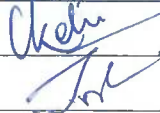
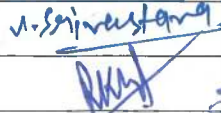
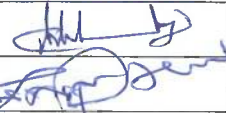
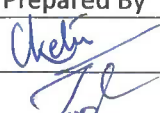
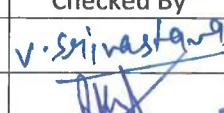
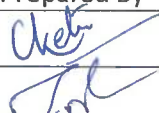
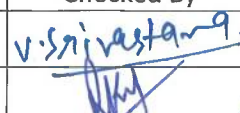
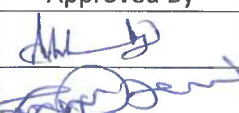
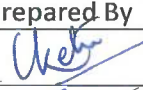
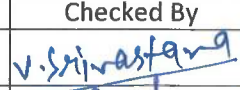
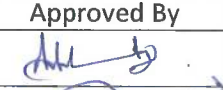
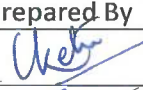
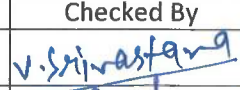
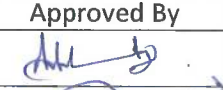
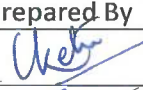
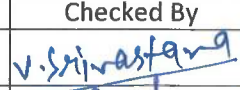
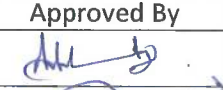
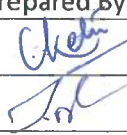


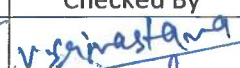
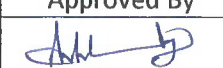
MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 1 of 18	
	1. Quantity : 2 Nos. 2. Type of cooling : ONAN. Mineral oil filled 3. Rating (at all taps) : 1250 KVA, 4. Number of phases : 3 5. Voltages primary (L-L) : 11000 volts -10% to +10% Secondary (L-L) : 415 volts 6. Frequency : 50Hz $\pm$ 3% 7. Combined volt & freq. Variation : 10% (Absolute sum) 8. Number of winding : 2 9. Vector group : DYN11 10. Percentage Impedance : 5% on principal tap 11. Installation : OUTDOOR 12. Ambient temp : 50 Degree C 13. Duty : Continuous							
	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.							
	Rev.00:	Issued By	Prepared By	Checked By	Approved By	Date		
1 st Issue	SPV GROUP				06.07.19			

MATERIAL CODE EL8349010029	 1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer			ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019	
	Page 2 of 18						
	14. Temperature Rise (a) Design ambient temp. : 50 Degree C. (b) Temp. Rise of top of Oil by thermometer should not increase : 40 Degree C (c) Temp. Rise of winding by resistance method should not increase: 45 Degree C						
	15. Class of insulation : Class- "A" 16. Relative Humidity : 100 % 17. Short Ckt. level at 11 kV : 40 KA (for 3 sec) 18. Rated Basic Insulation Level : 75 kVp (Minimum) 19. a) Material of winding : Copper – Electrolytic Grade b) Core : The Maximum flux density at any part of core and yoke at rated voltage & frequency shall not exceed 1.9Wb/m ² at any tap Position with $\pm 12.5\%$ combined voltage and frequency variation from voltage and frequency corresponding to the tap. The laminated core shall be of high grade cold rolled grain oriented silicon steel. c) Tank : Tank shall be of welded construction and Fabricated from tested low carbon steel. It shall be designed for a continuous internal pressure of 0.35 Kg/sq.cm over normal hydrostatic pressure of oil. All bolted connections shall be fitted with weather proof hot oil resistant gasket, in between for complete oil tightness. The gaskets shall give a satisfactory service under the operating conditions and guaranteed temperature rise conditions Bi-directional skids, rollers, jacking pads (four nos.), Lifting lugs shall be provided.						
The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.							
Rev.00: 1 st Issue		Issued By SPV GROUP	Prepared By 	Checked By 	Approved By 	Date 06.07.19	

MATERIAL CODE EL8349010029	 1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer			ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 3 of 18
	d) Hardware : All nuts and bolts exposed to weather shall be hot dip Galvanized or cadmium plated or zinc passivated steel. 20. Noise: Not to exceed values specified in NEMA TR-1. 21. Insulating oil: Fresh oil (before pouring into transformer) should be as per IS 335, without inhibitor. 10% extra oil shall be supplied for topping in non-returnable containers in sealed drums. 22. Terminal arrangement : Terminal boxes on both primary and secondary side, suitable for termination of HT-XLPE cable with Raychem type heat shrinkable terminating kits. 4mm thick MS blank (undrilled) gland plates to be supplied with primary and secondary sides on the bottom surface and Marshalling boxes. The secondary neutral shall be brought out and be fitted with suitable rated CT in an enclosed chamber on the transformer as per IP 55 protection. The Porcelain Bushing for high voltage (3 Nos) shall confirm to IS 2099. The low voltage bushing (4 Nos) shall confirm to IS 7421. The dimension of outer bushing shall conform to IS 3347 and shall be covered with suitably slopped plate to protect from rain water. The minimum length between cable gland plate and cable Lugs should be 550 mm for both primary and secondary sides of cable Boxes. Terminal marking shall be as per IS 2026. (Epoxy bushings are not acceptable.) 23. Tap changer : OFF LOAD TAP CHANGER 24. Taps : Taps -2.5% TO +2.5% in steps of 2.5 % (Number of tap position should be 4)					
	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.					
	Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date
1 st Issue	SPV GROUP				06.07.19	

