

**NOTICE INVITING TENDER  
FOR TYPE TESTING OF 420KV, 50KA GIS**

NIT No: NIT/GIS420/TT/2021/001 Rev 01

DATE:26.11.2021

**Switchgear Engineering Division  
BHEL Bhopal**

**Pre-Qualification Criteria (PQR)**

S. No	Pre-Qualification Criteria	Confirmation by Test lab Yes/No	Remarks
1	The Test lab should not be associated with EHV GIS manufacturer. The lab has to submit an undertaking. Otherwise, their offer will be rejected without further evaluation.	Lab has to submit Undertaking.	
2	<b>Capability to Conduct Test</b> Test Lab should able to conduct Tests mentioned in the Table-2 and as per relevant IEC without any deviation.	Lab to confirm and furnish relevant supporting documents	

**Tender Enquiry No : NIT/GIS420/TT/2021/001 Dated 26.11.2021**

**Tender Submission Date : upto 21/12/2021 on or before 11.00pm(IST).**

**Tender Opening date : 21/12/2021 at 2.00pm(IST) at**

Tender room

Administrative building, Ground floor, Western Wing

BHEL Piplani, Bhopal-462022

**Alternatively**

offer can be sent on following email:- [mmtender.bpl@bhel.in](mailto:mmtender.bpl@bhel.in)

**Note:**

- It is two-bid system enquiry. **Price bid shall be sealed in separate envelop.** Envelope should be marked as "**Bid Part - II - Price bid for NIT/GIS420/TT/2021/001 dated 26-11-2021**"
- Bid should be free from correction, overwriting, using corrective fluid, etc. Any interlineation, cutting, eraser or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else bid shall be liable for rejection.**
- In case of more than one L1 bidder, it will be dealt as per BHEL Policy.
- In case of discrepancy in words and figure in quoted price bid, it will be dealt as per BHEL Policy.

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**Specification for Performance Tests of 420 kV, 50 kA GCB**

**Item: 001:**

Testing of 420 kV, 50 kA, 4000 A Gas Insulated Circuit Breaker. Technical particular of the Circuit Breaker is given in **Table-1.1**. List of Tests to be conducted on Gas Insulated Circuit Breaker are given in **Test No. A1 of Table-2**. The Performance Tests are to be conducted in accordance with **IEC 62271-100/110**. Vendor shall give confirmation against each technical requirement mentioned in **Table-3**. Weight & Size of Packing Case – Gas Insulated Circuit Breaker is given in **Table-4.1**.

Vendor shall give separate charges against each item as per Price Schedule- 'A' given at **Table-5**.

**Item: 002:**


Testing of 420 kV, 50 kA, 4000 A Gas Insulated Disconnect Switch in accordance with International Standard IEC62271-102. Technical particular of the Disconnect Switch is given in **Table-1.2**. List of Tests to be conducted on Gas Insulated Circuit Breaker are given in **Test No. A2 of Table-2**. The Performance Tests are to be conducted in accordance with **IEC 62271-102**. Vendor shall give confirmation against each technical requirement mentioned in **Table-3**. Weight & Size of Packing Case – Gas Insulated DS is given in **Table-4.2**.

Vendor shall give separate charges against each item as per Price Schedule- 'A' given at **Table-5**.

**Item: 003:**

Testing of 420 kV, 50 kA Fast Earthing Switch in accordance with International Standard IEC62271-102. Technical particular of the Fast Earthing Switch is given in **Table-1.3**. List of Tests to be conducted on Gas Insulated Circuit Breaker are given in **Test No. A3 of Table-2**. The Performance Tests are to be conducted in accordance with **IEC 62271-102**. Vendor shall give confirmation against each technical requirement mentioned in **Table-3**. Weight & Size of Packing Case – Gas Insulated FES is given in **Table-4.3**.

Vendor shall give separate charges against each item as per Price Schedule- 'A' given at **Table-5**.





