humidity 30%
-Hydrogen LHV ... ...119,96 MJ/kg

Cooling system

-face area 524800mm2
-rows and materials... ... ... 4 rows Aluminium
-matrix density and material .. ..Aluminium 10 fins/inch
-width of matrix.. ... ... .220 mm
-height of matrix ... ...789 mm
-pressure cap setting. ... ... .100 kPa

Fan

-diameter ... ... 610 mm
-drive ratio 1.2:1
-number of blades 7
-material ... ... .Nylon
-type .. .. .pusher
-power @ 1500 rev/min. 5kW

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 (115 °F) if a canopy is fitted with an air flow restriction of up to 0,125 kPa. 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 Kemper en Van Twist Technical Service Department.*

General installation

Designation	Units	Type of operation and application
		Prime
		50 Hz
Gross engine power	kWm	100
Engine Torque	Nm	635
Mean piston speed	m/s	6.8
ElectropaK net engine power	kW	95
Engine coolant flow (coolant pump ratio 1.2:1)(against 35 kPa restriction)	l/min	142
Fuel consumption	kg/hr	9.1
Combustion air flow	kg/hr	-
Exhaust gas temperature (max)	°C	550
Cooling fan air flow (zero duct allowance)	m³/min	282
Typical Genset Electrical output (0.8pf 25 °C)	kWe	91
	kVA	113
Assumed alternator efficiency	%	95,7

Note: Cooling fan air flow (zero duct allowance) at 60 Hz Stand-by assumes 1.25:1 fan ratio and 120 kPa restriction

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Coolant

Total system capacity
-with radiator . ... .21 litres
-without radiator ... ... 9.5 litres
Maximum top tank temperature ... ... 110 °C
Maximum permissible external system resistance ... ... 35 kPa
Thermostat operation range.. ... ...82 - 93 °C (180 - 199 °F)
Recommended coolant immersion heater rating .. ..TBA kW
Recommended coolant:
50% ethylene glycol with a corrosion inhibitor (BS 658 :1992 or MOD AL39) and 50% clean fresh water.

Exhaust system

Maximum permitted back pressure of the complete exhaust system is 4.0 kPa

Fuel system

Recommended fuel: Hydrogen gas with less than 1% impurities. Reference should be made to KVT Gas B.V. to determine suitability. Gas supplies must be filtered to the same standard as the engine intake air (i.e. Maximum particle size not to exceed 50 microns).

Gas supply pressure ... ... … . . … … … … … … ± 10.0 bar
Regulator type .. .. … …Quad chamber design

Emissions at 100% load (Correlation 15 % O_2)

-NO_x.. ... ... … … … PPM –
-CO .. .. … … … PPM –
-HC .. .. … … … PPM –
-Engine suface noice ... ... dB (A) 98
-Exhaust sound power level.. ... ... .dB (A) 120

Ignition system

Primary system ... ... Woodward
Primary voltage .. .. 12 volts
Polarity ... ... Negative earth
Spark plug gap ... ... …. -.- mm
Ignition timing . ...-° BTDC

Electrical system

Type ... ... Insulated return
Starter motor .. .. 12/24 volts
Starter motor power ... ... 4.2 kW
Number of teeth on flywheel... 126
Number of teeth on starter motor 10
Minimum cranking speed ... ... 120 rev/min

Lubrication system

Lubricating oil capacity

Sump option... ... ...G0100
Minimum Sump capacity... ... ... 12.4 litres
Maximum Sump capacity ... ... 149 litres
Maximum engine operating angles
-front up, front down, right side or left side. ... ... 2 5 ° continuous
Shutdown switch setting... ... ... .1,0bar normally closed

Lubricating oil pressure

-relief valve opens.. ... ... 430 kPa
-at maximum no-load speed .. .. 340 kPa
Maximum continuous oil temperature (in rail) ... ... 125 °C (257 °F)
Lube oil consumption... ... ...0,03kg/h

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