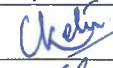
MATERIAL CODE EL8349010029	 1800-01 Rev. 00 EPD		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer			ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 4 of 18													
	25. Painting : Grey Shade 631 as per IS: 5 latest revisions with 2 coats of primer and 2 coats of paint. 26. Fittings and accessories : As per Annexure-1 27. Standards : IS 2026 and IS 1180 (Part 1): 2014. 28. Inspection and Testing : As per Annexure –2 29. Quality plan : Supplier shall submit his Quality Plan for approval. 30. Testing (Type Test): Type test certificates to be produced as per Annexure – 3 31. Efficiency at rated current, rated : 99.00% (Minimum) Voltage and Unity power factor (Energy Efficiency Level 2) at 75 Degree C (i.e. at Full load) IS 1180(Part-1):2014 32. Over Load capacity : As per IS 6600 33. No load current shall not exceed 3 percent of full load current and will be measured by energizing the transformer at rated voltage and frequency. Increase of 12.5 percent of rated voltage shall not increase the no-load current by 6 percent maximum of full load current. 34. Minimum Clearances in air a) The minimum external clearances for LV and HV bushings shall be 255 mm (phase-to-phase) and 140 mm (phase-to-earth). b) The minimum air clearances in cable box/connection chamber shall be 130 mm (phase-to- phase) and 80 mm (phase-to-earth).																		
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company. <table border="1" style="width: 100%;"> <tr> <th>Rev 00:</th> <th>Issued By</th> <th>Prepared By</th> <th>Checked By</th> <th>Approved By</th> <th>Date</th> </tr> <tr> <td>1st Issue</td> <td>SPV GROUP</td> <td></td> <td> V. Srinivasan</td> <td></td> <td>06.07.19</td> </tr> </table>								Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date	1 st Issue	SPV GROUP		 V. Srinivasan		06.07.19
Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date														
1 st Issue	SPV GROUP		 V. Srinivasan		06.07.19														

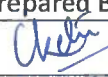
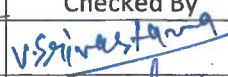
MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019	
	Page 5 of 18							
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		35. Information flow						
		(A) The DATA SHEETS shall be completely filled and all guaranteed figures must be without any tolerance and to be submitted along with the technical offer. Supplier must very clearly mention, if any deviation is taken on the specification. (B) Following information shall be submitted after placement of order (a) All preliminary drawings for approval (i) Soft Copies in PDF format only. (GA, BOM, Data Sheet, Quality Plan, Type Test Procedures etc.) (b) All final drawings after approval (i) 2 hard copies of Final Drgs & Data Sheet (ii) 2 hard copies of Test certificates and Guarantee certificates (iii) 2 hard copies of Instruction & Maintenance Manual (iv) All Final Drawings / datasheets / Test Certificates, Instruction & Maintenance Manual shall be handed over. 36. Pre-Qualification Criteria : As per annexure-4 Note: The price quoted by the vendor should be inclusive of supervision charges for commissioning.						
		Rev 00: 1 st Issue	Issued By SPV GROUP	Prepared By 	Checked By V. Srivastava 	Approved By  	Date 06.07.19	

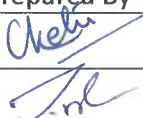
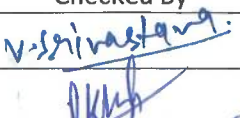
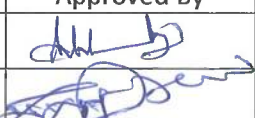
MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019																																	
	Page 6 of 18																																							
	<u>ANNEXURE - 1</u> All accessories shall be provided confirming to IS 3639. The following fittings and accessories shall be provided:																																							
	<table border="1"> <thead> <tr> <th>SL.NO</th> <th>DESCRIPTION</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Oil filling hole with cover on conservator</td> <td>1</td> </tr> <tr> <td>2.</td> <td>Conservator with sump & drain valves With plug/cover plate. The Breather Shall be mounted at a height less Than 1600 mm from the ground.</td> <td>1</td> </tr> <tr> <td>3.</td> <td>a) Magnetic Oil level gauge (Dial type) With minimum and maximum filling level markings. It should have two Independent electrically insulated low level alarm contacts suitable for 110 V DC. The oil level at 30 deg C Shall be marked on the gauge. The Contacts shall be suitable for 110 V DC.</td> <td>1</td> </tr> <tr> <td></td> <td>b) Prismatic oil level gauge</td> <td>1</td> </tr> <tr> <td>4.</td> <td>Thermometer pockets</td> <td>1</td> </tr> <tr> <td>5.</td> <td>Air release plug on tank cover</td> <td>1</td> </tr> <tr> <td>6.</td> <td>Lifting lugs</td> <td>1 SET</td> </tr> <tr> <td>7.</td> <td>Top filter valve</td> <td>1</td> </tr> <tr> <td>8.</td> <td>Dehydrating breather with Silica gel and oil seal</td> <td>1</td> </tr> <tr> <td>9.</td> <td>Rating and terminal marking stainless steel/anodized Aluminium plate, with details etched in MKS & SI units in English</td> <td>1 No.</td> </tr> </tbody> </table>								SL.NO	DESCRIPTION	QTY	1.	Oil filling hole with cover on conservator	1	2.	Conservator with sump & drain valves With plug/cover plate. The Breather Shall be mounted at a height less Than 1600 mm from the ground.	1	3.	a) Magnetic Oil level gauge (Dial type) With minimum and maximum filling level markings. It should have two Independent electrically insulated low level alarm contacts suitable for 110 V DC. The oil level at 30 deg C Shall be marked on the gauge. The Contacts shall be suitable for 110 V DC.	1		b) Prismatic oil level gauge	1	4.	Thermometer pockets	1	5.	Air release plug on tank cover	1	6.	Lifting lugs	1 SET	7.	Top filter valve	1	8.	Dehydrating breather with Silica gel and oil seal	1	9.	Rating and terminal marking stainless steel/anodized Aluminium plate, with details etched in MKS & SI units in English
SL.NO	DESCRIPTION	QTY																																						
1.	Oil filling hole with cover on conservator	1																																						
2.	Conservator with sump & drain valves With plug/cover plate. The Breather Shall be mounted at a height less Than 1600 mm from the ground.	1																																						
3.	a) Magnetic Oil level gauge (Dial type) With minimum and maximum filling level markings. It should have two Independent electrically insulated low level alarm contacts suitable for 110 V DC. The oil level at 30 deg C Shall be marked on the gauge. The Contacts shall be suitable for 110 V DC.	1																																						
	b) Prismatic oil level gauge	1																																						
4.	Thermometer pockets	1																																						
5.	Air release plug on tank cover	1																																						
6.	Lifting lugs	1 SET																																						
7.	Top filter valve	1																																						
8.	Dehydrating breather with Silica gel and oil seal	1																																						
9.	Rating and terminal marking stainless steel/anodized Aluminium plate, with details etched in MKS & SI units in English	1 No.																																						
Rev 00: 1 st Issue		Issued By SPV GROUP	Prepared By 	Checked By 	Approved By 	Date 06.07.19																																		

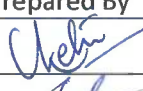
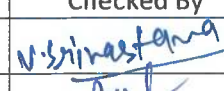
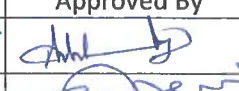
COPY RIGHT AND CONFIDENTIAL

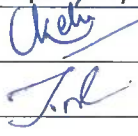
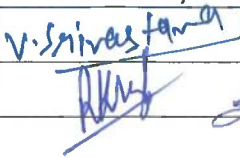
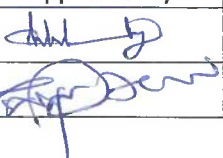
The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.

