

 <b>BHEL</b> Tenders		<b>Government eProcurement System</b> Tender Details	
		Date : 19-Jun-2023 10:15 AM	
 Print			
<b>Basic Details</b>			
<b>Organisation Chain</b>	Bharat Heavy Electricals Limited  HEP - Bhopal  Transformer Capacitor Bushings  356 - Material MGT - Transf. Cap. and Bushg.		
<b>Tender Reference Number</b>	E7533012		
<b>Tender ID</b>	2023_BHEL_25900_1	<b>Withdrawal Allowed</b>	Yes
<b>Tender Type</b>	Global Tenders	<b>Form of contract</b>	Supply
<b>Tender Category</b>	Goods	<b>No. of Covers</b>	2
<b>General Technical Evaluation Allowed</b>	No	<b>ItemWise Technical Evaluation Allowed</b>	Yes
<b>Payment Mode</b>	Not Applicable	<b>Is Multi Currency Allowed For BOQ</b>	Yes
<b>Is Multi Currency Allowed For Fee</b>	No	<b>Allow Two Stage Bidding</b>	No
<b>Cover Details, No. Of Covers - 2</b>			
Cover No	Cover	Document Type	Description
1	Fee/PreQual/Technical	.pdf	Signed specifications
		.pdf	Commercial annexure AND BP200102A
		.pdf	INTEGRITY PACT CONCILIATION CLAUSE BP200102A
		.pdf	PQR documents and any deviations if any
2	Finance	.xls	BOQ
<b>Tender Fee Details, [Total Fee in ₹ * - 0.00]</b>		<b>EMD Fee Details</b>	
<b>Tender Fee in ₹</b>	0.00	<b>EMD Amount in ₹</b>	0.00
<b>Fee Payable To</b>	Nil	<b>EMD through BG/ST or EMD Exemption Allowed</b>	No
<b>Fee Payable At</b>	Nil	<b>EMD Fee Type</b>	fixed
<b>Tender Fee Exemption Allowed</b>	No	<b>EMD Percentage</b>	NA
		<b>EMD Payable To</b>	Nil
		<b>EMD Payable At</b>	Nil
<a href="#">Click to view modification history</a>			
<b>Foreign Currency BOQ Details</b>			
S.No	Currency	Conversion rate in ₹	
1	US Dollar	NA	
2	European Euro	NA	
3	Japanese Yen	NA	
<b>Work /Item(s)</b>			
<b>Title</b>	420KV 1250A OIL SF6 BUSHING and 245 KV 2000A OIL SF6 BUSHING		
<b>Work Description</b>	09 Nos 420KV 1250A OIL SF6 BUSHING 09 nos 245 KV 2000A OIL SF6 BUSHING		
<b>Pre Qualification Details</b>	as per PQR		
	NA		

<b>Independent External Monitor/Remarks</b>					
<b>Show Tender Value in Public Domain</b>	No				
<b>Tender Value in ₹</b>	3,75,00,000	<b>Product Category</b>	Electrical Work/ Equipment	<b>Sub category</b>	NA
<b>Contract Type</b>	Tender	<b>Bid Validity(Days)</b>	120	<b>Period Of Work(Days)</b>	150
<b>Location</b>	BHEL BHOPAL	<b>Pincode</b>	462021	<b>Pre Bid Meeting Place</b>	NA
<b>Pre Bid Meeting Address</b>	NA	<b>Pre Bid Meeting Date</b>	NA	<b>Bid Opening Place</b>	BHEL BHOPAL
<b>Should Allow NDA Tender</b>	No	<b>Allow Preferential Bidder</b>	No		

**Critical Dates**

<b>Publish Date</b>	19-Jun-2023 11:00 AM	<b>Bid Opening Date</b>	29-Jun-2023 02:00 PM
<b>Document Download / Sale Start Date</b>	19-Jun-2023 11:00 AM	<b>Document Download / Sale End Date</b>	29-Jun-2023 11:00 AM
<b>Clarification Start Date</b>	NA	<b>Clarification End Date</b>	NA
<b>Bid Submission Start Date</b>	19-Jun-2023 11:00 AM	<b>Bid Submission End Date</b>	29-Jun-2023 11:00 AM

**Tender Documents**

<b>NIT Document</b>	<b>S.No</b>	<b>Document Name</b>	<b>Description</b>	<b>Document Size (in KB)</b>
	1	Tendernotice_1.pdf	PQR 420kv	34.33
	2	Tendernotice_2.pdf	PQR 245kv	32.94
	3	Tendernotice_3.pdf	NIT	79.92