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**Technical particular of the Gas Insulated Circuit Breaker (item 001)**

**TABLE 1.1**

General information of Circuit Breaker		
Client	M/s Bharat Heavy Electricals limited Bhopal	
Manufacturer	M/s Bharat Heavy Electricals limited Bhopal	
Standard	IEC 62271-100/ 110	
Type of report	Test Report	
Client representative(s)	To be informed Later	
Description of the apparatus	One Pole SF6 Gas-Insulated metal-enclosed Circuit Breaker	
Ratings assigned by the manufacturer		
Designation / Type	GSM 420	
Serial number	To be informed Later	
Rated voltage	420	kV
Nominal current	4000	A
Number of poles	1	
Frequency	50	Hz
Operating sequence	O-0.3 sec-CO-3 min-CO	
Short-time withstand current	50	kA
Peak withstand current	125	kAp
Duration of short-circuit	3	s
Short-circuit making current	125	kAp
Short-circuit breaking current	50	kA
Time constant	45	ms
First pole to clear factor	1.3	
Pressure for interruption SF6 at 20°C	8.5	bar (absolute)
Pressure for insulation SF6 at 20°C	6.5	bar(abs)
Pressure for operation	8.5	bar(abs)
Supply voltage of closing and opening devices	220	Vd.c
Class	E2/M2/C2	
Minimum pressure for interruption at 20°C	8.5	bar (absolute)
Maximum pressure for interruption at 20°C	9	bar (absolute)
Mechanism for closing	Stored energy closing (springs, charged by motor)	
Mechanism for opening	Stored energy closing (springs, charged by motor)	
Type of mechanism	Spring-Hydro	
Supply voltage closing coil	220	V d.c.
Supply voltage opening coil	220	V d.c.
Supply voltage motor	230	V a.c.
Rated operating pressure	36.0	MPa
Maximum operating pressure	31.0	MPa
Logistics		
Number of complete breakers <sup>1</sup>	2	
Number of incomplete breakers <sup>2</sup>	4 (Spare Parts)	
Number of bushings	3	
Number of mechanisms	2	
Time needed to fill SF6 gas (including bushings, breaker etc.)	6	hours
Time needed to vacuum CB	2	hours
Time needed to assemble bushings	2	hours
Preferable Test Dates	Feb'22 to Apr'22	

<sup>1</sup> Please note here complete breakers. (including bushings and mechanism)

<sup>2</sup> Breaker without bushings and/or mechanism

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**Technical particular of the Disconnecter Switch (item 002) is as below:**

**Table-1.2**

General information GIS Disconnecter Switch		
Client	M/s Bharat Heavy Electricals Limited, Bhopal	
Manufacturer	M/s Bharat Heavy Electricals Limited, Bhopal	
Standard	IEC 62271-102	
Type of report	Test Report	
Client representative(s)	To be informed Later	
Description of the apparatus	420 KV,50 KA SF6 Gas Insulated metal-enclosed Disconnector	
Ratings assigned by the manufacturer		
Designation / Type	GSM 420	
Serial number	To be informed Later	
Rated voltage	420	kV
Nominal current	4000	A
Number of poles	1	
Frequency	50Hz	Hz
Short-time withstand current	50	kA
Peak withstand current	125	kA
Duration of short-circuit	3	s
Short-circuit making current	NA	kA
Short-circuit breaking current	NA	kA
Time constant	NA	ms
First pole to clear factor	NA	
Pressure for interruption SF6 at 20°C	5.5	bar (absolute)
Pressure for insulation SF6 at 20°C	5.5	bar( absolute )
Pressure for operation	5.5	bar( absolute )
Supply voltage of closing and opening devices	230	Va.c.
Class	NA	
Minimum pressure for interruption at 20°C	5.5	bar (absolute)
Maximum pressure for interruption at 20°C	6.0	bar (absolute)
Mechanism for closing	Motor Operated	
Mechanism for opening	Motor Operated	
Alternative mechanism	Not Applicable.	
Supply voltage closing coil	NA	Vd.c.
Supply voltage opening coil	NA	Vd.c.
Supply voltage motor	230	Va.c.
Minimum operating pressure	5.5	bar (absolute)
Maximum operating pressure	5.0	bar (absolute)
Logistics		
Number of complete GIS Disconnector	1	
Number of incomplete GIS Disconnector	2(Spare Parts)	
Number of bushings	2	
Number of mechanisms	NA	
Time needed to fill SF6 gas (including bushings, Disconnector for bus charging test)	8	hours
Time needed to vacuum DS	2	hours
Time needed to assemble bushings	2	hours
Preferable Test Dates	Feb'22 to Apr'22	
Total Weight and Size of Equipment	Refer Table 4	