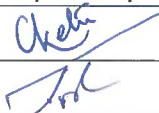
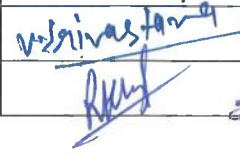
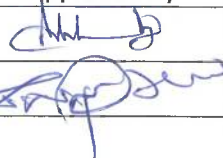
MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 7 of 18																																					
	<table border="1"> <thead> <tr> <th>SL.NO</th> <th>DESCRIPTION</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td>10.</td> <td>Earthing terminals without lugs suitable for connecting 50x6 mm galvanized mild steel flat.</td> <td>2</td> </tr> <tr> <td>11.</td> <td>Diagram plate</td> <td>1</td> </tr> <tr> <td>12.</td> <td>Drain cum bottom filter valve (A sampling device or sampling facility on drain valve)</td> <td>1</td> </tr> <tr> <td>13.</td> <td>Base channel with towing holes/lugs</td> <td>2</td> </tr> <tr> <td>14.</td> <td>Double diaphragm explosion vent with Sight glasses and equalizer pipe Connection to conservator.</td> <td>1</td> </tr> <tr> <td>15.</td> <td>Four Jacking Pads to enable transformer with oil to be raised or lowered using Hydraulic or screw jacks.</td> <td>1 SET</td> </tr> <tr> <td>16.</td> <td>Manufacture's name plate (stainless steel)</td> <td>1</td> </tr> <tr> <td>17.</td> <td>Bi-directional rollers + Bi-directional skids</td> <td>1 SET</td> </tr> <tr> <td>18.</td> <td>Detachable radiator with bottom drain Plug, top air release plug and top & bottom Shut off valve.</td> <td>1 SET</td> </tr> <tr> <td>19.</td> <td>Buchholz relay (Oil and gas)should be of double float type with testing & sampling cocks, alarm and trip contacts and one isolating valve on conservator side</td> <td>1</td> </tr> <tr> <td>20.</td> <td>150mm dial type oil temp. Indicator and winding temp. Indicators with max. pointer with alarm and trip contacts. Contacts suitable for 110V DC with adjustable alarm and trip points. Full scale temp. 240 deg C. Least count 2 deg C. Oil / Winding temp. Indicators should be provided with resetting device</td> <td>1 SET</td> </tr> </tbody> </table>								SL.NO	DESCRIPTION	QTY	10.	Earthing terminals without lugs suitable for connecting 50x6 mm galvanized mild steel flat.	2	11.	Diagram plate	1	12.	Drain cum bottom filter valve (A sampling device or sampling facility on drain valve)	1	13.	Base channel with towing holes/lugs	2	14.	Double diaphragm explosion vent with Sight glasses and equalizer pipe Connection to conservator.	1	15.	Four Jacking Pads to enable transformer with oil to be raised or lowered using Hydraulic or screw jacks.	1 SET	16.	Manufacture's name plate (stainless steel)	1	17.	Bi-directional rollers + Bi-directional skids	1 SET	18.	Detachable radiator with bottom drain Plug, top air release plug and top & bottom Shut off valve.	1 SET	19.	Buchholz relay (Oil and gas)should be of double float type with testing & sampling cocks, alarm and trip contacts and one isolating valve on conservator side	1	20.	150mm dial type oil temp. Indicator and winding temp. Indicators with max. pointer with alarm and trip contacts. Contacts suitable for 110V DC with adjustable alarm and trip points. Full scale temp. 240 deg C. Least count 2 deg C. Oil / Winding temp. Indicators should be provided with resetting device	1 SET
	SL.NO	DESCRIPTION	QTY																																									
	10.	Earthing terminals without lugs suitable for connecting 50x6 mm galvanized mild steel flat.	2																																									
11.	Diagram plate	1																																										
12.	Drain cum bottom filter valve (A sampling device or sampling facility on drain valve)	1																																										
13.	Base channel with towing holes/lugs	2																																										
14.	Double diaphragm explosion vent with Sight glasses and equalizer pipe Connection to conservator.	1																																										
15.	Four Jacking Pads to enable transformer with oil to be raised or lowered using Hydraulic or screw jacks.	1 SET																																										
16.	Manufacture's name plate (stainless steel)	1																																										
17.	Bi-directional rollers + Bi-directional skids	1 SET																																										
18.	Detachable radiator with bottom drain Plug, top air release plug and top & bottom Shut off valve.	1 SET																																										
19.	Buchholz relay (Oil and gas)should be of double float type with testing & sampling cocks, alarm and trip contacts and one isolating valve on conservator side	1																																										
20.	150mm dial type oil temp. Indicator and winding temp. Indicators with max. pointer with alarm and trip contacts. Contacts suitable for 110V DC with adjustable alarm and trip points. Full scale temp. 240 deg C. Least count 2 deg C. Oil / Winding temp. Indicators should be provided with resetting device	1 SET																																										
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.																																												
Rev 00:		Issued By	Prepared By	Checked By	Approved By	Date																																						
1 st Issue		SPV GROUP				06.07.19																																						

