

# Perkins based INDUSTRIAL GAS ENGINES

## Technical Data ElectropaK NG KVT-E33SI

### Basic technical data

Number of cylinders . . . . . 3  
 Cylinder arrangement . . . . . Vertical, In line  
 Cycle . . . . . 4 stroke, spark ignition  
 Induction system . . . . . Naturally aspirated  
 Compression ratio . . . . . 12.1:1  
 Bore . . . . . 105 mm (4.13 in)  
 Stroke . . . . . 127 mm (4.99 in)  
 Cubic capacity . . . . . 3,3 litres  
 Direction of rotation . . . . . Anti-clockwise viewed on flywheel  
 Firing order . . . . . 1, 2, 3,  
 Cylinder 1 . . . . . Furthest from flywheel  
 Total weight of electro unit (engine only)  
 - estimated total weight (dry) . . . . . 329 kg  
 - estimated total weight (wet) . . . . . TBA kg

### Overall dimensions

-height . . . . . 915 mm  
 -length . . . . . 1045 mm  
 -width . . . . . 631 mm

### Moments of inertia (mk<sup>2</sup>)

-engine flywheel . . . . . 1,14 kgm<sup>2</sup>

### Centre of gravity

Fan to flywheel	Unit	Wet	Dry
Forward from rear of block	mm (in)	192.9	TBA
Above centre line of block	mm (in)	139.9	TBA
Offset to Rhs of centre line	mm (in)	-4.7	TBA

**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 application	
		Prime	Stand-by
		50 Hz	50 Hz
Gross engine power	kW	31	34
Mean piston speed	m/s	6.3	6.3
ElectropaK net engine power	kW	30	33
Engine coolant flow (coolant pump ratio 1.25:1)	l/min	125	125
Fuel consumption	Kg/h	9	9.2
Combustion air flow	kg/h	110	120
Exhaust gas temperature (max)	°C	610	620
Cooling fan air flow (zero duct allowance)	m <sup>3</sup> /min	45.6	45.6
Power Factor		0.8	0.8
Typical Genset Electrical output (0.8pf 25 °C)	kWe	27	30
	kVA	34	37.5
Assumed alternator efficiency	%	90	

### Performance

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

### Test conditions

-air temperature . . . . . 25 °C (77 °F)  
 -barometric pressure . . . . . 101 kPa (29.5 in hg)  
 -relative humidity . . . . . 30%  
 -natural gas LCV . . . . . 31,65MJ/Nm<sup>3</sup>

### Cooling system

Radiator  
 -weight (dry) . . . . . 10 Kg  
 -face area . . . . . 0,276m<sup>2</sup>  
 -rows and materials . . . . . single row aluminium  
 -matrix density and material . . . . . aluminium 12,7 fins/inch  
 -width of matrix . . . . . 526 mm (20.7 in)  
 -height of matrix . . . . . 524 mm (20.6 in)  
 -pressure cap setting . . . . . 107 kPa (15.5 lb/in<sup>2</sup>)

### Fan

-diameter . . . . . 457 mm (18 in)  
 -drive ratio . . . . . 0.85:1  
 -number of blades . . . . . 7  
 -material . . . . . composite  
 -type . . . . . pusher  
 -power @ 1500 rev/min . . . . . 0,7

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## Coolant

Total system capacity

-with radiator ..... 10, litres

-without radiator ..... 4,4 litres

Maximum top tank temperature ..... 110 °C (230 °F)

Maximum permissible external system resistance ..... 35 kPa

Thermostat operation range..... 82 - 93 °C (180 - 199 °F)

Coolant pump ratio and method of drive ..... gear driven 2:1

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 kPa

Exhaust outlet size ..... 56 mm

## Fuel system

Recommended fuel: Natural Gas LHV at 31.6 MJ/m<sup>3</sup>. Other fuels may be used, for example landfill or digester gas. Ratings will vary from those shown.

Where fuels other than Natural Gas are being considered it is imperative that a full gas analysis (including details of any solid or liquid components) be obtained. Reference should be made to Kemper en Van Twist 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 ..... 1,5 kPa to 5 kPa at full rated flow

Carburettor type ..... Impco with zero pressure regulator

Installation of gas supply and shut off valves to be in accordance with local regulations.

## Ignition system

Primary system ..... GECM

Primary voltage ..... 12 volts

Polarity ..... Negative earth

Spark plug gap ..... 0,25 mm

Ignition timing ..... 21° BTDC

## Electrical system

Type ..... Insulated return

Starter motor ..... 12 volts

Starter motor power ..... 3 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

Total system..... 8,3 litres (14.1 UK pints)

Minimum ..... 6,2 litres (9.7 UK pints)

Maximum ..... 7,8 litres (12.3 UK pints)

Maximum engine operating angles

-front up, front down, right side or left side. .... 25° continuous

Sump drain plug tapping size. .... 3/4 in x 16 UNF

Shutdown switch setting (where fitted) ..... 60 - 90 kPa

Oil pump speed and

method of drive ..... gear driven @ 2 x engine speed

Oil pump flow:

1500 rev/min ..... TBA

1800 rev/min ..... TBA

### Lubricating oil pressure

-relief valve opens..... 415 - 470 kPa (60 - 68 lbf/in<sup>2</sup>)

-at maximum no-load speed .. 276 - 414 kPa (40 - 60 lbf/in<sup>2</sup>)

Maximum continuous oil temperature (in rail) ..... 125 °C (257 °F)

Oil consumption at full load as a % of fuel consumption:..... 0,15%

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Note: Gen set meets the performance class G2 according to the Iso standard 8528-5.

All information in the document is substantially correct at the time of printing but may be subsequently altered by the company.

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MANUFACTURED BY:

