

SCHEDULE OF TECHNICAL DATA (TO BE FURNISHED BY BIDDER)

1.00 Preamble:

- A. Following are the formats of the technical data to be furnished by the bidder along with his technical bid.
- B. The technical data as asked for by these formats form part of the vital information required for technical evaluation of the bidder's offer and shall be furnished by the bidder in full details and clarity. Failing this, the bidder's offer shall be rejected without any consideration.
- C. Exact details as asked for shall be furnished by the bidder against each item.
- D. The bidder shall use multiple copies of the format enclosed, as required, to furnish details for all the equipment / materials detailed in the Bill/Schedule of Quantities. The items for which format is not enclosed, the bidder shall furnish the technical details in his own format.
- E. The client is at liberty to ask any further information and/or clarifications on the technical data submitted by the bidder.
- F. Replies like "To suit duty", "As per manufacturer's standards", "As per OEM supply", "Shall be furnished later", etc. shall be considered irrelevant and will be of no consequence as far as the evaluation of the technical bid is concerned. In such case, the bidder's offer shall be considered incomplete.
- G. The technical data to be furnished by the bidder shall be for any one of the approved makes chosen by the bidder from the approved list of the makes. However, this shall not imply that the client has agreed and/or accepted the make / model indicated by the bidder in the technical data furnished.

2.00 Formats:

- 2.01 The formats for the technical data to be furnished by the bidder are enclosed here with.

TECHNICAL PARTICULARS OF D.G.SET

Contractor shall furnish technical particulars for Engine, Alternator, Governor and Engine Mounted Radiator together with tender documents, in his own format, but including the following information:

S.NO	DESCRIPTION	DG set
	ENGINE	50 KVA
1.1	Engine rating (standard)	
1.2	Engine rating at NTP (as per BS:649)	
1.3	Maximum engine rating at site	
1.4	Time interval between successive starts	
1.5	Maximum time required to start the diesel engine from cold and to bring up to rated speed and in condition to take load	
1.6	Cylinder bore and stroke (mm)	
1.7	No. of strokes/cycle	
1.8	No. of cylinders and arrangement	
1.9	Direction and rotation when viewed from free end	
1.10	Lube oil pressure at pump inlet	
1.11	Lube oil change intervals in hours with oil quantity	
1.12	Minimum acceptable lube oil temperature at start up	
1.13	Method of cooling	
1.14	Method of starting	
1.15	Compression ratio a. Compression pressure (PSI) b. Max. cylinder pressure (PSI) c. Fuel injection Pressure (PSI)	
1.16	Minimum period for which the engine can operate without raw cooling water supply	
1.17	Heat balance a. Fuel input mechanical b. Cooling water circuit c. Cooling fuel circuit d. Thermal exhaust e. Engine radiation	
1.18	Specific fuel consumption a. Full load (on incidental Power) b. $\frac{3}{4}$ load (on incidental Power) c. $\frac{1}{2}$ load (on incidental Power) d. $\frac{1}{4}$ load (on incidental Power)	
1.19	Emissions Meeting CPCB/SPCB norms with or without catalytic converter/ online scrubber	
1.20	Cooling circuit a. H.T. engine water inlet temp b. H.T. engine water outlet temp	

S.NO	DESCRIPTION	DG set
	ENGINE	50 KVA
	c. H.T. water flow d. L.T. engine water inlet temp e. L.T. engine water outlet temp f. L.T. water flow	
1.21	Air intake a. Air flow intake b. Exhaust gas flow c. Exhaust gas temp d. Max. gas back pressure	
1.22	Method of lubrication	
1.23	Lube oil consumption at NTP full rated output (Hr./BHP/min)	
1.24	No. of inlet valves per cylinder head	
1.25	No. of exhaust valves per cylinder head.	
1.26	Cooling tower a. Size b. Make	
1.27	Fuel oil heat exchanger A. Shell side a. Fluid circulated b. Quantity of fluid circulated in Kg./ Hr. c. temperature Inlet/ outlet B. Tube side a. Fluid circulated b. Quantity of fluid circulated in Kg./ Hr. c. temperature Inlet/ outlet	
1.28	Crank case heater type/ number rate make up water tank capacity	
1.29	Vibration limit	
1.30	Noise level	
1.31	Efficiency a. Electrical b. Thermal	
1.32	Safety protection	
1.33	Method of aspiration	
2.0	ALTERNATOR DESIGN DATA	
2.1	General	
2.1.1	Manufacture/ Type	
2.1.2	Rating site value	
2.1.3	Maximum rating design/ site	
2.1.4	Rated voltage, current (continuous) & P.F.	
2.1.5	Rated speed & frequency	