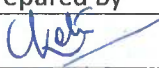
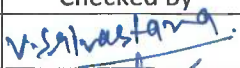
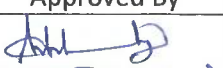
MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019	
							Page 8 of 18	
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.	SL.NO	DESCRIPTION					QTY	
	21.	Pressure Relief Valve on Tank side wall With Alarm and Trip contacts.(Location of this valve will be such that the hot oil discharge shall not fall on the Transformer or any of its parts.)					2 Nos.	
	22.	Marshalling box (protection class IP55 and IS 2147) epoxy painted. Should be vermin, weather, dust proof. Terminal connector of control cable should be of reputed make.20% extra spare terminals reqd. All TBs to be complete with insulating barriers, clip on type terminals suitable to 2.5 sq mm stranded copper wire. The marshalling box and temperature indicators shall not be mounted at a height greater than1600 mm from the ground level. The box shall be tank mounted with sloping roof. All incoming cables shall enter from bottom sheet steel to be 1.6 mm thick. Thermostatically Controlled space heaters shall be provided.					1 No	
	23.	Inspection openings on tank with handle					2 Nos	
	24.	Winding temperature indicator with alarm & trip					1 SET	
NOTE: 1. Contacts of all temp indicators, Buchholz relays and auxiliary devices shall be suitable for 110 V dc supply. All alarm and trip contacts shall also be suitable for 110 V dc circuits. External power Supply will not be provided. 2. Nuts and bolts exposed to weather to be hot dipped galvanized or cadmium plated or zinc passivated steel. 3. Control wiring to be done with 1100 V grade PVC wire, 2.5 mm stranded copper wire.								
Rev 00: 1 st Issue		Issued By SPV GROUP	Prepared By 	Checked By 	Approved By 	Date 06-07-19		

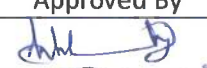
MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 9 of 18	
	ANNEXURE - 2							
	A comprehensive Quality Assurance plan (QAP) for the transformer and bought out/sub contracted items to be submitted and got approved by M/S BHEL after placement of order. A) Final testing of the finished Transformer The following tests shall be conducted on the transformers. Also please note that all routine tests shall be as per approved quality plan only. i) All Routine tests in accordance with the latest amendments as per IS 2026 shall be done on Transformer. ii) Oil leakage test All tanks and oil filled compartment shall be tested for oil tightness by completely filling with air, or oil of a viscosity not greater than that of insulating oil, at an ambient temp of 50 deg C, and subjected to a pressure equal to the normal pressure plus 0.35 Kg/cm² measured at the base of the tank. The pressure shall be maintained for a period not less than 24 hours for fluid and 10 min for air, during which time no leakage shall occur. iii) All auxiliary equipment shall be tested as per the relevant IS and Test certificates shall be submitted for bought out items. High voltage withstand test shall be performed on auxiliary equipment and wiring after complete assembly. iv) BDV test on oil samples before start and after finish of all Routine tests. v) Magnetic Balance Test. vi) Repeat of no load test after all electrical tests.							
	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.							
Rev 00: 1 st Issue		Issued By SPV GROUP	Prepared By 	Checked By 	Approved By 	Date 06.07.19		

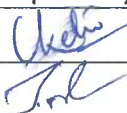
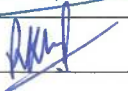
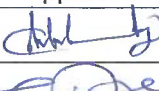
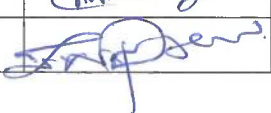
MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 10 of 18	
	Annexure-3 The Type tests shall be in accordance with latest issue / amendments of IS: 2026 and certificate to be submitted along with the offer. 1. Temperature rise test. 2. Lighting impulse test. 3. Short circuit withstand test . 4. Measurement of acoustic noise level. This shall conform to NEMA standard Publication TR-1. 5. No load current at 112 % voltage. Other Type test certificates for the similar rating transformer in accordance with latest issue / amendments of IS: 2026 shall be submitted							
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date	
		I st Issue	SPV GROUP				06.07.19	

MATERIAL CODE EL8349010029	 1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer			ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 11 of 18	
	Annexure-4 <u>Pre-Qualification Criteria:</u> - The vendor shall be an Original Equipment Manufacturer (OEM). Only the OEM or their authorized dealers along with an authorization letter can submit offers. An authorized Representative/Dealer cannot quote for the same equipment from more than one OEM. - Offer shall be for new equipment and not for any refurbished / used equipment. All the parts used in the machine shall also be new and not used / refurbished ones. A declaration to the above effect to be furnished. - The vendor should have already supplied and installed a minimum of 05 nos. of similar or above rating transformers in India during the past 3 years (01.01.2016 to 31.12.2018) and these must be operating satisfactorily. The details of the customers with contact details, transformers installed, date of installations etc. to be provided. BHEL reserves the right for independent verification of the references provided. - Vendor should have ISO:9001 certification and to be submitted along with technical bid. - The vendor shall furnish a comprehensive warranty for at least 12 months from the date of commissioning or 18 months from the date of supply whichever is earlier. Note: - Pre-qualification will be carried out based on the details furnished by the vendor / feedback from their customers / inspection of the company / product if required by BHEL independently at its sole discretion. - The vendor or their authorized service representatives shall have trained engineers for commissioning & service for the offered equipment and shall be in a position to provide prompt after sales service and spares support for our installations. - The vendor shall be in a position to provide service support for the equipment supplied, after the expiry of the warranty/ guarantee period either directly or through a service representative The Pre-qualification criteria are mandatory requirements and the technical bids will be evaluated only when the Pre-Qualification criteria are met.						
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date
		I st Issue	SPV GROUP				06.07.19

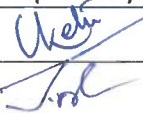
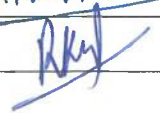
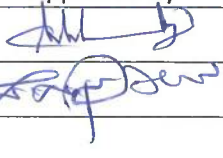
MATERIAL CODE EL8349010029	 1800-01 Rev. 00 EPD		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer			ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 12 of 18	
	DATA SHEET						
	SI No	Details					Vendor Confirmation / Response
	1	Manufacturer's Name and address Are you Original Equipment Manufacturer or authorized Dealer? Is authorization letter from OEM enclosed if you are a dealer?					Yes/No
2	Service Class / KVA rating						
3	Rated Voltage						
	a) Primary Winding KV						
	b) Secondary Winding KV						
4	Rated frequency						
5	Number of phases						
6	Connections						
	a) Primary Winding						
	b) Secondary Winding						
7	Connection symbol						
8	Type of cooling						
9	Insulation level						
	a) Separate source power frequency voltage withstand						
	i) Between Windings(KV rms)						
	ii) To Earth (KV rms)						
	iii) Between adjacent contacts(KV rms)						
	iv) Between first and last contact (KV rms)						
	b) Switch impulse withstand voltage						
	i) Between Windings(KV Peak)						
	ii) To Earth (KV Peak)						
	iii) Between adjacent contacts(KV Peak)						
	iv) Between first and last contact (KV Peak)						
10	Guaranteed positive sequence impedance at 75 deg C with 100% rating at						
	i) at Principal tap						
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.	Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date	
	1 st Issue	SPV GROUP				06.07.19	

