

## BHARAT HEAVY ELECTRICAL LIMITED, JHANSI



**Transformer Plant,  
BHARAT HEAVY ELECTRICAL LIMITED,  
BHEL, JHANSI.**

Specification No.	9316
Item No.	SP/ELEC/9316
Location	ICC
Quantity	1 No

**SCOPE : SUPPLY , INSTALLATION, TESTING & COMMISSIONING OF 1 NO. 50 KW (62.5 KVA) DIESEL GENERATING SET,  
COMPLYING AS PER SPECIFICATION BELOW**

**NOTE :**

- 1 VENDOR must submit complete information against clause No. **14.0 ( Qualifying condition)**. The offer meeting this clause would only be processed.
- 2 The " offered" Column and where applicable, the " Deviations" Column of this format shall be filled in by the Vender and submitted along with the offer. Technical details also submitted with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specification / requirements shall be treated as non - compliance.
- 3 The offer and all documents enclosed with offer should be in English language only.

**SPECIFICATION CUM COMPLIANCE CERTIFICATE OF 50KW (62.5 KVA) DIESEL GENERATOR SET**

S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	DEVIATIONS IF ANY
<b>1.0</b>	<b>PURPOSE &amp; WORK PIECE MATERIAL:</b>			
1.1	One number 50KW (62.5 KVA) diesel generating sets are required for generating power supply 415 Volt, 50 hz, 3 phase 4 wire system. The D.G.Set should have following features/facilities:	VENDER TO CONFIRM		
1.2	Automatic start at the time of main failurer.	VENDER TO CONFIRM		
1.3	Automatic load changeover from main supply to D.G.supply.	VENDER TO CONFIRM		
1.4	Automatic D.G.supply stop when main supply available.	VENDER TO CONFIRM		
1.5	Automatic D.G.Set stop.	VENDER TO CONFIRM		
<b>2.0</b>	<b>EQUIPMENT CONFIGURATION :-</b> Diesel generating set shall consist of Diesel engine (complete with air intake system, exhaust system, coolant system Lubrication system, fuel system, safety controls, instrument panel), an alternator, AMF control panel etc. Complete equipment shall be of " State of art" latest design & technology. The equipment shall consists of various components / sub assemblies as listed below:	VENDER TO CONFIRM		
<b>2.1</b>	<b>DIESEL ENGINE</b>			
2.1.1	Diesel engine shall be fuel efficient, robust in construction, water cooled four stroke, 4 cylinder engine and shall be confirming to BS : 5514 .	VENDER TO SPECIFY		
2.1.2	Engine shall be electric start turbocharged and after cooled with capacity of 10% over load for one hourin 12 hours duration and to run continuously for a long duration upto 72 hours.	VENDER TO CONFIRM		
2.1.3	Engine shall have sufficient BHP to meet 62.5 KVA requirement of alternator.	VENDER TO SPECIFY		
2.1.4	Noise level of engine shall be as per environmental rule.	VENDER TO CONFIRM		
2.1.5	Engine shall be mounted on AVM pads and a common base frame for engine and Alternator.	VENDER TO CONFIRM		
2.1.6	<b>Following details of engine shall be furnished by the vender</b>			
2.1.7	Make & model of the engine	VENDER TO SPECIFY		
2.1.8	BHP of the engine	VENDER TO SPECIFY		
2.1.9	RPM of the engine	VENDER TO SPECIFY		
<b>2.2</b>	<b>AIR INTAKE SYSTEM</b>			
2.2.1	It shall consists of air intake manifold	VENDER TO CONFIRM		
2.2.2	Dry type air cleaner	VENDER TO CONFIRM		
<b>2.3</b>	<b>EXHAUST SYSTEM</b>	VENDER TO CONFIRM		
2.3.1	It shall consists of turbocharger	VENDER TO CONFIRM		
2.3.2	S.S. Flexible bellow	VENDER TO CONFIRM		
2.3.3	Exhaust manifold	VENDER TO CONFIRM		
2.3.4	Rsidential exhaust silenser	VENDER TO CONFIRM		
2.3.5	Companion flanges for silencer & bellow			
<b>2.4</b>	<b>COOLENT SYSTEM</b>	VENDER TO CONFIRM		
2.4.1	It shall consists of Engine water pump	VENDER TO CONFIRM		