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Technical particular of the Earthing Switch (item 003) is as below:

**TABLE-1.3**

General information GIS Fast Earthing Switch		
Client	M/s Bharat Heavy Electricals Limited, Bhopal	
Manufacturer	M/s Bharat Heavy Electricals Limited, Bhopal	
Standard	IEC 62271-102	
Type of report	Certificate	
Client representative(s)	To be informed Later	
Description of the apparatus	420 KV,50 KA SF6 Gas Insulated metal-enclosed Fast Earthing Switch	
Ratings assigned by the manufacturer		
Designation / Type	GSM 420	
Serial number	To be informed Later	
Rated voltage	420	kV
Number of poles	1	
Frequency	50Hz	Hz
Operating sequence	NA	
Short-time withstand current	50	kA
Peak withstand current	125	kA
Duration of short-circuit	3	s
Short-circuit making current	125	kA
Short-circuit breaking current	NA	kA
Time constant	NA	ms
First pole to clear factor	NA	
Pressure for interruption SF6 at 20°C	5.5	bar (absolute)
Pressure for insulation SF6 at 20°C	5.5	bar(abs)
Pressure for operation	5.5	bar(abs)
Supply voltage of closing and opening devices	220	Vd.c
Class	NA	
Minimum pressure for interruption at 20°C	5.5	bar (absolute)
Maximum pressure for interruption at 20°C	6	bar (absolute)
Mechanism for closing	Motor Operated Spring Charged	
Mechanism for opening	Spring Charged	
Alternative mechanism	Not Applicable.	
Supply voltage closing coil	220	Vd.c
Supply voltage opening coil	220	Vd.c
Supply voltage motor	230	Va.c
Minimum operating pressure	5.5	bar (absolute)
Maximum operating pressure	6	bar (absolute)
Logistics		
Number of complete GIS Fast Earthing Switch <sup>3</sup>	2	
Number of incomplete GIS Fast Earthing Switch <sup>4</sup>	2(Spare Parts)	
Number of bushings	1	
Number of mechanisms	1 + 1 spare	
Time needed to fill SF6 gas (including bushings, breaker etc.)	2	hours
Time needed to vacuum Earth switch	2	hours
Time needed to assemble bushings	2	hours
Preferable Test Dates	Feb'22 to Apr'22	
Total Weight and Size of Equipment	Refer Table 4	

<sup>3</sup> Please note here complete **GIS Fast Earthing Switch**. (including bushings and mechanism)

<sup>4</sup> **GIS Fast Earthing Switch** without bushings and/or mechanism

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**List of Tests to be conducted on Gas Insulated Circuit Breaker/ GIS Disconnect Switch/ GIS  
Fast Earthing Switch**

**TABLE-2**

Vendor shall give confirmation against each technical requirement

Test No.	DESCRIPTION	CONFIRMATION YES/NO	REMARKS
A.1	Single phase synthetic test on GIS CB comprising <b>(at 50kA)</b> :		As per IEC 62271-100
	I. L75 at 50kA (On Prototype 1)		
	II. L90 at 50kA (On Prototype 2) (Min 3 working days gap is required between L75 & L90 tests)		
	III. OP2 (a) + OP2 (b) and voltage test on GIS CB and condition check as per IEC 62271-100 clause 6.2.11 <b>(On Prototype 3)</b> (Min 3 working days gap is required between L90 and OP2 tests)		
A. 2	I. Switching of bus-charging currents on GIS Disconnect Switch (DS) After two months of A.1 <b>(On Prototype 4)</b>		As per IEC 62271-102
	II. Bus-Transfer current switching test on GIS Disconnect Switch According to IEC 62271-102 <b>(On Prototype 4)</b> (Min 3 working days gap is required between A.2 I. and A.2 II. tests)		As per IEC 62271-102
A.3	I. Short circuit making tests according to clause 6.101.1 of IEC 62271-102 on the GIS Fast Earthing Switch <b>(On Prototype 5)</b>		As per IEC 62271-102
	II. Induced current switching capability test as per clause 6.107 of IEC 62271-102 <b>(On Prototype 5)</b> (Min 3 working days gap is required between A.3 I. and A.3 II. tests )		As per IEC 62271-102

Note:

- 1) A.1, A.2.i, A.2.ii & A.3 Tests are independent.
- 2) Order will be placed on technically suitable L1 vendor for each independent test.
- 3) A.1, A.2.i, A.2.ii and A.3 will be conducted in different time span. There should be a gap of min 1 month between these tests.



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**General specification for Type Tests**

**TABLE-3**

Vendor shall give confirmation against each technical requirement

S.NO	DESCRIPTION	Confirmation by Test Lab YES/NO	REMARKS
1.	Performance Test as per details mentioned in TABLE-2. Follow up tests before & after above tests shall be conducted as per requirement of relevant IEC.		
2.	The successful test results shall be used for certification without repeating them. Further tests required for certification will be completed without modification of test specimen design.		
3.	Test dates shall be based on mutual agreed dates (tentatively date between <b>Feb'22 to Apr'22</b> .		
4.	BHEL will have option to test alternate specimen to utilize shifts effectively for repeat test within agreed test schedule.		
5.	Test lab to allot Assembly Bay to assemble the Test Sample for complete duration of Test including Preparation of Assembly for First test and Packing of all samples after completion of all the tests. Assistance shall be extended by test lab for use of crane, caterpillars to lift and transport the test sample etc. The assembly bay must have internet access.		
6.	The test and service charges shall be payable against production of documents indicating type of tests conducted with charges. These documents shall be jointly signed by BHEL representative and test lab.		
7.	The equipment will be exported in Sea worthy packing by BHEL. Unpacking of the Test equipment & its Repacking in the same packing case after the test shall be done by the BHEL. <b>For total weight &amp; size of Packing Case Refer Table-4. Lab may extend support on chargeable basis.</b>		
8.	1 set of test report in English shall be dispatched to BHEL after completion of each test and soft copy in CD/DVD/Pen Drive/Hard Disk.		
9.	Testing assistance by lab shall be extended along with necessary equipment such as 5 KV Megger, contact resistance measurement kit etc. for checking by BHEL before the start of type test. Test lab shall specify the facility available.		
10.	Lab shall confirm travel recording facility during type test. Necessary travel recorder and mounting shall be organised by BHEL.		
11.	In case of doubts in specifications, the test agency shall contact BHEL for clarifications.		

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12.	<p><b>Payment Terms :</b></p> <p>a) 100% against irrevocable, unconfirmed LC, payable within 90 days of the Test date or CAD payable on 90th day of test date.</p> <p>In case BHEL considers any deviation in payment terms i.e. early payment based on vendor's request, then bids shall be evaluated with loading of State bank of India Base rate plus 6%, for the credit period short of 90 days.</p> <p>b) The LC shall be established 2 months prior to test date, valid for period of 90 days, unless agreed otherwise.</p> <p>c) Payment will be released after testing. Test completion date shall be considered as date when last full test shot will be taken. Test lab has to submit following original documents for release of payment:</p> <ul style="list-style-type: none"> <li>i. Invoice copy</li> <li>ii. Preliminary report.</li> <li>iii. Signed document between test lab &amp; BHEL engineer for completion of test.</li> </ul> <p>d) LC charges inside India will be in BHEL's account while outside India will be in Test Lab account.</p>	Lab to Confirm	
13.	<p>The duration of the test shift(s):</p> <ul style="list-style-type: none"> <li>a. For A.1 Tests</li> <li>b. For A.2.i Test</li> <li>c. For A.2.ii Test</li> <li>d. For A.3 Tests</li> </ul>	Lab to specify	
14.	The delivery time of certificates and reports shall be indicated.	Lab to specify	
15.	<p><b>ARBITRATION AND LAW:</b></p> <p>All disputes arising in connection with the contract shall be settled by mutual consultation. If no agreement is reached the dispute shall be settled in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and the rules made there under. The dispute shall be referred for arbitration to any arbitrator to be appointed by the Head of the Unit. The award of the arbitrator shall be final and binding on both the Parties. The venue of the Arbitration shall be <b>Bhopal</b> in India. The Award to be given by the Arbitration shall be a speaking award. All questions, disputes, differences arising under, out of or in connection with this contract shall be to the exclusive jurisdiction of <b>Bhopal</b> Courts.</p>	Lab to Confirm	
16.	<p><b>Short Closure</b></p> <p>BHEL reserve the right to accept the offers in part or in full, or cancel the tender enquiry without assigning any reason.</p>		
17.	TDS shall be deducted by BHEL under Income Tax Act of India.	Lab to confirm	