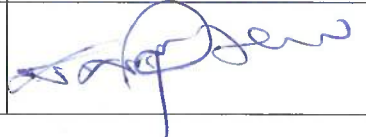
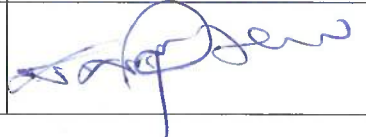
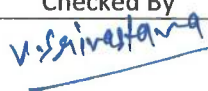
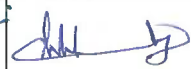
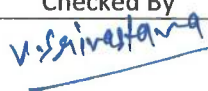
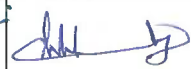
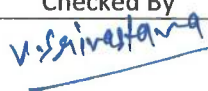
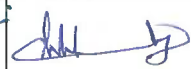
MATERIAL CODE EL8349010029	 1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer			ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019	
	Page 13 of 18						
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.	SI No	Details				Vendor Specifications	
		ii)Maximum tap (Approx)					
		iii)Minimum tap (Approx)					
	11	Temp. rise over an ambient of 50 deg C					
		a) Top oil in deg C					
		b) Winding (by resistance measurement method in degC)					
	12	Guaranteed losses at rated voltage on principal Tap and at rated current, rated frequency:					
		a) No load loss (KW)					
		b) Copper loss at full load and 75 deg C (KW)					
		c) Total Losses(KW)					
	13	Withstand time for three phases Short circuit at terminals (sec)					
	14	No load current at rated voltage and rated Frequency (Amps) (Approx)					
	15	Insulation level					
		a) Separate source power frequency voltage withstand					
		i) Primary Winding (KV rms)					
		ii)Secondary Winding (KV rms)					
		iii) Neutral Bushing					
		b) Induced over voltage withstand					
		i) Primary Winding (KV rms)					
		ii) Secondary Winding (KV rms)					
		c) Full wave lightning impulse withstand					
		i) Primary Winding (KV)					
		ii) Secondary Winding (KV)					
		iii) Neutral Bushing					
		d) Switch impulse withstand voltage					
		i) Primary Winding (KV)					
		ii) Secondary Winding (KV rms)					
	Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date	
	1 st Issue	SPV GROUP				06.07.19	

MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 14 of 18																																																																																					
	<table border="1"> <thead> <tr> <th>Sl No</th> <th>Details</th> <th>Vendor Specifications</th> </tr> </thead> <tbody> <tr> <td>16</td> <td>Regulation at full load at 75 deg C</td> <td></td> </tr> <tr> <td></td> <td>i) At unity power factor (percent)</td> <td></td> </tr> <tr> <td></td> <td>ii) At 0.8 power factor lagging (percent)</td> <td></td> </tr> <tr> <td>17</td> <td>Terminal arrangement</td> <td></td> </tr> <tr> <td></td> <td>i) Primary Voltage</td> <td></td> </tr> <tr> <td></td> <td>ii) Secondary voltage</td> <td></td> </tr> <tr> <td></td> <td>ii) Neutral Secondary</td> <td></td> </tr> <tr> <td>18</td> <td>Over excitation withstand time (sec)</td> <td></td> </tr> <tr> <td></td> <td>a) 120%</td> <td></td> </tr> <tr> <td></td> <td>b) 150%</td> <td></td> </tr> <tr> <td>19</td> <td>Neutral Bushing</td> <td></td> </tr> <tr> <td></td> <td>i) Manufacturer</td> <td></td> </tr> <tr> <td></td> <td>ii) Type</td> <td></td> </tr> <tr> <td></td> <td>iii) Minimum creep age distance (mm)</td> <td></td> </tr> <tr> <td>20</td> <td>Proposed method of transformer shipment</td> <td></td> </tr> <tr> <td>21</td> <td>Total quantity of oil (litres) required for first filling</td> <td></td> </tr> <tr> <td>22</td> <td>Is vacuum filling required, if so, state absolute pressure</td> <td></td> </tr> <tr> <td>23</td> <td>Efficiency at 75 deg C at unity power factor</td> <td></td> </tr> <tr> <td></td> <td>a) At full load (percent)</td> <td></td> </tr> <tr> <td></td> <td>b) At 3/4 full load (percent)</td> <td></td> </tr> <tr> <td></td> <td>c) At 1/2 full load (percent)</td> <td></td> </tr> <tr> <td></td> <td>d) Maximum efficiency of the transformer (%)</td> <td></td> </tr> <tr> <td></td> <td>e) Load at which max. efficiency occurs in KVA</td> <td></td> </tr> <tr> <td>24</td> <td>Approximate dimensions</td> <td></td> </tr> <tr> <td></td> <td>i) Tank enclosure (mm) (L x B x H)</td> <td></td> </tr> <tr> <td></td> <td>ii) overall L x B x H (mm)</td> <td></td> </tr> <tr> <td>25</td> <td>Untanking height (mm)</td> <td></td> </tr> </tbody> </table>								Sl No	Details	Vendor Specifications	16	Regulation at full load at 75 deg C			i) At unity power factor (percent)			ii) At 0.8 power factor lagging (percent)		17	Terminal arrangement			i) Primary Voltage			ii) Secondary voltage			ii) Neutral Secondary		18	Over excitation withstand time (sec)			a) 120%			b) 150%		19	Neutral Bushing			i) Manufacturer			ii) Type			iii) Minimum creep age distance (mm)		20	Proposed method of transformer shipment		21	Total quantity of oil (litres) required for first filling		22	Is vacuum filling required, if so, state absolute pressure		23	Efficiency at 75 deg C at unity power factor			a) At full load (percent)			b) At 3/4 full load (percent)			c) At 1/2 full load (percent)			d) Maximum efficiency of the transformer (%)			e) Load at which max. efficiency occurs in KVA		24	Approximate dimensions			i) Tank enclosure (mm) (L x B x H)			ii) overall L x B x H (mm)		25	Untanking height (mm)	
	Sl No	Details	Vendor Specifications																																																																																									
	16	Regulation at full load at 75 deg C																																																																																										
	i) At unity power factor (percent)																																																																																											
	ii) At 0.8 power factor lagging (percent)																																																																																											
17	Terminal arrangement																																																																																											
	i) Primary Voltage																																																																																											
	ii) Secondary voltage																																																																																											
	ii) Neutral Secondary																																																																																											
18	Over excitation withstand time (sec)																																																																																											
	a) 120%																																																																																											
	b) 150%																																																																																											
19	Neutral Bushing																																																																																											
	i) Manufacturer																																																																																											
	ii) Type																																																																																											
	iii) Minimum creep age distance (mm)																																																																																											
20	Proposed method of transformer shipment																																																																																											
21	Total quantity of oil (litres) required for first filling																																																																																											
22	Is vacuum filling required, if so, state absolute pressure																																																																																											
23	Efficiency at 75 deg C at unity power factor																																																																																											
	a) At full load (percent)																																																																																											
	b) At 3/4 full load (percent)																																																																																											
	c) At 1/2 full load (percent)																																																																																											
	d) Maximum efficiency of the transformer (%)																																																																																											
	e) Load at which max. efficiency occurs in KVA																																																																																											
24	Approximate dimensions																																																																																											
	i) Tank enclosure (mm) (L x B x H)																																																																																											
	ii) overall L x B x H (mm)																																																																																											
25	Untanking height (mm)																																																																																											
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.	Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date																																																																																						
	1 st Issue	SPV GROUP				06.07.19																																																																																						

MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 15 of 18																																																																																																	
	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company. <table border="1" style="width: 85%;"> <thead> <tr> <th>Sl No</th> <th>Details</th> <th>Vendor Specifications</th> </tr> </thead> <tbody> <tr><td>26</td><td>Approximate weight</td><td></td></tr> <tr><td></td><td>i)Core and winding(Kg)</td><td></td></tr> <tr><td></td><td>ii) Tank cover (Kg)</td><td></td></tr> <tr><td></td><td>iii)Tank fitting (Kg)</td><td></td></tr> <tr><td></td><td>iv)Oil (Kg)</td><td></td></tr> <tr><td></td><td>v)Total weight (Kg)</td><td></td></tr> <tr><td>27</td><td>Dispatch details (Kg)</td><td></td></tr> <tr><td></td><td>a) Approximate mass of heaviest package (Kg)</td><td></td></tr> <tr><td></td><td>b) Approximate dimensions of largest package L x B x H (mm)</td><td></td></tr> <tr><td>28</td><td>Reference standards for Transformer</td><td></td></tr> <tr><td>29</td><td>Type of Construction (Core/Shell)</td><td></td></tr> <tr><td>30</td><td>Thermal time constant (Hours)</td><td></td></tr> <tr><td>31</td><td>Magnetizing inrush current (Amps)</td><td></td></tr> <tr><td>32</td><td>No load current at rated Frequency and at(Approx)</td><td></td></tr> <tr><td></td><td>i) 90% voltage (Amps)</td><td></td></tr> <tr><td></td><td>ii) 100% voltage (Amps)</td><td></td></tr> <tr><td></td><td>iii) 110% voltage (Amps)</td><td></td></tr> <tr><td>33</td><td>Power factor of no load current</td><td></td></tr> <tr><td>34</td><td>Zero sequence impedance at principle tap</td><td></td></tr> <tr><td>35</td><td>Capacitance between winding and to Earth (micro farads)</td><td></td></tr> <tr><td>36</td><td>Percentage reactance at rated Current and frequency and at</td><td></td></tr> <tr><td></td><td>i)Principal Tap</td><td></td></tr> <tr><td></td><td>ii) Maximum tap</td><td></td></tr> <tr><td></td><td>iii) Minimum tap</td><td></td></tr> <tr><td>37</td><td>Radiator(nos)</td><td></td></tr> <tr><td></td><td>i) Overall dimensions lxbxh (mm)</td><td></td></tr> <tr><td></td><td>ii) Total weight with oil (Kg)</td><td></td></tr> <tr><td></td><td>iii) Total weight without oil (Kg)</td><td></td></tr> <tr><td></td><td>iv) Type of mounting</td><td></td></tr> <tr><td></td><td>v) Thickness of Radiator tube radiator sheet steel (approx)</td><td></td></tr> <tr><td>38</td><td>Size of filter hose (mm)</td><td></td></tr> </tbody> </table>								Sl No	Details	Vendor Specifications	26	Approximate weight			i)Core and winding(Kg)			ii) Tank cover (Kg)			iii)Tank fitting (Kg)			iv)Oil (Kg)			v)Total weight (Kg)		27	Dispatch details (Kg)			a) Approximate mass of heaviest package (Kg)			b) Approximate dimensions of largest package L x B x H (mm)		28	Reference standards for Transformer		29	Type of Construction (Core/Shell)		30	Thermal time constant (Hours)		31	Magnetizing inrush current (Amps)		32	No load current at rated Frequency and at(Approx)			i) 90% voltage (Amps)			ii) 100% voltage (Amps)			iii) 110% voltage (Amps)		33	Power factor of no load current		34	Zero sequence impedance at principle tap		35	Capacitance between winding and to Earth (micro farads)		36	Percentage reactance at rated Current and frequency and at			i)Principal Tap			ii) Maximum tap			iii) Minimum tap		37	Radiator(nos)			i) Overall dimensions lxbxh (mm)			ii) Total weight with oil (Kg)			iii) Total weight without oil (Kg)			iv) Type of mounting			v) Thickness of Radiator tube radiator sheet steel (approx)		38	Size of filter hose (mm)	
									Sl No	Details	Vendor Specifications																																																																																													
									26	Approximate weight																																																																																														
	i)Core and winding(Kg)																																																																																																							
	ii) Tank cover (Kg)																																																																																																							
	iii)Tank fitting (Kg)																																																																																																							
	iv)Oil (Kg)																																																																																																							
	v)Total weight (Kg)																																																																																																							
27	Dispatch details (Kg)																																																																																																							
	a) Approximate mass of heaviest package (Kg)																																																																																																							
	b) Approximate dimensions of largest package L x B x H (mm)																																																																																																							
28	Reference standards for Transformer																																																																																																							
29	Type of Construction (Core/Shell)																																																																																																							
30	Thermal time constant (Hours)																																																																																																							
31	Magnetizing inrush current (Amps)																																																																																																							
32	No load current at rated Frequency and at(Approx)																																																																																																							
	i) 90% voltage (Amps)																																																																																																							
	ii) 100% voltage (Amps)																																																																																																							
	iii) 110% voltage (Amps)																																																																																																							
33	Power factor of no load current																																																																																																							
34	Zero sequence impedance at principle tap																																																																																																							
35	Capacitance between winding and to Earth (micro farads)																																																																																																							
36	Percentage reactance at rated Current and frequency and at																																																																																																							
	i)Principal Tap																																																																																																							
	ii) Maximum tap																																																																																																							
	iii) Minimum tap																																																																																																							
37	Radiator(nos)																																																																																																							
	i) Overall dimensions lxbxh (mm)																																																																																																							
	ii) Total weight with oil (Kg)																																																																																																							
	iii) Total weight without oil (Kg)																																																																																																							
	iv) Type of mounting																																																																																																							
	v) Thickness of Radiator tube radiator sheet steel (approx)																																																																																																							
38	Size of filter hose (mm)																																																																																																							
Rev 00: 1 st Issue	Issued By SPV GROUP	Prepared By 	Checked By v.srinivasa 	Approved By  	Date 06.07.19																																																																																																			

