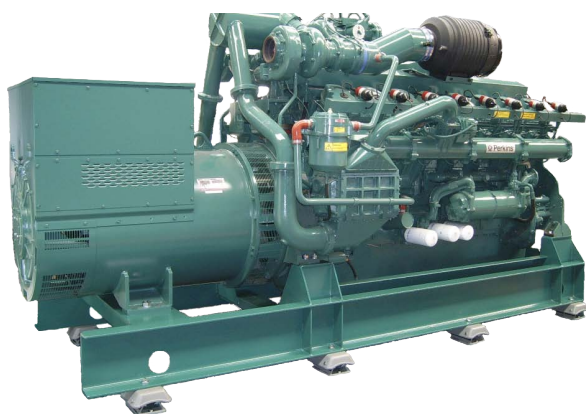




**Perkins®**  
4000 SERIES

POWERED INDUSTRIAL GEN-SETS



EVW/PERKINS

**4016-61TRS**

Gas genset - Cogeneration spec

TRS1 : 884 kWe Baseload Power @ 50 Hz

TRS2 : 1011 kWe Baseload Power @ 50 Hz

Illustrated model: 4016-61TRS2

## ENGINE SPECIFICATIONS

MAKE.....PERKINS  
ENGINE TYPE.....4000 series with 'cogeneration' specifications  
MODEL.....4016-61TRS  
NUMBER OF CYLINDERS.....16  
CYLINDER LAYOUT.....60°, in V  
DISPLACEMENT.....61,123 litres  
CYCLE.....4 stroke  
BORE.....160mm  
STROKE.....190mm  
COMPRESSION RATIO.....12:1  
MEAN PISTON SPEED.....9,5 m/s  
INTAKE SYSTEM.....turbocharged, air to water charge cooled

### GOVERNOR

ELECTRONIC.....standard  
conforming to ISO3046/4: 1986 Class A1

### FUEL SYSTEM

TYPE.....electronic AFR control system  
GAS TRAIN.....ball valve, pressure gauge, safety shutoff valve  
AIR/GASMIXER.....zero pressure regulator, gas throttle, lambda  
IGNITION.....separate industrial ignition coils  
CONNECTION.....flexible, metal braided  
FILTERS.....full flow spin-on type  
GAS SUPPLY PRESSURE.....50-250mbar

### COOLING SYSTEM

TYPE.....water/water plate heat exchangers  
COOLANT CAPACITY.....95 litres  
50% WATER/50% GLYCOL.....antifreeze to -37°C  
COOLING PUMPS.....frequency drive

### LUBRICATION SYSTEM

LUBRICATING OIL CAPACITY.....286 litres  
OIL CONSUMPTION.....after running in : 0,25 g/kWh  
OIL FILTER.....spin-on full flow type  
COOLING OIL.....yes

### ELECTRICAL SYSTEM

STARTER MOTOR.....2 x 24V/2 x 16,4kW  
RATION FLYWHEEL/STARTER.....13:1  
TYPE.....negative earth

## ALTERNATOR SPECIFICATIONS

MAKE.....LEROY SOMER  
MODEL.....LSA 50.2 VL10  
TYPE.....4 pole, revolving field  
INSULATION CLASS.....H  
PROTECTION CLASS.....IP23  
EFFICIENCY for 400V, Class H/40°C, P.F. = 1.....97,0%  
EFFICIENCY for 400V, Class H/40°C, P.F. = 0,8.....96,0%  
BEARING LAYOUT.....single bearing  
DIRECT AXIS TRANSIENT REACTANCE X'd, saturated .....16,0  
VOLTAGE REGULATION.....± 0,5%  
TELEPHONE INTERFERENCE FACTOR (TIF).....<50  
SHORT CIRCUIT CAPACITY.....300%, max 10 sec

### FEATURES:

- Brushless, self-exciting and self-regulating.
- 3-pole circuit breaker and current transformers.
- Built-in overvoltage protection device.
- Alternator meets requirements of BN EN 60034 and the relevant sections of BS5000, VDE 0530 REM, NEMA MG1-32, IEC34.1, CSA C22.2-100, AS1359 and ISO8528, EN 55011 class B.
- The stator coil features a 2/3 pitch, eliminating the harmonic voltage waveform distortions of the 3th order (3th, 9th, 15th,.....). This is to be found the optimum design to supply trouble-free power to non-linear loads, as well as for parallel operation with mains.
- The rotor has been balanced with superior performance than the requirements of BS6861:part1 grade 2.5, ensuring minimal vibrations during operation.