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18.	<b>Risk &amp; Cost clause</b> If the work is not executed or partly executed within the agreed execution period, BHEL reserves the right to cancel the order and get the work executed from the alternate source(s) at the Risk and Cost of the Contractor. In such an event, it shall be obligatory on the part of contractor to make good any loss suffered by BHEL.	Lab to confirm	
19.	<b>Force Majeure</b> Notwithstanding anything contained in the contract, neither BHEL nor the Contractor shall be held responsible for total or partial non-execution of any of the contractual obligations, should the obligation become unreasonably onerous or impossible due to occurrence of a 'Force Majeure' which directly affects the obligations to be performed by the BHEL or the contractor; Such events include war, military operations of any nature, blockages, revolutions, insurrections, riots, civil commotions, insurgency, sabotage, acts of public enemy, fires, explosion, epidemics, quarantine restrictions, floods, earthquake, or acts of God, restrictions by Govt. authorities; over which the BHEL or the contractor has no control. The party claiming to be affected by force majeure shall notify the other party in writing without delay, within two weeks from the occurrence of such situation and on the cessation thereof. Extension of time sought by the contractor along with supporting evidence and so granted by BHEL for the work affected, if any, shall not be construed as waiver in respect of remaining execution. Rescheduling of execution on account of force majeure conditions, if so agreed by BHEL, will not entail the contractor to claim any increase in the price on whatsoever account. Notwithstanding above provisions, BHEL shall reserve the right to cancel the Contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements. If deemed necessary, BHEL may takeover partly processed work at a mutually agreed price.	Lab to confirm	

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**Weight & Size of Packing Case – Gas Insulated Circuit Breaker**

**TABLE-4.1**

Sno.	Package no.	Length (Mts.)	Breadth (Mts)	Height (Mts)	Volume (M <sup>3</sup> )	Approx. Net WT (Kg)	Approx. Gross WT (Kg)	Type of package	Description of package contents
1	2	3	4	5	6	7	8	9	10
1	1	2.40	2.30	2.30	12.70	1800	2000	BOX	Spare Insulators -10 Nos.
2	2	1.95	1.45	2.40	6.79	1200	1400	BOX	Mechanism 1 with base frame
3	3	1.95	1.45	2.40	6.79	1200	1400	BOX	Mechanism 2 with base frame
4	4	1.95	1.45	2.40	6.79	1200	1400	BOX	Mechanism 3 with base frame
5	5	2.80	1.05	1.80	5.29	850	1000	BOX	CB Chamber-1
6	6	2.80	1.05	1.80	5.29	850	1000	BOX	CB Chamber-2
7	7	2.80	0.90	1.05	2.65	400	500	BOX	2U assembly (4+1 spare nos.)
8	8	4.75	1.05	1.10	5.49	780	900	BOX	Bushing-1
9	9	4.75	1.05	1.10	5.49	780	900	BOX	Bushing-2
10	10	4.75	1.05	1.10	5.49	780	900	BOX	Bushing-3
11	11	2.10	1.20	2.00	5.04	675	800	BOX	Pole Assemblies-3 Nos.
12	12	2.10	1.20	2.00	5.04	675	800	BOX	Pole Assemblies-3 Nos.
13	13	0.90	0.90	1.80	1.46	125	200	BOX	Gas Handling System
14	14	2.10	1.25	2.00	5.25	675	800	BOX	Insulators and HV parts
15	15	1.80	1.10	1.10	2.18	400	500	BOX	Spare parts 1
16	16	1.80	1.10	1.10	2.18	700	800	BOX	Spare parts 2
17	17	3.70	1.40	1.60	8.29	1250	1500	BOX	Structure Assembly with DS (2 Nos.) and structure for 2U (3 Nos.)
18	18	3.70	1.40	1.60	8.29	1250	1500	BOX	Structure Assy for upper DS and DS Assy.
19	19	0.80	0.40	0.40	0.13	300	300	LOOSE	Tool box
						<b>15590</b>	<b>18300</b>		

