

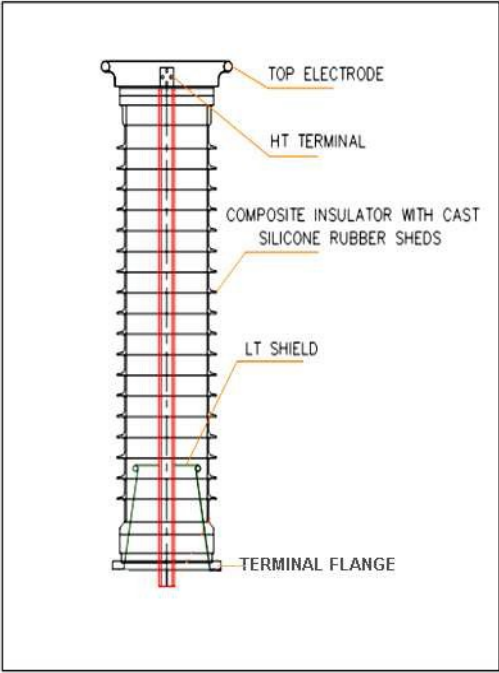
PSGSG 2019-20 / 002	Product Specifications for SF6 GAS INSULATED BUSHING	Drawing No.	
		Date	27.08.2019
		Product	CGSM 145
S. No.	BHEL Specification	Vendor compliance	Vendor remarks / description

1.0	Purpose: Gas-to-Air termination bushing for high voltage tests on 170 kV SF6 gas insulated metal clad substation equipment.		
2.0	Scope of Supply: 1.One Number of 170 kV, SF6 gas insulated bushing with composite insulator (porcelain not acceptable). 2. The bushing shall be complete with internal and external shields. Alternatively, stress graded HT conductor or LT end can be offered. 3.HT connection shall have provision to connect to gas insulated equipment directly (refer Figure-1).		
3.0	Mounting Arrangement: Detailed assembly drawing of bushing confirming the different possible mounting arrangements. Please also specify the maximum permissible angle of mounting w.r.t. support structure.		
4.0	Drawing Approval: Drawings as per Master list of manufacturing drawings shall be submitted for approval prior to commencement of supply, in event of order placed by BHEL. Detailed drawing of the critical components like composite insulator, HT Shield, LT Shield, terminal flange shall also be submitted for information of BHEL along with technical bid.		
5.0	Factory Tests: Detailed type test reports i.e., for both electrical and mechanical test shall be furnished with technical offer. All routine tests have to be carried out on the equipment being offered and test reports to be submitted along with the supply. A sample of test report shall be submitted along with the offer.		

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6.0	Technical specifications: 1. System Voltage: 170 kV (rms) 2. System Frequency: 50 Hz. 3. Standard Insulation Level: (a). Dry Lightning Impulse Withstand Voltage: ~750 kV 1.2/50 μs. (b). Power Frequency withstand Voltage dry: 325 kV 60 S 4. Rated Current: > 2500 Amps. 5. Rated Short Time Current: 50kA 3 sec. 6. Rated phase to earth voltage: 98 kV 7. Maximum cantilever operating load: > 3000N 8. Minimum operating pressure: ~0.5Mpa 9. Maximum operating pressure :> 0.85 Mpa (abs.) 10. Arcing Distance: ~1400mm $\pm$ 10%		
7.0	Standard Specifications: 1. All other specifications as per IEC 60137, version thereof. 2. PD level should be in accordance with IEC 60270 for composite gas insulated bushing and shall be specified. 3. The resistance of bushing HT conductor should be close to theoretical minimum and shall be specified. 4. The test certificates shall be furnished for all type tests. 5. Creepage distance of the bushing shall be in the range of 30-35 mm/kV.		
8.0	Gas Connections: For bushings terminated in a conical support insulator, it shall be provided with at least two non-return gas valves (standard DILO) for gas filling and gas pressure monitoring. The detailed drawings of these components shall be provided with the offer.		
9.0	Operating & Maintenance Manuals Supplier shall provide operation and maintenance manual. The user manuals shall have detailed information about frequently maintenance requirements, spare parts and part nos. and addresses for future correspondence etc.		

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10.0	Any Other information: Supplier can furnish any other/additional information, considering overall requirements.		
11.0	Sample drawing:  Figure 1. Schematic Drawing of 170 kV Gas Insulated Bushing.		