<b>Work Item Documents</b>	<b>S.No</b>	<b>Document Type</b>	<b>Document Name</b>	<b>Description</b>	<b>Document Size (in KB)</b>
	1	Tender Documents	PQR420kv.pdf	420kv PQR	18.87
	2	Tender Documents	420kvspecifications.pdf	420kv Specifications	228.91
	3	Tender Documents	PQR245kv.pdf	245kv PQR	17.38
	4	Tender Documents	245kvspecifications.pdf	245kv Specifications	261.35
	5	Tender Documents	ANNEXURETC3Aindianvendor.pdf	Commercial annexure for indian vendors	367.02
	6	Tender Documents	ANNEXURETC3Bforeignvendor.pdf	Commercial annexure for foreign suppliers	380.10
	7	Other Document	IP.pdf	Integrity pact	613.97
	8	Other Document	CONCILIATIONCLAUSE.pdf	Model Conciliation clause	160.63
	9	Other Document	BP200102A.pdf	BHEL general terms and conditions	723.99
	10	BOQ	BOQ_27079.xls	BOQ	238.50
	11	Additional Documents	ANNEXUREIPEBC.pdf	Annexure PEBC I	23.28
	12	Additional Documents	ANNEXUREIPEBC.pdf	Annexure PEBC II	30.78

**Bid Openers List**

<b>S.No</b>	<b>Bid Opener Login Id</b>	<b>Bid Opener Name</b>	<b>Certificate Name</b>
1.	vineet.yadav@bhel.in	VINEET YADAV	VINEET YADAV
2.	vkathour@bhel.in	Vijay Kumar Rathour	VIJAY KUMAR RATHOUR
3.	vikramjain@bhel.in	Vikram Jain	VIKRAM JAIN
4.	ved.shukla@bhel.in	VED PRAKASH SHUKLA	VED PRAKASH SHUKLA

**GeMARPTS Details**

<b>GeMARPTS ID</b>	YWPK382FPZSL
<b>Description</b>	420KV 1250A OIL SF6 BUSHING
<b>Report Initiated On</b>	19-Jun-2023
<b>Valid Until</b>	19-Jul-2023

### **Tender Properties**

<b>Auto Tendering Process allowed</b>	No	<b>Show Technical bid status</b>	Yes
<b>Show Finance bid status</b>	Yes	<b>Show Bids Details</b>	Yes
BoQ Comparative Chart model	Normal	BoQ Compartive chart decimal places	2
BoQ Comparative Chart Rank Type	L	Form Based BoQ	No

### **Tender Inviting Authority**

<b>Name</b>	VED PRAKASH SHUKLA
<b>Address</b>	BHEL BHOPAL

### **Tender Creator Details**

<b>Created By</b>	VED PRAKASH SHUKLA
<b>Designation</b>	Engineer
<b>Created Date</b>	19-Jun-2023 09:57 AM



BPC 0007

**ENQUIRY  
TWO PART BID**

**भारत हेवी इलेक्ट्रिकल्स लिमिटेड, पिपलानी, भोपाल - ४६२०२२(भारत)  
सामग्री प्रबंधन विभाग  
BHARAT HEAVY ELECTRICALS LIMITED, PIPLANI, BHOPAL – 462022(INDIA)  
MATERIALS MANAGEMENT DIVISION**

TIN NO. 23573600001 | ECC NO. AAACB4146PXM009 | MPCT NO. HEL/05/01/0001/S15/11/79  
PHONE: 91-755-2500100 (7 LINE) | FAX: 91-755-2500023 | WWW.BHELBHOPAL.COM

ENQUIRY NO E7533012  
ENQUIRY DATE 19/06/23  
ENQUIRY DUE DATE 29/06/23

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SUPP NAME AND ADDRESS	SUPP CODE	REV CD	REV NO	REV DATE	NO OF CATY2	NO OF CATY3	ENQ NO OF ITEMS	INDENT NO
OFFICE COPY		1	0	NA	0	0	2	242130011
	GUARANTEE CERTIFICATE		Y	SUPPLY CONDITION AS PER PO				
	TEST CERTIFICATE		Y					
	INSTRUCTION BOOKLET		N	TECHNICAL CONDITION AS PER BHEL DRG/TECHNICAL SPECIFICATION				
	SAMPLE		N					
GATE PASS		Y	INSPECTION CONDITION AS PER POWERGRID QUALITY PLAN					

**NOTE: QUOTE PRICE BOTH IN FIGURES & WORDS. IN CASE OF MISMATCH PRICE IN WORDS WILL BE VALID, QUOTATIONS NOT BEARING ENQUIRY NO AND DUE DATE LIABLE TO BE REJECTED.**