MATERIAL CODE EL8349010029	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer		ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019																																																																																					
	Page 16 of 18																																																																																											
	<table border="1"> <thead> <tr> <th>SI No</th> <th>Details</th> <th>Vendor Specifications</th> </tr> </thead> <tbody> <tr> <td>39</td> <td>Core</td> <td></td> </tr> <tr> <td></td> <td>a) Form of core</td> <td></td> </tr> <tr> <td></td> <td>b) Net core area (mm²)</td> <td></td> </tr> <tr> <td></td> <td>c) Type of joint between core and yoke</td> <td></td> </tr> <tr> <td></td> <td>d) Thickness of stamping (mm)</td> <td></td> </tr> <tr> <td></td> <td>e) Percentage silicon content (percent)</td> <td></td> </tr> <tr> <td></td> <td>f) Maximum flux density in core at</td> <td></td> </tr> <tr> <td></td> <td>rated frequency and at</td> <td></td> </tr> <tr> <td></td> <td>i) 90% voltage (Wb/m²)</td> <td></td> </tr> <tr> <td></td> <td>ii) 100% voltage (Wb/m²)</td> <td></td> </tr> <tr> <td></td> <td>iii) 110% voltage (Wb/m²)</td> <td></td> </tr> <tr> <td></td> <td>g) Type of core binding</td> <td></td> </tr> <tr> <td>40</td> <td>Winding</td> <td></td> </tr> <tr> <td></td> <td>a) Type of winding</td> <td></td> </tr> <tr> <td></td> <td>b) Current density at rated load</td> <td></td> </tr> <tr> <td></td> <td>i) HV (A/mm²)</td> <td></td> </tr> <tr> <td></td> <td>ii) LV (A/mm²)</td> <td></td> </tr> <tr> <td></td> <td>c) Conductor area</td> <td></td> </tr> <tr> <td></td> <td>i) HV (A/mm²)</td> <td></td> </tr> <tr> <td></td> <td>ii) LV (A/mm²)</td> <td></td> </tr> <tr> <td></td> <td>d) Maximum current density under short circuit</td> <td></td> </tr> <tr> <td></td> <td>i) HV (A/mm²)</td> <td></td> </tr> <tr> <td></td> <td>ii) LV (A/mm²)</td> <td></td> </tr> <tr> <td>41</td> <td>Clearance</td> <td></td> </tr> <tr> <td></td> <td>a) Minimum clearance between phase</td> <td></td> </tr> <tr> <td></td> <td>i) In oil (mm)</td> <td></td> </tr> <tr> <td></td> <td>ii) In air (mm)</td> <td></td> </tr> </tbody> </table>								SI No	Details	Vendor Specifications	39	Core			a) Form of core			b) Net core area (mm ²)			c) Type of joint between core and yoke			d) Thickness of stamping (mm)			e) Percentage silicon content (percent)			f) Maximum flux density in core at			rated frequency and at			i) 90% voltage (Wb/m ²)			ii) 100% voltage (Wb/m ²)			iii) 110% voltage (Wb/m ²)			g) Type of core binding		40	Winding			a) Type of winding			b) Current density at rated load			i) HV (A/mm ²)			ii) LV (A/mm ²)			c) Conductor area			i) HV (A/mm ²)			ii) LV (A/mm ²)			d) Maximum current density under short circuit			i) HV (A/mm ²)			ii) LV (A/mm ²)		41	Clearance			a) Minimum clearance between phase			i) In oil (mm)			ii) In air (mm)	
	SI No	Details	Vendor Specifications																																																																																									
39	Core																																																																																											
	a) Form of core																																																																																											
	b) Net core area (mm ²)																																																																																											
	c) Type of joint between core and yoke																																																																																											
	d) Thickness of stamping (mm)																																																																																											
	e) Percentage silicon content (percent)																																																																																											
	f) Maximum flux density in core at																																																																																											
	rated frequency and at																																																																																											
	i) 90% voltage (Wb/m ²)																																																																																											
	ii) 100% voltage (Wb/m ²)																																																																																											
	iii) 110% voltage (Wb/m ²)																																																																																											
	g) Type of core binding																																																																																											
40	Winding																																																																																											
	a) Type of winding																																																																																											
	b) Current density at rated load																																																																																											
	i) HV (A/mm ²)																																																																																											
	ii) LV (A/mm ²)																																																																																											
	c) Conductor area																																																																																											
	i) HV (A/mm ²)																																																																																											
	ii) LV (A/mm ²)																																																																																											
	d) Maximum current density under short circuit																																																																																											
	i) HV (A/mm ²)																																																																																											
	ii) LV (A/mm ²)																																																																																											
41	Clearance																																																																																											
	a) Minimum clearance between phase																																																																																											
	i) In oil (mm)																																																																																											
	ii) In air (mm)																																																																																											
The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.																																																																																												
Rev 00:		Issued By	Prepared By	Checked By	Approved By	Date																																																																																						
1 st Issue		SPV GROUP	<i>Chetan</i>	<i>V. Srinastana</i>	<i>Chetan</i>	06.07.19																																																																																						

