

	TITLE:- SCHEDULE OF GUARANTEED & TECHNICAL PARTICULARS (To be filled by supplier)	DOC. NO. OR 12701 ANNEXURE-2	REV 01
	CONTROL EQUIPMENT ENGINEERING DIVISION, BHEL BHOPAL	PAGE 1 OF 9	

**PROJECT :- 2X500KVA DG SET FOR VYASI HYDRO (2 X
60 MW), UJVNL, INDIA**

S. N.	Description	500 KVA DG Set
A.	DIESEL ENGINE	
1.	Type of engine	
2.	Manufacturer (Name and Place)	
3.	Model No.	
4.	Rated Speed	
5.	Rated output at 29.5"(179mm) mercury and 29.4°C as defined in BSS 649.	
6.1	Guaranteed rated output at rated R.P.M at site conditions (continuous running for 24 hours under the worst atmospheric conditions) at altitude of installation after deducting all auxiliary power consumption & also derating for site elevation.	
6.2	Derating factor values considered in 6(a) above.	
6.3	Auxiliary power consumption considered in 6.1 above.	
6.4	Net power available to drive the alternator at 110% of rated output (at site elevation & temperature at 45 deg. C.	
6.5	Percentage (%) overloading at the rated speed for one(1) hour in any period of (12) hours consecutive running at design temp. of 45 deg. C.	
6.6	Continuous hours of operation in full load of the engine at the site elevation & design temperature of 45 deg. C.	
6.7	Specification of fuel	
6.8	Specific fuel consumption: a) at rated speed/no load b) at 50% of rated load c) at 75% of rated load d) at rated load(as per 6.1 above) e) at overload (as per 6.1 above)	
6.9	Lube oil temperature in deg. C	
6.10	Lube oil pressure in Kg/sq.cm.	
6.11	Fuel oil pressure in Kg/cm ²	
6.12	Water temperature in deg. C	
6.13	Lube oil consumption at rated load.	
6.14	Maximum permissible cylinder temperature in deg. C	

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	CONTROL EQUIPMENT ENGINEERING DIVISION, BHEL BHOPAL	PAGE 2 OF 9	

**PROJECT :- 2X500KVA DG SET FOR VYASI HYDRO (2 X
60 MW), UJVNL, INDIA**

S. N.	Description	500 KVA DG Set
7.	Compression ratio.	
8.	Type of coupling.	
9.	Oil lubrication system- a) Capacity & location of reservoirs b) Specification for lubrication oil recommended	
10.	Governing system- a) Whether speed governing system provided as per specification. b) Make c) Type d) Steady state speed e) Class of governing	
11.	Self starting system- a) Voltage & capacity b) Starting motor make & type c) Battery-Make & type d) Battery- number per engine e) Time required by the engine to accept full load after receipt of the signal to start from cold condition.	
12	Alternative manual starting arrangement provided.	
13.	Lubrication oil pressure gauge- a) Make & Type b) Numbers per engine c) Range in Kg/cm ² d) Location e) Accuracy	

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Date:-

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	CONTROL EQUIPMENT ENGINEERING DIVISION, BHEL BHOPAL	PAGE 3 OF 9	

PROJECT :- 2X500KVA DG SET FOR VYASI HYDRO (2 X 60 MW), UJVNL, INDIA

S. N.	Description	500 KVA DG Set
14.	Thermometer for coolant measurement- a) Make & Type b) Numbers per engine c) Range in °C d) Location e) Accuracy	
15.	Tachometer for Engine RPM measurement- a) Make & Type b) Numbers per engine c) Range in RPM d) Location e) Accuracy	
16.	Fuel System- a) No. of tanks b) Material c) Capacity in litres d) Size in mm	
17.	Cooling system	
17.1	Whether direct cooling system provided ?	
17.2	Whether necessary piping, fittings valves, pressure reducing orifice, pressure gauge, strainer etc. furnished ?	
17.3	Cooling water requirement in cubic meter/hr.	
17.4	Cooling water pressure(kg/cm ²)	
17.5	Cooling water inlet temperature	
17.6	Cooling water outlet temperature	

