

Sr. No.	Description	Model / Make	Quantity Required
1	<b>Generator Specification</b> Continuous generating power = 700 KVA Rated voltage = 380/440 volts Frequency = 50 HZ Phase = 3-Phase, 4 wires Power factor = 0.8	Perkins, Cummins or equivalent	01 (No.)
Detail Specification is attached at Annexure-A (page 2-3)			

**SPECIFICATIONS FOR 100 KVA GENERATOR SET**

A.C Diesel Generating set directly coupled with diesel engine, skid mounted, stationary, continuous duty, working temperature 55C°, Make: - Cummins, Perkin. Country of origin: USA, EUROPE, Singapore, Korea, Australia or Equivalent.

**General Requirements / Specifications**

- 1) Continuous generating power = 700 KVA
- 2) Rated voltage = 380/440 volts
- 3) Frequency = 50 HZ
- 4) Phase = 3-Phase, 4 wires.
- 5) Power factor = 0.8
- 6) Rated speed = 1500 RPM to 1800 RPM
- 7) Excitation = Self-exciting system
- 8) Overload capacity = 10 % for one hours within 6 hours.
- 9) Efficiency at rated load = 95%
- 10) Working temperature = 55C°
- 11) Insulation class = H or Equivalent
- 12) Alternator type (Newage / Stamford UK). = Brushless with voltage regulator
- 13) Control panel = Siemens / GE / MG  
Separately mounted control panel comprising:
  - Circuit breaker of suitable rating having.
    - Under voltage release.
    - Over current protection (Adjustable).
    - Short circuit protection.
  - Voltmeter with VSS ( L-L, L-N, OFF)
  - Ampere meter with ASS (L1, L2, L3, OFF)
  - Indication for L1, L2, L3
  - On / off and trip indication of main breaker.
  - Over temperature indication of alternator winding.
- 14) ATS Panel Siemens / GE / MG = Auto transfer switch panel.
- 15) Engine = Diesel engine preferably CUMMINS. or Equivalent.
  - 4-Stroke with single turbocharger suitable for offered alternator for Continuous service.
  - Engine should be water-cooled in closed circuit system with thermostat (Radiator type).
  - Engine should be equipped with isochronous Mechanical / Hydraulic type governor (Woodward) with buffer type speed compensation and mechanical speed control mechanism PSG type.
  - Engine should be equipped with over speed shut down device (s) to protect against runaway should be mechanical / hydraulic governor or control device (s) fail.
  - Fuel tank attached / separately mounted (02 Nos.) one for each Generator, fuel capacity for 12 Hrs. and complete with filling cap and fuel level gauge.
- 16) **Attachments**
  - Led acid batteries 12 V / 24 V, tray and cables for led acid batteries according to engine type.
  - Starter, battery charger generator, voltage regulator and battery charger transmitter.
  - Complete exhaust system.

- Safety devices to protect the alternator from over load and short circuit. Auto stop mechanism to protect engine during abnormal rise in water temperature and drop of oil pressure.
- Control panel, either built in or separately attached with and should be equipped with :
  - Commutator starting switch and Auto start.
  - Battery charge ammeter and charge warning light
  - Battery charge voltmeter
  - Oil pressure gauge and warning light
  - Water temperature gauge and warning light
  - Volt meter complete with pole switch for reading generator phase voltage.
  - Ammeter for reading line load and Ammeter selector switch.
  - Frequency meter.
  - Power terminal board

#### 17) Other requirements

- Generating set should be according to the international specifications. Engine DIN, BS & SAE. Control CEI, IEC, NEMA, VDE & BS
- Fast consuming spare parts for 10,000 working hours and one complete set of spare parts for engine overhauling should be quoted. The rate of each spare part may also be mentioned.
- Electrical, electronic wiring diagram and schematic diagram of PCBs, control panel, ATS panel of DG set with operating manual (In English).
- Two complete sets of Electronic spare parts (Controller card, solenoid valve, gauges and sensors etc.) of complete Generator.
- 04 sets of operational and maintenance manuals, parts manuals and shop manuals for complete Generating set which includes engine, alternator control panel and all other accessories.
- Warranty / guarantee certificate for one year after commissioning of the Generating set.
- Commissioning of Generators will be carried out by the supplier / manufacturer at our site.
- Two sets Standard tools, tachometer and torque wrench for maintenance of Generator.
- Quotation should be supported with catalogues and technical data and also mention the location of Generator in operation in Pakistan.

Note: Generator provided with the suitable covering to protect from dust storm and rain etc. as the units are to be operated in open where the conditions would be dusty, especially in summer and the ambient temperature exceeds 50°C.