SL NO	MATERIAL CODE	DESC	UNIT	ITEM QTY	LOT NO	LOT QTY	DEST	DELIVERY DATE
1	TF4622167000	420KV 1250A OIL SF6 BUSHING TO SPEC. NO. BCE/PS/420/50 REV.00	NO	9.000	1	9.000	206	09/10/23
2	TF4622167018	245 KV 2000A OIL SF6 BUSHING TO SPEC. NO. BCE/PS/245/51 REV.00	NO	9.000	1	9.000	206	09/10/23

**REMARK** 1. PLEASE QUOTE ON FIRM RATES BASED AS PER ENCLOSED ANNEXURE T&C (3A & 3B), & PURCHASE SPECIFICATION TO ENQUIRY. 2. DETAILED TERMS & CONDITIONS AS PER BP-200102A. SUPPLIER TO QUOTE IN COMPLIANCE WITH THESE TERMS & CONDITIONS. ANY DEVIATION/ NON COMPLIANCE TO BE CITED IN THE OFFER, ELSE THEY SHALL BE DEEMED ACCEPTABLE. 3. RATES SHOULD BE ON FOR BHEL BHOPAL BASIS FOR INDIAN VENDORS AND CIP JNPT NHAVA SHEVA SEAPORT MUMBAI FOR FOREIGN VENDORS. 4. VALIDITY OF YOUR QUOTATION SHOULD BE AT LEAST 120 DAYS FROM ENQUIRY OPENING DATE. 5. PLEASE SUBMIT OFFER IN TWO PARTS BID. 6. MII & MSE PURCHASE PREFERENCE SHALL BE APPLICABLE FOR THIS TENDER ENQUIRY AS PER GOI /DPIIT PPP-MII LATEST CIRCULARS. 7. PRE QUALIFICATION REQUIREMENT-PQR SHALL BE APPLICABLE AS PER ENCLOSED WITH ENQUIRY. 8. OFFERS ARE INVITED FROM ONLY M/S POWERGRID APPROVED VENDORS. KINDLY SUBMIT M/S POWERGRID APPROVAL FOR RESPECTIVE KV CLASS AS PER PQR. 9. THE EVALUATION CURRENCY FOR THIS TENDER SHALL BE INR. 10. THE IEM APPOINTED FOR THIS CONTRACT IS AS UNDER 1) SHRI OTEMDAI, IAS (RETD.) 2) SHRI BISHWAMITRA PANDEY, IRAS (RETD.) AND SHRI MUKESH MITTAL, IRS (RETD.) 11. AS PER GOVERNMENT OF INDIA GUIDELINES, THIS CONTRACT WILL BE COVERED UNDER INTEGRITY PACT. SIGNED AND SEALED INTEGRITY PACT ON ALL PAGES MUST BE SUBMITTED WITH OFFER. 12. RESTRICTION TO QUOTE BY BIDDERS FROM COUNTRIES HAVING LAND BORDER WITH INDIA, AS PER PUBLIC PROCUREMENT ORDER ISSUED BY DEPARTMENT OF EXPENDITURE, GOVT. OF INDIA ([HTTPS://DOE.GOV.IN/SITES/DEFAULT/FILES/OM%20DATED%2023.07.2020.PDF](https://doe.gov.in/sites/default/files/om%20dated%2023.07.2020.pdf)) AND ITS AMENDMENTS ISSUED FROM TIME TO TIME SHALL BE APPLICABLE FOR THIS TENDER.

DRAWING	PURCH SPEC	CATALOUGE	PLAN	TWO PART BID
Y	Y	N	Y	Y

S.NO	INDENT NO	ITEM NO	CATEGORY	ENQUIRY QTY.
1	242130011	1	259300	9.000
2	242130011	2	259300	9.000

**NOTE:** BHEL, BHOPAL'S Standard Terms & Conditions BP4255/MM5533 rev02 for imports and BP4255/MM5527 rev03 for indigeneous procurements form a part of this Enquiry. Bidders may obtain from us copies of these terms and conditions if not already available.

<b>SPECIAL REMARKS</b>	<p>NAME : SHRI VED PRAKASH SHUKLA DESG : ENGINEER</p> <p align="center"><b>SIGN &amp; SEAL</b></p>
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**BHARAT HEAVY ELECTRICAL LIMITED, BHOPAL**