S.NO	DESCRIPTION	DG set
	ENGINE	50 KVA
2.1.6	Insulation class – Stator/ Rotor	
2.1.7	Temperature rise above 50 deg. C + 5 Deg. C. Stator/ Rotor/ Core	
2.1.8	Enclosure details	
2.1.9	Maximum rated kW f motor that can be started with direct online starter with voltage dip not more than 20 % without base load a. unloaded b. 50 % loaded c. 80 % loaded	
2.1.10	Excitation at MCR	
2.1.11	Permanent / temporary voltage variation at terminals. a. Full load thrown on b. Full load thrown off	
2.1.12	Over load (As per BS: 649)	
2.2	Alternator Parameters a. Synchronous reactance- Xd b. Transient reactance-Xd c. Sub-transient reactance- Xd d. Zero-sequence reactance – Xo e. Negative sequence reactance – X2 f. Short circuit ratio g. Resistance of stator winding at operating temp. h. Resistance of rotor winding at operating temp. i. Impedance – Stator + Rotor combined	
2.3	Alternator Performance	
2.3.1	Generator Losses a. Full load losses b. Armature copper loss c. Rotor Copper Loss d. Core loss	
2.3.2	Efficiency a. Efficiency at full load b. Efficiency at $\frac{3}{4}$ load c. Efficiency at $\frac{1}{2}$ load d. Efficiency at $\frac{1}{4}$ load	
2.3.3	Variation of terminal voltage & frequency %	
2.3.4	Load power factor	
2.3.5	Form factor of % deviation of the above shape from standard	
2.3.6	Maximum continuous and momentary unbalanced load capacity	
2.3.7	Symmetrical short circuit current withstand	
2.3.8	Asymmetrical short circuit current withstand	
2.3.9	Vibration limit	

S.NO	DESCRIPTION	DG set
	ENGINE	50 KVA
2.3.10	Noise level	
2.4	Engine/ Alternator Auxiliaries and accessories.	
2.4.1	Exciter a. Type b. Rated Voltage/ Current c. Voltage at rated speed with no load d. Voltage at rated speed with full load e. Response ratio f. Class of insulation – stator/ rotor	
2.4.2	Automatic Voltage regulator a. Type b. Dead band c. Response time d. Voltage regulation e. Line drop compensator for maintaining bus voltage constant f. Range of voltage adjustment g. Catalogues and characteristics curves attached	
2.4.3	Governor a. Make/ Type b. Steady state speed regulation c. Steady state governing speed plus of minimum % of rated speed. d. Momentary over speed after full load rejection % of rated speed e. Momentary under speed of rated speed after sudden increase of 25% rated load f. Prescribed speed band + rated speed	
2.4.4	Fly wheel a. Weight b. Width of rim c. Diameter d. Thickness of rim e. Cyclic variation (C/Sec.)	
2.4.5	Damper windings on poles	
3.0	Fuel and cooling water requirements a. Capacity of Day oil tanks b. Grade of fuel oil to be used c. Grade of lube oil to be used	
3.1	Quantity of water required	
4.0	Weight schedule	
4.1	Weight of engine a. Total Shipping weight b. Weight of alternator c. Heaviest piece to be handled in normal maintenance	
4.2	Contractor shall indicate capacity of monorail to be provided in the D.G. room for handling the DG set during erection, maintenance period.	

S.NO	DESCRIPTION	DG set
	ENGINE	50 KVA
5.0	Piping, fitting & valves	
5.1	Furnish piping schedule giving size of pipe, wall thickness, type of bends, manufacturer, material of construction, rating etc.,	
5.2	Furnish all fittings, drains, vents, valves & any other accessories etc as required.	

The D.G. supplier will furnish the technical calculation and literature etc. for the following for the verification of consultant

1. Pressure drop in exhaust pipe and pipe diameter.
2. The basis of calculation for H-class insulation D.G/ Alternator insulation with temperature rise limited to F-class.
3. Short circuit calculations (rotor stator and rotor-stator combined impedance)
4. F.D.V (Ventilation required for acoustic enclosure)
5. Starting battery and battery charger capacity.
6. Descriptive testing procedure of individual equipment and combined set with accepted value etc.,
7. Genset dimensions (L x B x H).
8. Recommended room size (L x B x H).
9. Terminal box flange details incase of bus duct.
10. Deviation statement if any.
11. Maximum in rush current capacity for 10 minutes.

END OF SECTION