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8.1.6	Temperature of enclosure shall not be increased beyond 5-7degreeC ambient temp.	VENDER TO CONFIRM		
8.1.7	Noise level shall be 75 dBA at one meter distance and shall meet requirement of present applicable CPCB norms.	VENDER TO CONFIRM		
<b>9.0</b>	<b>CABLES</b>			
9.1	Suitable rating cable along with termination shall be provided to connect the Alternator to panels	VENDER TO CONFIRM		
9.2	Suitable control cable along with termination to be provided.	VENDER TO CONFIRM		
<b>10.0</b>	<b>DOCUMENTATION</b>			
10.1	Following documantation shall be provided with each set:	VENDER TO CONFIRM		
a	Operation and mainenance manual of diesel engine	VENDER TO CONFIRM		
b	Test certificate of diesel engine	VENDER TO CONFIRM		
c	Operation and maintenance manual of Alternator	VENDER TO CONFIRM		
d	Test certificate of alternator	VENDER TO CONFIRM		
e	Test certificate of D.G.Set	VENDER TO CONFIRM		
<b>11.0</b>	<b>INSPECTION &amp; TESTING</b>			
11.1	Inspection and testing of assembled D.G.set shall be done at manufacturing works before dispatch.	VENDER TO CONFIRM		
<b>12.0</b>	<b>ERECTION AND COMMISSIONING</b>			
12.1	Erection and commissioning of D.G.set shall be done by the supplier. Final commissioning shall be done after taking load trail.	VENDER TO CONFIRM		
<b>13.0</b>	<b>GUARANTEE</b>			
13.1	D.G.Set shall be guaranteed for the period of 24 months from the date of commissioning.	VENDER TO CONFIRM		
<b>14.0</b>	<b>Qualifying condition</b>			
	Only those vender, who have supplied and commissioned <b>at least ten numbers Diesel Generator set for similar specification/ application in the past five years</b> and such D.G.sets are presently working satisfactorily for more than one year after commissioning should quote. The following information is to be submitted by the vender about the companies where similar Diesel Generating sets have been supplied. This is required from venders for qualifications of their offers.	VENDER TO SPECIFY		
	1. Name of the customer / company where similar Diesel Generating set is installed. (copy of purchase order to be furnished)	VENDER TO SUBMIT		
	2. Complete postal address of the customer.	VENDER TO SUBMIT		
	3. Year of suppling / commissioning.	VENDER TO SUBMIT		
	4. Application for which Diesel Generating set is supplied with details.	VENDER TO SUBMIT		
	5. Name and designation of the contact person of the customer.	VENDER TO SUBMIT		
	6. Phone. FAX, no andE-mail address of the contact person of the customer.	VENDER TO SUBMIT		
	7. Performance certificate from the customer regarding satisfactory performance of Diesel Generating set supplied to them	VENDER TO SUBMIT		
15.0	BHEL reserves the right to verify information submitted by vender. In case the information is found to be false/ incorrect, the offer shall be rejected.	VENDER TO CONFIRM		

*Arjun Singh*  
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Mgr. (WE&S)

*B D Arya*  
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Dy Mgr. (ICC)

*Y K Dfinga*  
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Sr. DGM (WEX & TEX)

*NSLEKKA*  
NSLEKKA  
DGM (IT&ICC)

*A K Shivpuri*  
A K Shivpuri  
Sr.Mgr(WEX)

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2.4.2	Radiator	VENDER TO CONFIRM		
2.4.3	Coolent additive concentrate	VENDER TO CONFIRM		
2.4.4	By pass thermostat	VENDER TO CONFIRM		
<b>2.5 LUBRICATING SYSTEM</b>				
2.5.1	It shall consists of oil pan	VENDER TO CONFIRM		
2.5.2	Engine mounted Lub oil pump	VENDER TO CONFIRM		
<b>2.6 FUEL SYSTEM</b>				
2.6.1	It shall consists of fuel pump with mechanical governor	VENDER TO SPECIFY		
2.6.4	Replaceable fuel filter	VENDER TO CONFIRM		
<b>2.7 STARTING SYSTEM</b>				
2.7.1	It shall consists of 12 Volt D.C. electric starter . Details to be submitted	VENDER TO SPECIFY		
2.7.2	12 Volt D.C. battery charging alternator . Details to be specified	VENDER TO SPECIFY		
<b>2.8 ENGINE CONTROL PANEL</b>				
2.8.1	it shall consist of Micro processor based engine control panel having the following features:	VENDER TO CONFIRM		
2.8.2	Manual start button	VENDER TO CONFIRM		
2.8.3	Key switch for switching OFF generating set	VENDER TO CONFIRM		
2.8.4	LED indicating lamps for following:	VENDER TO CONFIRM		
	(a) Over speed, under speed sensor fails	VENDER TO CONFIRM		
	(b) Low oil pressure	VENDER TO CONFIRM		
	(c) High engine temperature	VENDER TO CONFIRM		
	(d) Battery charging alternator fails	VENDER TO CONFIRM		
2.8.5	LCD engine hour counter	VENDER TO CONFIRM		
2.8.6	Load indication to be provided	VENDER TO CONFIRM		
2.8.7	Other items like vibration damper, front engine support, flywheel with housing etc.	VENDER TO CONFIRM		
2.8.8	Other indications like water temperature , temp in canopy etc also to be provided			
<b>3.0 ALTERNATOR</b>				
3.1	Alternator shall be 62.5 KVA rating , 415 Volt at 0.8 PF(lagg), 50HZ, 3 phase 4 wire system. The alternator shall be brushless design. The alternator shall be confirming to IS : 4722/IEC-34 standard	VENDER TO SPECIFY		
3.2	Voltage regulation of Alternator shall be : $\pm 1.5\%$ of rated voltage from No. load to Full load	VENDER TO SPECIFY		
3.4	Alternator encloser : IP 23	VENDER TO SPECIFY		
3.5	Alternator insulation : Class 'HF' with temperature rise limited to class 'H' insulation limit	VENDER TO SPECIFY		
<b>4.0 BASE FRAME</b>				
4.1	Base frame shall be suitable to mount engine and alternator. These shall be coupled and aligned on a common channel iron fabricated base frame with pre drilled holes.	VENDER TO CONFIRM		
<b>5.0 FUEL TANK</b>				
5.1	Daily service fuel tank shall be provided . The size of tank shall be minimum 80 Lit. capacity.	VENDER TO CONFIRM		
5.2	The tank shall be made from 14 SWG sheet steel metal complete with drain valve, air vent, inlet and out let connections.	VENDER TO CONFIRM		
5.3	The fuel tank shall be suitable for floor mounting insatallation out side the acoustic enclosure.	VENDER TO CONFIRM		
5.4	Consumption of oil in load and no load condition	VENDER TO SPECIFY		
<b>6.0 BATTERIES</b>				
6.1	Suitable battery bank shall be provided for starting the D.G.set. All batteries should be supplied in full charged and ready to use condition.	VENDER TO CONFIRM		
6.2	Battery details to be submitted with offer i.e No. of batteries used, battery voltage, battery capacity in AH, make of the battery etc.	VENDER TO SUBMIT		
<b>7.0 AMF CONTROL PANEL</b>				