**SPECIFICATION CUM COMPLIANCE CERTIFICATE OF 420 kV OIL-SF6 CONDENSER BUSHING**

NAME & ADDRESS OF THE SUPPLIER :			
SCOPE: SUPPLY OF 420 kV, 1250A OIL-SF6 CONDENSER BUSHINGS COMPLYING WITH THE SPECIFICATIONS AS BELOW :			
			Spec No. : BCE/PS/420/50, Rev00
			Date : 13-01-2023
S.NO.	DESCRIPTION OF BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	REMARKS
1.0	WORKPIECE MATERIAL		
1.1	Item :		
	420KV Oil-SF6 RIP (Resin Impregnated Paper) condenser type bushing.	Vendor to confirm	
2.0	SPECIFICATION :		
2.1	The electrical and mechanical characteristics of bushings shall be in accordance with latest revisions of IEC: 60137:2017 & IEC 62271-211.	Vendor to confirm	
2.1	The bushing shall be suitable for connection with GIS SF6/ Oil Interface as per IEC.62271-211.	Vendor to confirm	
2.2	Valid type test reports as per IEC:60137 (2017) for similar 420 kV Oil-SF6 RIP bushings , conducted within last 7(seven) years prior to the date of bid opening shall be submitted alongwith the bid.	Vendor to confirm and submit the test reports alongwith the bid	
2.2.1	The type tests conducted should have either been conducted in accredited laboratory (accredited based on ISO/ IEC Guide 25/ 17025 or EN 45001 by the national accreditation body of the country where laboratory is located) or witnessed by client / third party.	Vendor to confirm	
2.2.2	Type Tests reports should include the following tests also, (i) Seismic Test (ii) Snap Back Test	Vendor to confirm	

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Spec No. : BCE/PS/420/50, Rev00

Date : 13-01-2023

S.NO.	DESCRIPTION OF BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	REMARKS
2.2.3	In case valid type test report as mentioned under Sr. Nos. 2.2.2.2.1 & 2.2.2 above is not available, then vendor has to conduct type test in presence of BHEL / Customer representative before delivery of first lot, at no extra cost.	Vendor to confirm	
2.3	When operating at normal rated voltage there shall be no electric discharge between the conductors and bushing which would cause corrosion or injury to conductors; insulators or supports by the formation of substances produced by chemical action.	Vendor to confirm	
2.4	No radio interference shall be caused by the bushings when operating at the normal rated voltage. All surfaces of the metal parts shall be perfectly smooth with the projecting points or irregularities which may cause corona.	Vendor to confirm	
2.5	End fittings shall be free from cracks, seams, shrinks, air holes and rough edges.	Vendor to confirm	
2.6	End fittings should be effectively, sealed to prevent moisture ingress; effectiveness of sealing system must be supported by test documents.	Vendor to confirm	
2.7	All load bearing surfaces shall be smooth and uniform so as to distribute the loading stresses uniformly.	Vendor to confirm	
2.8	Clamps and fittings shall be of hot dip galvanised/stainless steel.	Vendor to confirm	
2.9	Spare Bushing shall be specially packed suitable for long storage with non-returnable.	Vendor to confirm	
2.10	Bushings of identical current and voltage ratings must be interchangeable.	Vendor to confirm	
2.11	Supplier to submit their Quality Plan for review by BHEL.	Vendor to confirm	
2.12	Bottom stress shield insulated with 5mm pressboard is preferable. It shall be duly packed in moisture proof condition and supplied along with bushing.	Vendor to confirm	



Spec No. : BCE/PS/420/50, Rev00

Date : 13-01-2023

S.NO.	DESCRIPTION OF BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	REMARKS
2.13	Bushing shall be specially packed to avoid any damage during transit and suitable for long storage, with non-returnable packing wooden boxes with hinged type cover. Without any gap between wooden planks. Packing Box opening cover with nails/screws type packing arrangement shall not be acceptable.	Vendor to Confirm	
2.14	Both bushing oil end & SF6 end shall be fitted with metal housing with positive dry air pressure and a suitable pressure monitoring device shall be fitted on the metal housing during storage to avoid direct contact with moisture with epoxy. Alternatively, oil filled metal housing / tank with suitable arrangement for taking care oil expansion due to temperature variations shall also be acceptable. Tank shall have necessary provision for oil filling, level gauge etc. Manufacturer shall submit drawing/ documents of packing for approval during detail engineering.	Vendor to Confirm	
2.15	Detail method for storage of bushing including accessories shall be brought out in the instruction manual.	Vendor to Confirm	
2.16	Tan delta measurement at variable frequency (in the range of 20 Hz to 350 Hz) shall be carried out on each condenser type bushing (RIP) at manufacturing works as routine test before despatch and the result shall be compared at site during commissioning to verify the healthiness of the bushing.	Vendor to Confirm	
2.17	Tan delta value of RIP condenser bushing at site shall be 0.005 (max) in temperature range of 20 deg C to 90 deg C. The measured tan delta value at site of in-service bushing should not exceed by 0.001 w.r.t factory results (measured at approx. similar temperature conditions) during warranty period.	Vendor to Confirm	