## ASSEMBLY

- Engine and alternator are close coupled and vibration-free mounted on a rigid, welded, common frame.
- The complete genset is mounted on anti-vibration insulators.
- All hot and rotating parts are equipped with protection guards.
- Protective finisher coating in green/blue colour.
- Lifting by using lifting bars.
- The installation is constructed in a ISO 9001 environment.
- Oil pressure, water temperature and overspeed protection.
- Our cogeneration units comply with the prescriptions of TA Luft.

EVW/PERKINS 4016-61TRS/ENG

## STANDARD EQUIPMENT

### CERTIFICATE SUPPORT

- Energy measurement for electric, thermal and input power is included and homologated for certificate support.

### COOLING SYSTEM

- Stainless steel plate heat exchangers for the optimum heat transfer of the engine cooling water and mixture cooling water.
- Stainless steel tube heat exchanger for the optimum heat recovery of the engine exhaust gasses (120°C by default).

### LUBRICATING SYSTEM

- Automatic suppletion system (including mechanic pumps, filters,...).
- Sufficient capacity of the lube oil tanks for 2.000 running hours.

### EXHAUST GAS CONDUIT

- Absorbion type steel silencer (-60dBA) with flanges, joints and bolts.
- Stainless steel trajectory with thermal and acoustic isolation.

### IGNITION

- Electronic ignition with knock detection and temperature sensing.
- Single coil per cylinder, cycle of 2.000 operating hours.
- According the interference limit values of EN 55011 class B.

### OPERATOR'S MANUAL AND WIRING DIAGRAM

### POWER PANEL

- Protected power departure terminal with 3 pole circuit breakers and current transformers mounted in a comfortably sized power panel.
- Degree of protection IP54.

## CONTROL AND REGULATOR PANELS

### STANDARD CONTROL PANEL TYPE PLC

- Full programmable panel with PLC for automatic start, control and protection in function of the customer requirements, featuring extensions for modem and/or MOD/PROFIBUS access (optional) for remote troubleshooting and diagnostics.

### COMPLIANCE CONNECTION REQUIREMENTS SYNERGRID

- The installation is by default in accordance with the specific technical connection requirements for distributed generation equipment that operate in parallel with the distribution grid and are therefore in accordance with the requirements of local grid operators in Belgium.
- Visible, lockable and permanently accessible security breaker.
- Special protection for distributed generation:  
Decoupling of the type recognized by the local grid operator.

## OPTIONS

### ENGINE

- Coolant system immersion heater.

### ALTERNATOR

- NEWAGE STAMFORD alternator with identical efficiency ratings and power output, instead of LEROY SOMER.

### COOLING SYSTEM

- Supplementary stainless steel exhaust gas condensor.
- Separation of charge cooler in two stages (cold, hot).
- Alternative cooling systems (consult EVW).

### ALTERNATIVE FUELS

- Valorization digester gas/landfill gas  
Electric efficiency only valable with methane number(MN)  $\geq 70$   
100% baseload power at  
MN = 70 > CH<sub>4</sub> > 55  
100-75% baseload power at  
MN = 55 > CH<sub>4</sub> > 45

### EXHAUST GAS CONDUIT

- Absorbion type steel silencer (-70dBA) with flanges, joints and bolts.

### CANOPY

- Sound attenuating canopy type drop-over for indoor and outdoor installation.
- Sound attenuating canopy for indoor and outdoor installation mounted with the genset on a common baseframe.
- Sound attenuating canopy for outdoor installation mounted with the genset equipped with a catch tank for leaks under the entire frame, pumps, piping, heat exchangers, control and power bord in separate operator compartment and double wall lube oil tank on a common baseframe, 3 interior incandescent lighting devices, sockets, doors with panic locks,...(READY-TO-OPERATE).

### STEAM GENERATION

- Steam generator for production of  $\pm 0,8$  T/h at 7 bar (to be deployed outside of the canopy)
- A bypass valve with automatic valves is provided over the exhaust gas conduit.



