

## Revised Annexure C-2

Supply, Installation, commissioning and testing of acoustic enclosure Diesel Engine Generating set with AMF Panel 125 KVA/100 KW (CPCB IV+) with 156 BHP, 415 Volt, 0.8 lagging power factor 50 HZ, 1500 RPM, self-excited self-regulated brush less AC generator mounted on common base plate complete with fuel tank, battery and standard accessories and fittings including acoustic enclosure and all components as detailed complete all as specified and directed listed as following:-

(a) **Diesel Engine:** The capacity of Diesel engine 156 HP, water cooled, Inline, 4 cylinder, 4 stroke, 1500 RPM coupled with alternator, turbo charged after cooled, heavy duty air cleaner as per ISO 3046, water separate filter, fuel feed pump and other accessories as per relevant IS / BS-5514 with an overload capacity of 10% for one hour in 12 hrs, continuous running complete with standard accessories all as specified and required for safe handling and operation, salient features of accessories shall be as under:-

- (i) Fly wheel with housing
- (ii) PT fuel pump
- (iii) STC injectors
- (iv) Turbocharger, pulse tuned exhaust manifold, stainless steel exhaust flexible connections.
- (v) Radiator/heat exchanger with initial filled coolant
- (vi) Full flow filters for fuel, lube oil and by pass filter
- (vi) dry type replaceable paper element air cleaner with restriction indicator
- (vii) initial fill lube oil
- (viii) Starter motor 12 volts

(b) **Alternator:** Standard design alternator rated at 125 KVA net output at site after considering de ratings as per site conditions at 0.8(lag) power factor AC, 3 phase four wire system 415 volts 50Hz, 1500 RPM self-excited self-regulated screen protected / drip proof IP23 enclosure brush less design with winding in pole faces, insulating class 'H' and voltage regulation of  $\pm 0.5$  to 1% at rated voltage from no load to full load, The alternator shall be confirming to BS 613/5000 and shall be in position to generate supply with frequency regulation with in $\pm 1$  % tolerance the alternator will be suitable for tropical climate and shall generally confirm to BS-2613/500/IS-4722

- 1) Insulation Class-'H'
- 2) Excitation: self-Excited
- 3) Regulation performance: The voltage is K pt constant with  $\pm 1$  % manual voltage adjustment within adjustment within  $\pm 5$  %
- 4) Frequency regulation  $\pm -1$  %

(c) **AMF Panel** :- Separate cubicle control panel Indoor type control cubical made out of thick CRCA sheet dust and vermin proof totally enclosed with front opening of 415 volts 3 -phase 4 -

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wire AC 50 Hz, including powder coated, bus bar of one and half times the rated load of 125 KVA alternator out door type complete with internal wiring with PVC insulated single core copper conductor multi stranded wire of 1200 volts grade of suitable capacity, fuses, name plates consisting of Contactors of capacity as recommended by the manufacturer. Detachable cable gland plates, all controls, indicators and standard microprocessor-based LED/LCD display for indicating voltage, current, frequency, speed, kW, kWh, pf, temperature, Battery voltage, etc AMF Controller

(1) Annunciation with indication lamps for :-

- i. Low lub oil pressure,
- ii. High Water Temperature,
- iii. Engine over speed,
- iv. Battery low voltage Controls

(2) Load on Indication

(3) Load off indication

(4) Engine start push button

(5) Engine stop push button

(6) Fault accept / reset push button

(7) Battery Charger:-

i. Transformer

ii. Rectifier

iii. Resistance

iv. DC Voltmeter

v. DC Ammeter

vi. Charger rate selector switch

(D) **Batteries:** One no's maintenance free battery of 12 volts capacity with multi stranded copper conductor cable of suitable size from battery to starter and from Control panel

(E) **Control Panel:** The control system is an integrated microprocessor-based generator control system providing voltage regulation, engine protection alternator protection, operator interface and isochronous governing.

(F) **Base frame** - The Dg set engine and alternator mounted on common base frame with anti-vibration pads as per manufacture recommendations.

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(G) **Fuel tank** –Fuel tank made up of thick HR sheet with calibrated level marking arrangements with fuel gauge stop cock, drain plug with capacity of tank & DEF Tank

(H) **Acoustic enclosure** – Enclosure is free standing floor mounting type factory built modular in construction to facilitate easy assembly at work site and will be drop over housing type and easy access for maintenance and repairs and operation with following facilities.

- (1) Rugged construction maintenance free.
- (2) CRCA sheets for enclosure with high quality insulation materials to be used as per IS 8183 for maximum sound absorption.
- (3) The sheet metals treated with anti-resistive solutions before painting and painted with pure polyester powder epoxy paint in outer side for better weather resistance.
- (4) Well designed ventilation system to be provided to pump up the heat in the chamber. (5) Provide sealing with special type of gaskets, frame rubbers on doors/frames for better weather protection.
- (6) Necessary provision for cable entry/ bus ducts and fuel line, control cables as per requirement.
- (7) A see through transparent glass/acrylic window in front of engine control panel to be provided for monitoring the parameters.
- (8) Inside the enclosure provide 12 volts LED light fitting two nos for inside illumination.
- (9) Necessary mounting bracket for batteries inside the enclosure.
- (10) The emergency stop push button provided in acoustic enclosure near Instrument panel side.
- (11) Workspace is to be provided around the equipment for easy maintenance by the manufacturer.

Notes: Unit rate quoted by the contractor shall be deemed to be inclusive for the following: - (a) The contractor shall provide the artificial load, fuel, oil etc for testing the DG set at site and the cost it's deemed to include in the quoted rate. (b) All civil works for making good the disturbed surface during installation. (c) The DG Set should comply with all the latest CPCB-IV + Norms including latest amendment issued up to the date of receipt of tender.

**Approved Make:** The DG set shall be from the approved makes only as specified below. No deviation or alternative make shall be permitted.

Kirloskar, Cummins, Caterpillar, Volvo, Sterling.