Spec No. : BCE/PS/420/50, Rev00				
Date : 13-01-2023				
S.NO.	DESCRIPTION OF BHEL REQUIREMENT		SPECIFIED / TO BE CONFIRMED BY	REMARKS
2.18	If the bushing does not fulfill the criteria under Cl. No. 2.17 mentioned above, the supplier shall arrange to replace the defective bushing by a new one within the warranty period.		Vendor to Confirm	
3.0	<b>Technical Parameters</b>			
3.1	Rated Voltage	420 kV	Vendor to Confirm	
3.2	Rated Current (Min.)	1250 A	Vendor to Confirm	
3.3	Lightning impulse withstand voltage	1425 kVp	Vendor to Confirm	
3.4	Switching impulse withstand voltage	1050 kVp	Vendor to Confirm	
3.5	One minute power frequency withstand voltage	695 kVrms	Vendor to Confirm	
3.6	Tan delta of bushings	$\leq 0.005$	Vendor to Confirm	
3.7	Max partial discharge level at Um	$< 10$ pC	Vendor to Confirm	
3.8	Test tap voltage withstand level	2 kVrms	Vendor to Confirm	
3.9	SF6 end Terminal details	As per drg. at Annexure-I	Vendor to Confirm	
3.10	Height of mounting flange (between SF6 side and oil side PCD areas)	200 mm	Vendor to Confirm	
3.11	Oil End Terminal details	Flat rectangular shaped with 2 nos. 14mm dia holes at 40mm pitch.	Vendor to Confirm	
3.12	Oil end side max. bushing dia. (mm)	298 mm	Vendor to Confirm	
3.13	Flange Fixing details - SF6 side	16 holes, dia. 20 mm equally spaced on PCD 640 mm	Vendor to Confirm	
3.14	Flange Fixing details - Transformer side	12 holes, dia. 23 mm equally spaced on PCD 450 mm	Vendor to Confirm	
3.15	CT space min.	300 mm	Vendor to Confirm	

Spec No. : BCE/PS/420/50, Rev00				
Date : 13-01-2023				
S.NO.	DESCRIPTION OF BHEL REQUIREMENT		SPECIFIED / TO BE CONFIRMED BY	REMARKS
3.16	Type of Lead	Bottom connected	Vendor to Confirm	
4.0	<b>DOCUMENTATION :</b> Following documents in English language should be submitted along with the bid for our evaluation.		Vendor to Confirm	
4.1	OGA Drawing		Vendor to submit	
4.2	Type test reports		Vendor to submit	
4.3	Instruction manual		Vendor to submit	
4.4	Quality Plan		Vendor to submit	
5.0	<b>GUARANTEE :</b>			
5.1	12 months from the date of commissioning of the transformer and 18 months from the date of supply, whichever is later.		Vendor to Confirm	
6.0	<b>ROUTINE TEST INSPECTION:</b>		Vendor to confirm	
6.1	Routine tests to be conducted on all bushings as per IEC 60137:2017. The routine tests may be witnessed by BHEL/customer/TPIA at supplier's works.		Vendor to confirm	

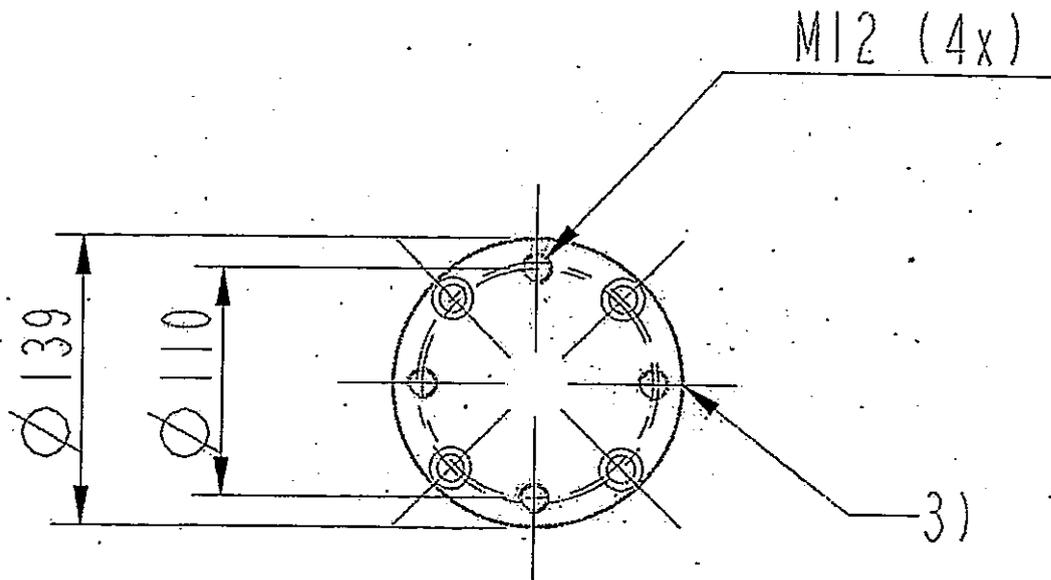
Prepared By  
Singiren.E.Kandulna  
Mgr (CIE)