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Date:-

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	CONTROL EQUIPMENT ENGINEERING DIVISION, BHEL BHOPAL	PAGE 4 OF 9	

PROJECT :- 2X500KVA DG SET FOR VYASI HYDRO (2 X 60 MW), UJVNL, INDIA

S. N.	Description	500 KVA DG Set
17.7	Engine mounted air cooled radiator for cooling system.	
	I) Fan cooled Radiator a) Type b) Make c) Location d) Water inlet temp. in °C e) Water outlet temp. in °C.	
	II) Cooling fan a) Type b) Make c) Location d) Capacity of each fan in cubic meter/hr. e) Power required for fan at rated condition of the engine in kW.	
	III) Whether provision made for by passing radiator system to avoid chilling of engine part.	
18.	Level gauge for fuel oil tank & lubricating oil tank. a) Make & Type b) Numbers c) Gauge glass body & cover material d) Location	
19.	Temperature indicator in lubricating oil outlet from the oil cooler. a) Make & Type b) Nos. per engine c) Range in °C d) Location e) Accuracy	

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	CONTROL EQUIPMENT ENGINEERING DIVISION, BHEL BHOPAL	PAGE 5 OF 9	

PROJECT :- 2X500KVA DG SET FOR VYASI HYDRO (2 X 60 MW), UJVNL, INDIA

S. N.	Description	500 KVA DG Set
20.	Temperature indicator for each cylinder head a) Make & Type b) Nos. per engine c) Range in °C d) Location e) Accuracy	
21.	Exhaust System	
21.1	General Information a) Type b) Exhaust manifold pressure in kg/ cm ² c) Exhaust manifold temp. in °C d) Maximum allowable temperature difference from two cylinder in °C. e) Height of main exhaust above top of building	
21.2	Silencer a) Type b) Make c) Maximum noise level (db) d) Material of construction e) Diameter in mm f) Whether spark arrester provided.	
22.	Engine protection a) Type of engine protection provided	
23.	Whether emergency stop push button at the engine provided.	
24.	Fly Wheel : a) Diameter b) Width mm c) Thickness mm d) Whether flywheel with guard provided	
25.	Turbo-charger after cooling :	
25.1	Speed at no load a) Minimum b) Maximum	

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	CONTROL EQUIPMENT ENGINEERING DIVISION, BHEL BHOPAL	PAGE 6 OF 9	

PROJECT :- 2X500KVA DG SET FOR VYASI HYDRO (2 X 60 MW), UJVNL, INDIA

S. N.	Description	500 KVA DG Set
25.2	Speed at full load a) Minimum b) Maximum	
26.	Maintenance	
26.1	Routine a) Total period required b) Frequency after actual running of engine	
26.2	Top overhauling a) Total period required b) Frequency after actual running of engine	
26.3	Major overhauling a) Total period required. b) Frequency after actual running of engine	
27.	Battery charging system	
27.1	Make	
27.2	Type	
27.3	Number per engine	
27.4	Mounting of charger unit in power pack module of panel	
27.5	A.C. input a) Voltage $\pm$ % , variation in Hz. b) Phases c) Frequency $\pm$ % variation in Hz. D) Input ampere at the load in addition to supply the battery charging current.	
27.6	D. C. Output a) Voltage Volt/cell b) Current(both float boost/mode) in A c) Ripple content in D.C. output.	
27.7	Ripple content in D.C. Output a) With battery b) Without battery	