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7.1	TYPE : Free standing, floor mounted, indoor , compartmentalized, bolted construction dust & vermin proof.	VENDER TO CONFIRM		
<b>7.2</b>	<b>SYSTEM :</b>	VENDER TO CONFIRM		
7.2.1	Rated voltage : 415/540 volt, 3 phase , 4 wire , 50HZ	VENDER TO CONFIRM		
7.2.2	Insulation Voltage: 2500 Volts for 60 seconds	VENDER TO CONFIRM		
<b>7.3</b>	<b>DEGREE OF PROTECTION :</b> Enclosed design for IP-52 degree of protection as per BIS	VENDER TO CONFIRM		
7.4	<b>PAINTING :</b> Powder coating, colour - Siemens grey	VENDER TO CONFIRM		
7.5	The panel shall comprise of following:	VENDER TO CONFIRM		
<b>A</b>	<b>LOGIC AND CONTROLS</b> (mounted in the acoustic enclosure)	VENDER TO CONFIRM		
	(i) 1 No. multifunction meter for indication of the following parameter of the D.G.set	VENDER TO CONFIRM		
	3 Phase current, 3 phase voltage, frequency, KW & KVA	VENDER TO CONFIRM		
	Engine parameters : Water temperature, Lube oil pressure	VENDER TO CONFIRM		
	(ii) 1 No. 100 Amps 3 pole MCCB for generator incoming	VENDER TO CONFIRM		
	(iii) 1 set of metering CT's	VENDER TO CONFIRM		
	(iv) 1 No. relay module	VENDER TO CONFIRM		
	(v) 1 No. auxiliary relay	VENDER TO CONFIRM		
	(vi) Set of control fuses	VENDER TO CONFIRM		
<b>B</b>	<b>POWER PANEL</b> (suitable for mounting outside the acoustic enclosure)	VENDER TO CONFIRM		
	(i) 1 No. 3 phase voltage monitoring relay	VENDER TO CONFIRM		
	(ii) 4 Nos. Aux. relays	VENDER TO CONFIRM		
	(iii) 1 No. ON delay timer	VENDER TO CONFIRM		
	(iv) 1 No. OFF delay timer	VENDER TO CONFIRM		
	(vii) 1 No. SMPS based automatic battery charger	VENDER TO CONFIRM		
	(viii) 1 No. 100 Amp. 3 pole contactor for mains incoming	VENDER TO CONFIRM		
	(ix) 1 No. thermal overload	VENDER TO CONFIRM		
	(v) Required push buttons, indicating lamps, set of control fuses etc.	VENDER TO CONFIRM		
<b>C</b>	The D.G.Set shall have facility to Auto start, auto changeover and auto stop.	VENDER TO CONFIRM & SPECIFY		
<b>8.0</b>	<b>ACOUSTIC ENCLOSURE</b>	VENDER TO CONFIRM		
8.1	The acoustic enclosure shall be suitable to house the D.G.set comprise of engine/ alternator mounted on a base frame, fuel tank mounted under the base frame and AMF logic panel.	VENDER TO CONFIRM		
8.1.1	Silent D.G.set container shall be of modular construction with the provision to assemble and dismantle at site.	VENDER TO CONFIRM		
8.1.2	Enclosure shall be polyester based powder coated (inside as well as out side).	VENDER TO CONFIRM		
8.1.3	The doors shall be gasketed with EPDM gaskets to avoid sound leakage	VENDER TO CONFIRM		
8.1.4	The door handle shall be locked type.	VENDER TO CONFIRM		
8.1.5	Adequate ventilation shall be provided to meet air requirement for combustion and heat removal.	VENDER TO CONFIRM		