Checked By:  
Kulamani Naik  
SDGM (BCE & CIE)

Approved By  
Mahendra Kurre  
AGM (BCE & CIE)

ANNEXURE-I

SF6 SIDE BUSHING TERMINAL DETAILS



*Singh*



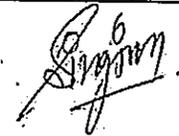
**BHARAT HEAVY ELECTRICAL LIMITED, BHOPAL**

**SPECIFICATION CUM COMPLIANCE CERTIFICATE OF 245 kV OIL-SF6 CONDENSER BUSHING**

NAME & ADDRESS OF THE SUPPLIER :			
SCOPE: SUPPLY OF 245 kV, 2000A OIL-SF6 CONDENSER BUSHINGS COMPLYING WITH THE SPECIFICATIONS AS BELOW :			
			Spec No. : BCE/PS/245/51, Rev00
			Date : 13-01-2023
S.NO.	DESCRIPTION OF BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	REMARKS
1.0	WORKPIECE MATERIAL		
1.1	Item :		
	245KV Oil-SF6 RIP (Resin Impregnated Paper) condenser type bushing.	Vendor to confirm	
2.0	SPECIFICATION :		
2.1	The electrical and mechanical characteristics of bushings shall be in accordance with latest revisions of IEC: 60137:2017 & IEC 62271-211.	Vendor to confirm	
2.1	The bushing shall be suitable for connection with GIS SF6/ Oil Interface as per IEC 62271-211.	Vendor to confirm	
2.2	Valid type test reports as per IEC:60137 (2017) for similar 245 kV Oil-SF6 RIP bushings , conducted within last 7(seven) years prior to the date of bid opening shall be submitted alongwith the bid.	Vendor to confirm and submit the test reports alongwith the bid	

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Spec No. : BCE/PS/245/51, Rev00			
Date : 13-01-2023			
S.NO.	DESCRIPTION OF BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	REMARKS
2.2.1	The type tests conducted should have either been conducted in accredited laboratory (accredited based on ISO/IEC Guide 25/17025 or EN 45001 by the national accreditation body of the country where laboratory is located) or witnessed by client / third party.	Vendor to confirm	
2.2.2	In case valid type test report as mentioned under Sr. Nos. 2.2 & 2.2.1 above is not available, then vendor has to conduct type test in presence of BHEL / Customer representative before delivery of first lot, at no extra cost.	Vendor to confirm	
2.3	When operating at normal rated voltage there shall be no electric discharge between the conductors and bushing which would cause corrosion or injury to conductors, insulators or supports by the formation of substances produced by chemical action.	Vendor to confirm	
2.4	No radio interference shall be caused by the bushings when operating at the normal rated voltage. All surfaces of the metal parts shall be perfectly smooth with the projecting points or irregularities which may cause corona.	Vendor to confirm	
2.5	End fittings shall be free from cracks, seams, shrinks, air holes and rough edges.	Vendor to confirm	
2.6	End fittings should be effectively, sealed to prevent moisture ingress, effectiveness of sealing system must be supported by test documents.	Vendor to confirm	
2.7	All load bearing surfaces shall be smooth and uniform so as to distribute the loading stresses uniformly.	Vendor to confirm	



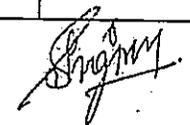
Spec No. : BCE/PS/245/51, Rev00			
Date : 13-01-2023			
S.NO.	DESCRIPTION OF BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	REMARKS
2.8	Clamps and fittings shall be of hot dip galvanised/stainless steel.	Vendor to confirm	
2.9	Spare Bushing shall be specially packed suitable for long storage with non-returnable.	Vendor to confirm	
2.10	Bushings of identical current and voltage ratings must be interchangeable.	Vendor to confirm	
2.11	Supplier to submit their Quality Plan for review by BHEL.	Vendor to confirm	
2.12	Bottom stress shield insulated with 5mm pressboard is preferable. It shall be duly packed in moisture proof condition and supplied along with bushing.	Vendor to confirm	
2.13	Bushing shall be specially packed to avoid any damage during transit and suitable for long storage, with non-returnable packing wooden boxes with hinged type cover. Without any gap between wooden planks. Packing Box opening cover with nails/screws type packing arrangement shall not be acceptable.	Vendor to Confirm	
2.14	Both bushing oil end & SF6 end shall be fitted with metal housing with positive dry air pressure and a suitable pressure monitoring device shall be fitted on the metal housing during storage to avoid direct contact with moisture with epoxy. Alternatively, oil filled metal housing / tank with suitable arrangement for taking care oil expansion due to temperature variations shall also be acceptable. Tank shall have necessary provision for oil filling, level gauge etc. Manufacturer shall submit drawing/ documents of packing for approval during detail engineering.	Vendor to Confirm	