MATERIAL CODE EL8349010029	 1800-01 Rev. 00 EPD		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer			ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019																																																							
	Page 17 of 18																																																												
	COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company. <table border="1" style="width: 85%;"> <thead> <tr> <th>Sl No</th> <th>Details</th> <th>Vendor Specifications</th> </tr> </thead> <tbody> <tr> <td></td> <td>b) Minimum clearance of HV winding to tank/enclosure (in oil, if applicable),(mm)</td> <td></td> </tr> <tr> <td></td> <td>c) Minimum clearance of HV winding to earth (In oil, if applicable),(mm)</td> <td></td> </tr> <tr> <td></td> <td>d) Clearance between core and coil (mm)</td> <td></td> </tr> <tr> <td></td> <td>e) Clearance between coils (mm)</td> <td></td> </tr> <tr> <td>42</td> <td>Tank/enclosure details</td> <td></td> </tr> <tr> <td></td> <td>i) Side (mm)</td> <td></td> </tr> <tr> <td></td> <td>ii) Bottom (mm)</td> <td></td> </tr> <tr> <td></td> <td>iii) Cover (mm)</td> <td></td> </tr> <tr> <td>43</td> <td>Bushings</td> <td></td> </tr> <tr> <td></td> <td>i) Type</td> <td></td> </tr> <tr> <td></td> <td>ii) Rated Voltage</td> <td></td> </tr> <tr> <td></td> <td>iii) Lightning Impulse</td> <td></td> </tr> <tr> <td></td> <td>iv) Creep age distance (minimum)</td> <td></td> </tr> <tr> <td></td> <td>v) Power Frequency</td> <td></td> </tr> <tr> <td>44</td> <td>Magnetic Oil Level Gauge (Dial type) Size</td> <td></td> </tr> <tr> <td>45</td> <td>List of deviations (if any)</td> <td></td> </tr> <tr> <td></td> <td style="height: 100px; vertical-align: bottom;">If yes, please mention deviations here.</td> <td></td> </tr> </tbody> </table>							Sl No	Details	Vendor Specifications		b) Minimum clearance of HV winding to tank/enclosure (in oil, if applicable),(mm)			c) Minimum clearance of HV winding to earth (In oil, if applicable),(mm)			d) Clearance between core and coil (mm)			e) Clearance between coils (mm)		42	Tank/enclosure details			i) Side (mm)			ii) Bottom (mm)			iii) Cover (mm)		43	Bushings			i) Type			ii) Rated Voltage			iii) Lightning Impulse			iv) Creep age distance (minimum)			v) Power Frequency		44	Magnetic Oil Level Gauge (Dial type) Size		45	List of deviations (if any)			If yes, please mention deviations here.	
								Sl No	Details	Vendor Specifications																																																			
	b) Minimum clearance of HV winding to tank/enclosure (in oil, if applicable),(mm)																																																												
	c) Minimum clearance of HV winding to earth (In oil, if applicable),(mm)																																																												
	d) Clearance between core and coil (mm)																																																												
	e) Clearance between coils (mm)																																																												
42	Tank/enclosure details																																																												
	i) Side (mm)																																																												
	ii) Bottom (mm)																																																												
	iii) Cover (mm)																																																												
43	Bushings																																																												
	i) Type																																																												
	ii) Rated Voltage																																																												
	iii) Lightning Impulse																																																												
	iv) Creep age distance (minimum)																																																												
	v) Power Frequency																																																												
44	Magnetic Oil Level Gauge (Dial type) Size																																																												
45	List of deviations (if any)																																																												
	If yes, please mention deviations here.																																																												
	Rev 00: 1 st Issue	Issued By SPV GROUP	Prepared By 	Checked By V. Srivastava 	Approved By 	Date 06.07.19																																																							

MATERIAL CODE EL8349010029	 1800-01 Rev. 00		PURCHASE SPECIFICATION FOR 1250 KVA, 11kV/415 V Distribution Transformer			ISSUE NO : 06 DOC.NO: SPV-UT-020 REV : 00 JULY 2019 Page 18 of 18																		
	<u>SPECIFICATION REVIEWED AND APPROVED</u> <table border="1"> <thead> <tr> <th></th> <th>NAME</th> <th>SIGNATURE</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Prepared by</td> <td>CHANDRA KETU</td> <td></td> </tr> <tr> <td>MOHAN J</td> <td></td> </tr> <tr> <td rowspan="2">Checked by</td> <td>VAIBHAV SHRIVASTAV</td> <td></td> </tr> <tr> <td>R.K.SINGH</td> <td></td> </tr> <tr> <td rowspan="2">Approved by</td> <td>S ARUNACHALAM</td> <td></td> </tr> <tr> <td>PURUSHOTHAM C N</td> <td></td> </tr> </tbody> </table>								NAME	SIGNATURE	Prepared by	CHANDRA KETU		MOHAN J		Checked by	VAIBHAV SHRIVASTAV		R.K.SINGH		Approved by	S ARUNACHALAM		PURUSHOTHAM C N
	NAME	SIGNATURE																						
Prepared by	CHANDRA KETU																							
	MOHAN J																							
Checked by	VAIBHAV SHRIVASTAV																							
	R.K.SINGH																							
Approved by	S ARUNACHALAM																							
	PURUSHOTHAM C N																							
<table border="1"> <tr> <td>Rev 00:</td> <td>Issued By</td> <td>Prepared By</td> <td>Checked By</td> <td>Approved By</td> <td>Date</td> </tr> <tr> <td>1st Issue</td> <td>SPV GROUP</td> <td></td> <td></td> <td></td> <td>06-07-19</td> </tr> </table>								Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date	1 st Issue	SPV GROUP				06-07-19					
Rev 00:	Issued By	Prepared By	Checked By	Approved By	Date																			
1 st Issue	SPV GROUP				06-07-19																			

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.

BHARAT HEAVY ELECTRICALS LTD.,
ELECTRIC & PHOTOVOLTAIC DIVISION, IISC POST, BENGALURU - 560012

DEPARTMENT : SPV & WEX - Projects				Ref : PR No. 50003240
				Date: 06.07.2019

LIST OF LINE ITEMS / BILL OF MATERIALS

Sl No.	Item / Description	Unit	Quantity	Rate	Amount	Remarks
1	1250 KVA, 11kV/415 V Distribution Transformer	set	2			The 1250 KVA Distribution Transformer per Purchase Specification No. SPV-UT-020 Complete inclusive of the following units / components and not limited to:
						a. Core
						b. Windings
						c. Transformer Oil
						d. Tank enclosure & Fittings
						e. Radiator
						f. Bushing
						g. Magnetic Oil Level Gauge
						h. Protection Relays
						i. Additional / Associated equipment : Other accessories as required.
2	Installation and Commissioning of the system at BHEL - EPD	Set	1			
3	Technical Documentation, Software and other associated information					
4	Consumables for a period of 2 years	Set	1			Bidder to indicate and provide details (optional)
5	Spare Parts package for a period of 2 years	Set	1			Bidder to indicate and provide details (optional)