TECHNICAL SPECIFICATIONS

FOR

5kVA GENERATOR

AT

ALUWORKS

Technical Specification
GENERATORS
MINIMUM TECHNICAL SPECIFICATIONS

Supply and install a 85 kVA prime rated acoustic canopy type electric power generator, with a power factor between 0.8 and unity, 415V/230V. 3-phase, 50Hz. Should be electrically started, diesel fuelled with closed water air cooled radiator system complete with residential type silencer exhaust, day feed base fuel tank, and associated interconnections.

CHARACTERISTICS

Generator

Type:	Acoustic Canopy
Prime/ Standby Power Rating:	5kVA (4kW)
Voltage:	230 - 240 V
Frequency:	50 Hz
Phase:	1 Ph
Sound Level at 1 metre:	70 - 75 dB
Gross Engine Power:	5kW
Engine Speed:	1500 RPM
Fuel:	Diesel
Fuel Tank Capacity:	Capable of 8 Hours continuous run
Fuel Consumption:	18 - 22 litres per hour at full load
Cooling System	Water

Engine

1500 RPM, heavy-duty, water-cooled diesel engine manufactured in accordance with BS5514 and generally to such international standards as D.I.N., E.I.C., N.E.M.A. In addition, the engine should be capable of providing a 10% overload for a minimum of ONE hour in any TWELVE hours' continuous operation. The engine features are detailed as follows:

Governor

Electronic compliant with BS5514, Class A1.

Electrical system

24V D.C. electrical system complete with energized run shutdown solenoid. Oil pressure and water temperature shutdown switches and gauge sensors.

Cooling system

Radiator and cooling fan complete with protection guards, anti-corrosive, easy to maintain and shall be sized for continuous full load.

Exhaust system

A residential type silencer complete with flexible exhaust bellows and elbows shall be supplied loose and noise level not exceeding 75dBA at a distance of one metre.

Batteries

The batteries should be of the high capacity, maintenance free lead acid type and should come complete with leads. The battery rack should be mounted on the generator base frame.

Brushless design screen protected, fan ventilated, drip-proof, self exciting self regulating, in accordance with IP22. Fitted with standard AVR and heavy duty long life bearings, lubricant packed. Constructed in accordance with BS5000 part 99. Stator and rotor insulation should be Class "H" standard.

Regulation
Voltage regulation shall be maintained within the limits of ±1 to 2% from no load to full load including cold to hot variations at any power factor between 0.8 and 1(unity) and inclusive of a speed variation of 4.5%.

Base frame
The complete generating unit shall be mounted as a whole on a heavy-duty steel base frame. The frame shall also allow for the earthing of the generator.

Anti-vibration mounts
The engine and alternator assembly should be isolated from the base frame with anti-vibration mounts. This should reduce the level of vibration transmitted to the base and the surrounding area.

Fuel Tank
The fuel tank shall form an integral part of the base plate and must have a capacity of 8 hours operation. The tank should be complete with contents indicator, fuel fill cap with breather, fuel feed/return lines to engine and drain plug.

Canopy
Acoustic weather proof sound attenuated canopy shall be fully resistant to corrosion and suitable for outdoor locations without the need for extra protection.

Noise Criteria

Enclosed set sound power level, LwA:	85 - 95 dB(A)
Enclosed set sound pressure level, @ 75% PRP, 1m:	70 - 75 dB(A)
Enclosed set sound pressure level, @ 75% PRP, /m:	60 – 65 dB(A)

Control Panel
Manufactured from sheet steel and mounted at the rear of the set. The control panel should be compatible with windows 8 operating system or later and have the following functions:

Monitoring and Display for:
- Oil pressure
- Oil temperature
- Water temperature
- Battery voltage
- Velocity RPM
- AC Voltage
- AC Amperes
- Frequency
- Kilowatts
- Power factor
- Kilowatt hours
- Running hours
- Number of start alternator counter
- Percent of governor duty
- Percent of voltage regulator duty

Indicators and alarm signals for:
- Low oil pressure (shutdown)
- High water temperature
- High/low battery voltage
- High engine temperature (shutdown)
- Oil temperature sender fault
- Low fuel level
- Weak battery

- Overload (trip)
- Over speed (shutdown)
- Over crank (shutdown)
- Frequency failure (shutdown)

Change-over Switch
Free standing intelligent automatic changeover switch consisting of two mechanically and electrically interlocked 4 pole air circuit breaker for mains/generator load transfer.

Test with load/Auto/Test without load

Mode selector switch: Manual- Off-Auto

The change-over switch shall be electronically controlled with timers (adjustable) for:
- Delay on start
- Delay on transfer
- Delay on re-transfer
- Cool down timer

Complete set of documents including:
Electrical/electronic diagrams
Engine handbook
Operation & maintenance manual

Warranty
The minimum Warranty required against manufacturing and installation defect shall be 12 months.

Tenderers are also to indicate:
1. The type of Engine and Alternator of the set
2. The make and rating of the Automatic Change Over
3. After Sales Service Programme
4. Evidence of similar installations previously undertaken and availability of spare parts
5. Manufacturer's Authorization Form.
6. Evidence of well-equipped workshop/technical team
7. Names, qualifications and the number of qualified engineers and technicians intended for the project.
8. Details of the workshop engineer to be responsible for the maintenance of the generators.

Tenderers are advised to visit the site and assess the requirement of materials for installation of the generator. All expenses towards fabrication works, civil works, cabling, additional accessories and electrical works including materials required for installation shall be provided by the Tenderer.