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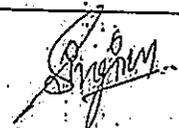
Spec No. : BCE/PS/245/51, Rev00

Date : 13-01-2023

S.NO.	DESCRIPTION OF BHEL REQUIREMENT		SPECIFIED / TO BE CONFIRMED BY	REMARKS
2.15	Detail method for storage of bushing including accessories shall be brought out in the instruction manual.		Vendor to Confirm	
2.16	Tan delta measurement at variable frequency (in the range of 20 Hz to 350 Hz) shall be carried out on each condenser type bushing (RIP) at manufacturing works as routine test before despatch and the result shall be compared at site during commissioning to verify the healthiness of the bushing.		Vendor to Confirm	
2.17	Tan delta value of RIP condenser bushing at site shall be 0.005 (max) in temperature range of 20 deg C to 90 deg C. The measured tan delta value at site of in-service bushing should not exceed by 0.001 w.r.t factory results (measured at approx. similar temperature conditions) during warranty period.		Vendor to Confirm	
2.18	If the bushing does not fulfill the criteria under Cl. No. 2.17 mentioned above, the supplier shall arrange to replace the defective bushing by a new one within the warrantee period.		Vendor to Confirm	
3.0	<b>Technical Parameters</b>			
3.1	Rated Voltage	245 kV	Vendor to Confirm	
3.2	Rated Current (Min.)	2000 A	Vendor to Confirm	
3.3	Lightning impulse withstand voltage	1050 kVp	Vendor to Confirm	
3.4	Switching impulse withstand voltage	850 kVp	Vendor to Confirm	
3.5	One minute power frequency withstand voltage	505 kVrms	Vendor to Confirm	
3.6	Tan delta of bushings	$\leq 0.005$	Vendor to Confirm	



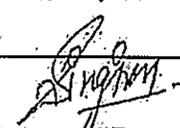
Spec No. : BCE/PS/245/51, Rev00			
Date : 13-01-2023			
S.NO.	DESCRIPTION OF BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	REMARKS
3.7	Max partial discharge level at Um	< 10 pC	Vendor to Confirm
3.8	Test tap voltage withstand level	2kVrms	Vendor to Confirm
3.9	SF6 end Terminal details	As per drg. at Annexure-I	Vendor to Confirm
3.10	Height of mounting flange (between SF6 side and oil side PCD areas)	220 mm	Vendor to Confirm
3.11	Oil End Terminal details	Flat rectangular shaped with 4 nos. 14mm dia holes Horizontal pitch = 45mm Vertical pitch = 40mm	Vendor to Confirm
3.12	Oil end side bushing dia. (max.)	210 mm	Vendor to Confirm
3.13	Flange Fixing details - SF6 side	16 holes, dia. 16 mm equally spaced on PCD 535 mm	Vendor to Confirm
3.14	Flange Fixing details - Transformer side	12 holes, dia. 24 mm equally spaced on PCD 400 mm	Vendor to Confirm
3.15	CT space min.	300 mm	Vendor to Confirm
3.16	Type of Lead	Bottom connected	Vendor to Confirm
4.0	<b>DOCUMENTATION :</b> Following documents in English language should be submitted along with the bid for our evaluation.	Vendor to Confirm	
4.1	OGA Drawing	Vendor to submit	



Spec No. : BCE/PS/245/51, Rev00

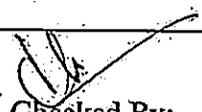
Date : 13-01-2023

S.NO.	DESCRIPTION OF BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	REMARKS
4.2	Type test reports	Vendor to submit	
4.3	Instruction manual	Vendor to submit	
4.4	Quality Plan	Vendor to submit	
5.0	<b>GUARANTEE :</b>		
5.1	12 months from the date of commissioning of the transformer and 18 months from the date of supply, whichever is later.	Vendor to Confirm	
6.0	<b>ROUTINE TEST INSPECTION:</b>	Vendor to confirm	
6.1	Routine tests to be conducted on all bushings as per IEC 60137:2017. The routine tests may be witnessed by BHEL/customer/TPIA at supplier's works.	Vendor to confirm	