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Date:-

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	CONTROL EQUIPMENT ENGINEERING DIVISION, BHEL BHOPAL	PAGE 7 OF 9	

PROJECT :- 2X500KVA DG SET FOR VYASI HYDRO (2 X 60 MW), UJVNL, INDIA

S. N.	Description	500 KVA DG Set
27.8	Whether provided with following features a) Voltage regulation b) Current limiting circuitry c) Smoothing filter circuit	
27.8	Whether automatic controlling arrangement for rectifier type battery charger furnished ?	
27.9	Rectifier type battery charger	
28.	Weight of the engine(dry)	
29.	Whether engine is provided with all accessories as specified in specification	
30.	Noise level at rated out put	
(B)	ALTERNATOR	
1.	Manufacturing standard	
2.	Manufacturer's name and place	
3.	Type & designation	
4.	Rated output in KVA.	
	a) 415V + 5% frequency 50 Hz and 3% Power factor 0.75 with temperature limits as per specification.	
5.	Rated voltage	
6.	Max. permissible over load capacity	
	i) for the conditions at 4 above.	
7.	Rated Power Factor	
8.	Rated Frequency	
9.	Insulation class	
	i) rotor winding	
	ii) stator winding	
10.	Current carrying capacity of stator for continuous working.	
11.	Temperature rises at rated output condition above ambient temperature of 45 deg. C	
11.1	for the conditions at '4' above a) for stator winding	

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Date:-

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	CONTROL EQUIPMENT ENGINEERING DIVISION, BHEL BHOPAL	PAGE 8 OF 9	

**PROJECT :- 2X500KVA DG SET FOR VYASI HYDRO (2 X
60 MW), UJVNL, INDIA**

S. N.	Description	500 KVA DG Set
	b) for rotor winding	
11.2	For the overload capacity for 6 above. a) for stator winding b) for rotor winding	
12.	Regulation Increase in voltage from full load to no load at unity P.F with constant speed and excitation & at 0.75 P.F	
13.	Type Make & No. of bearings.	
14.	Type of excitation system	
15.	Type of auxiliary exciter	
16.	Type of diode	
17.	Type of voltage regulator	
18.	Type of neutral earthing & of neutral earthing resistance.	
19.	Details of neutral earthing & value of neutral earthing system.	
20.	Excitation System	
21.	Percentage efficiencies a) 125% load at rated P.F. of 0.75 lag. (Tolerance(if any) : b) 100% load at rated P.F. of 0.75 lag. Tolerance (if any) c) 75% load at rated P.F. of 0.75 lag. Tolerance(if any) d) 50 % load at rated P.F. of 0.75 lag. Tolerance(if any)	
22.	Flywheel effect (GD ²) installed.	
23.	Weight of Generator	
24.	Noise Level corresponding to	

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Date:-

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	CONTROL EQUIPMENT ENGINEERING DIVISION, BHEL BHOPAL	PAGE 9 OF 9	

PROJECT :- 2X500KVA DG SET FOR VYASI HYDRO (2 X 60 MW), UJVNL, INDIA

S. N.	Description	500 KVA DG Set
	Rated output	
(C)	ASSEMBLED D.G.SETS	
1.	Overall efficiency of the DG Set at a) rated load b) 50 % of the rated load	
2.	Noise level at full load	
3.	Vibration at no load	
4.	Vibration at full load	
5.	Overall dimensions of assembled Diesel Generating Set complete with accessories(LXBXH)	
6.	Assembled weight of complete Diesel Generating Set along with accessories.	
7.	Transportation weight of the D.G. Sets	
8.	Weight of heaviest part to be transported.	
9.	Weight of heaviest part to be installed at a time.	
D)	AMF CONTROL & SYNCHRONIZING PANEL AND OTHER PANEL	
I)	Local Control Panel	
i)	Make.	
ii)	Details of Circuit Breaker	
iii)	Type, make & ratings of Protection relays.	
iv)	Details of meters & instruments	
v)	List of control switches.	
vi)	List of Annunciations.	
vii)	List of indications	
viii)	Details of Dead bus/line logic & interlocking system.	
ix)	Details of AMF system	
II.	Details of battery and battery charger panel	
III.	The following details of each panel shall be given	
a)	Over all dimensions (LxBxH)	
b)	Weight details	
	i) Total weight	
	ii) Shipping weight	
c)	Degree of protection class	

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