## OPERATING DATA

Ratings at Baseload power DIN-ISO3046/1, BS5514 and DIN6271

	4016-61TRS1	4016-61TRS2
OUTPUT VOLTAGE	400/230V/50Hz	400/230V/50Hz
SPEED	1500 min <sup>-1</sup>	1500 min <sup>-1</sup>
BRUTE ELECTRIC POWER (cos phi 1)	884 kWe	1011 kWe
NET ENGINE POWER	912 kWm - 1239 bhp	1042 kWm - 1416 bhp
FUEL CONSUMPTION AT 50% LOAD	2,68 kJ/kWs	2,66 kJ/kWs
75% LOAD	2,60 kJ/kWs	2,58 kJ/kWs
100% LOAD	2,51 kJ/kWs	2,48 kJ/kWs
BRUTE ELECTRIC EFFICIENCY (cos phi 1)	38,7 %	39,2 %
EXHAUST GAS TEMPERATURE AT FULL LOAD	482 °C	468 °C
EXHAUST GAS MASSFLOW AT FULL LOAD	4932 kg/h	5652 kg/h
MINIMUM AIR FLOW (combustion and cooling)	744 m <sup>3</sup> /min	840 m <sup>3</sup> /min
MAXIMUM EXHAUST GAS BACKPRESSURE (after silencer)	3,5 kPa	1,5 kPa

## MAINTENANCE AND SERVICE

For EVW service is a matter of honour. Continued investments to develop the service department and the strategic spare parts stock enables our service team, equipped with advanced tools, to ensure proper maintenance and rapid repairs. For EVW service is never an option but always part of the product.

EVW can offer standard and omnium maintenance contracts as well as maintenance on demand.



EVW uses exclusively PERKINS engines and is one of the three official European



**Gas Partner**

With recent developments in the diesel and gas engine market EVW's OEM Partner status has certainly resulted in added value for the end user. Whereas the market used to apply conventional technology and mechanical know-how, the breakthrough of electronics and software can now no longer be overlooked. At the same time this development requires utmost prudence at the level of system reliability and support. To make sure they can offer service quality to the end user and to protect their brand image engine manufacturers will therefore leave service operations only in the hands of specialized companies, i.e. partners.

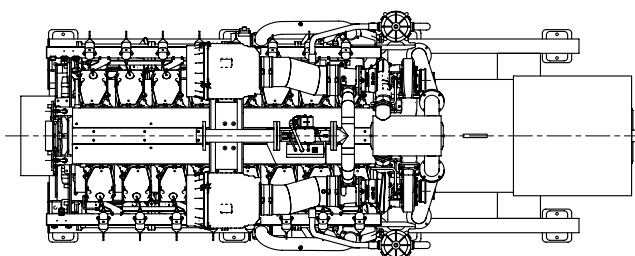
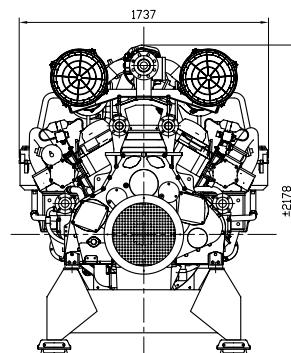
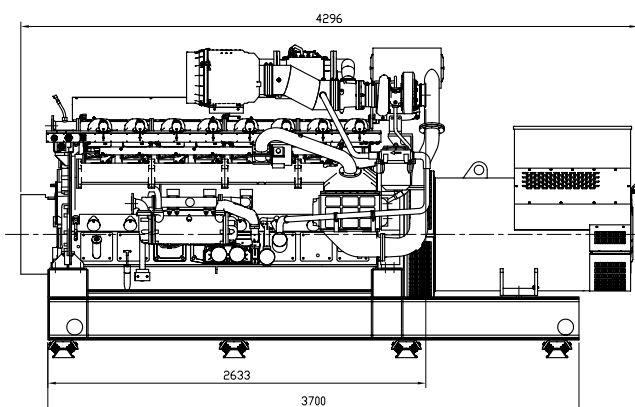
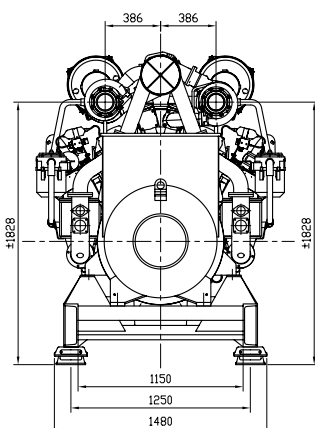
EVW manages to downtime periods of unavailability by bringing to bear the paramount importance of quality of customized solutions. And this supported by a well equipped and structured service team always at your side.

### 4016-61TRS

Motor / Moteur / Engine  
4016-61TRS

Alternator / Alternateur / Alternator  
LSA 50.2 VL10

Gewicht / Poids / Weight  
+/- 10200 kg



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