Prepared By:

Singiren.E.Kandulna  
Mgr (CIE)



Checked By:

Kulamani Naik  
SDGM (BCE & CIE)

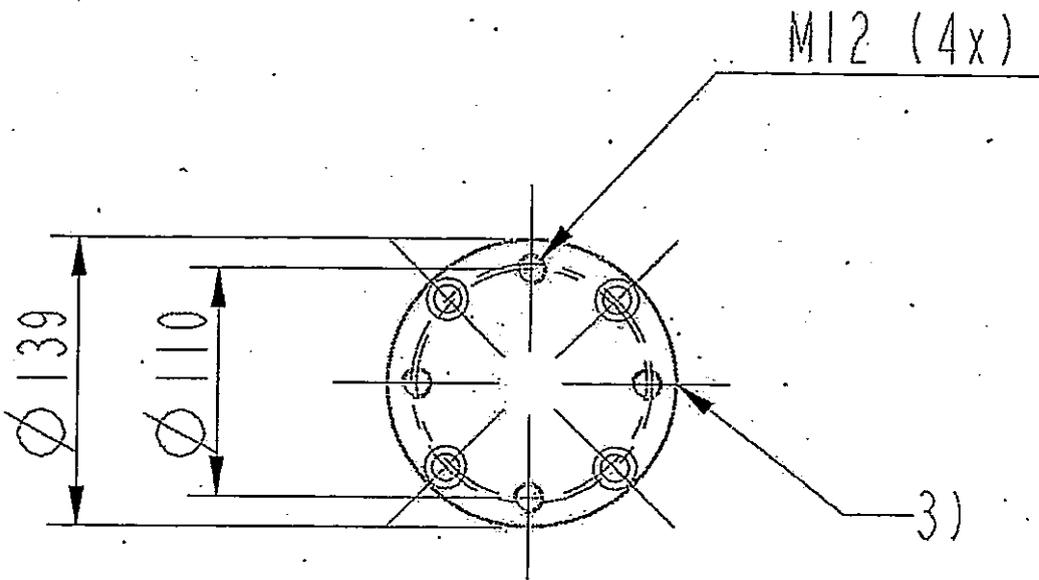


Approved By:

Mahendra Kurre  
AGM (BCE & CIE)

ANNEXURE-I

SF6 SIDE BUSHING TERMINAL DETAILS



*Signature*



**BHARAT HEAVY ELECTRICALS LIMITED BHOPAL**

**PRE QUALIFICATION REQUIREMENT(PQR)  
PI NO.- 242130011**

Date: 08.06.2023

Sl. No.	Description	Vendor's remarks (Y/N)
1.	The vendor should be either manufacturer of OIP/RIP/RIS bushings as per BHEL Enquiry <u>OR</u> their authorized representative.  Authorized representative to submit authorization letter from the manufacturer as a documentary proof.	
2.	<b>420KV, 1250A OIP/RIP/RIS Bushing:</b> Supplier should be approved by POWERGRID for 420kV or higher rating OIP/RIP/RIS bushings as on bid opening date.  Supplier to submit POWERGRID approval letter/drg/type test reports in support of the same.	

Prepared by: Singiren.E.Kandulna  
Manager (BCE)

Approved by: K M Naik  
Sr. DGM (BCE)

कुलगणी नाईक / K. NAIK  
वरि. उप महाप्रबंधक / Sr. Dy. General Manager  
सी.आई.ई. विभाग / CIE Division  
बी.एच.ई.एल., भोपाल / BHEL, Bhopal



# BHARAT HEAVY ELECTRICALS LIMITED BHOPAL

## PRE QUALIFICATION REQUIREMENT(PQR)

PI NO.- 242130011

Date: 08.06.2023

Sl. No.	Description	Vendor's remarks (Y/N)
1.	<p>The vendor should be either manufacturer of OIP/RIP/RIS bushings as per BHEL Enquiry <u>OR</u> their authorized representative.</p> <p>Authorized representative to submit authorization letter from the manufacturer as a documentary proof.</p>	
2.	<p><b>245KV,2000A OIP/RIP/RIS Bushing:</b></p> <p>Supplier should be approved by POWERGRID for 245kV or higher rating OIP/RIP/RIS bushings as on bid opening date.</p> <p>Supplier to submit POWERGRID approval letter/drg/type test reports in support of the same.</p>	

Prepared by:   
Singiren.E.Kandulna  
Manager (BCE)

Approved by:   
K M NAIK  
Sr. DGM (BCE)