**Note:** Insulators will be mounted on 2 U Disconnecter switch and CB Testing assembly which are required for testing.



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**Weight & Size of Packing Case – Gas Insulated Disconnect Switch**

**TABLE-4.2**

Sno.	Package no.	Length (Mts.)	Breadth (Mts)	Height (Mts)	Volume (M <sup>3</sup> )	Approx. Net WT (Kg)	Approx. Gross WT (Kg)	Type of package	Description of package contents
1	2	3	4	5	6	7	8	9	10
1	1	2.40	2.30	2.30	12.70	1800	2000	BOX	Spare Insulators -10 Nos.
2	2	4.75	1.05	1.10	5.49	780	900	BOX	Bushing-1
3	3	4.75	1.05	1.10	5.49	780	900	BOX	Bushing-2
4	4	4.75	1.05	1.10	5.49	780	900	BOX	Bushing-3
5	5	2.80	0.90	1.05	2.65	400	500	BOX	2U assembly
6	6	2.80	0.90	1.05	2.65	400	500	BOX	2U assembly
7	7	2.80	0.90	1.05	2.65	400	500	BOX	2U assembly
8	8	2.80	0.90	1.05	2.65	400	500	BOX	2U assembly
9	9	3.70	1.40	1.60	8.29	1250	1500	BOX	Structure Assembly with T-connector
10	10	1.70	1.40	1.60	8.29	800	1000	BOX	Structure Assy DC side DS
11	11	1.70	1.40	1.60	8.29	800	1000	BOX	DS under test for bus charge
12	12	1.70	1.40	1.60	8.29	800	1000	BOX	DS under test for bus transfer
13	13	1.80	1.10	1.10	2.18	400	500	BOX	Spare parts 1
14	14	1.80	1.10	1.10	2.18	500	600	BOX	Spare parts 2
15	15	0.80	0.40	0.40	0.13	300	300	LOOSE	Tool box
						<b>11540</b>	<b>14100</b>		

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**Weight & Size of Packing Case – Gas Insulated Fast Earthing Switch**

**TABLE-4.3**

Sno.	Package no.	Length (Mts.)	Breadth (Mts)	Height (Mts)	Volume (M <sup>3</sup> )	Approx. Net WT (Kg)	Approx. Gross WT (Kg)	Type of package	Description of package contents
1	2	3	4	5	6	7	8	9	10
1	1	2.50	1.40	1.60	8.29	1250	1500	BOX	Structure Assembly with Earthing switches back to back
2	2	1.80	1.10	1.10	2.18	400	500	BOX	Spare parts 1
3	3	1.80	1.10	1.10	2.18	500	600	BOX	Spare parts 2
4	4	0.80	0.40	0.40	0.13	300	300	LOOSE	Tool box
5	5	4.75	1.05	1.10	5.49	780	900	BOX	Bushing-1
6	6	4.75	1.05	1.10	5.49	780	900	BOX	Bushing-2



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**Note:**

- e. It is two-bid system enquiry. **Price bid shall be sealed in separate envelop.** Envelope should be marked as **"Bid Part - II - Price bid for NIT/GIS420/TT/2021/001 dated 26-11-2021"**
- f. **Bid should be free from correction, overwriting, using corrective fluid, etc. Any interlineation, cutting, eraser or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else bid shall be liable for rejection.**
- g. In case of more than one L1 bidder, it will be dealt as per BHEL Policy.
- h. In case of discrepancy in words and figure in quoted price bid, it will be dealt as per BHEL Policy.

**TABLE-5**

**(PRICE SCHEDULE -A)**

Vendor shall give separate charges against each item

SL. NO.	DESCRIPTION	QTY.	UNIT CHARGES	TOTAL CHARGES
1	<b>A.1 Test Charges for Sl. No A.1 of Table-2 (As per IEC 62271-100)</b>			
	I. L75 at 50kA	1 No.		
	II. L90 at 50kA	1 No.		
	III. OP2 (a) +OP2 (b) at 50kA	1 No.		
	<b>A.2 Test Charges for Sl. No A.2 of Table-2 (As per IEC 62271-102)</b>			
	I. Switching of bus-charging currents on DS	1 No.		
	II. Bus-Transfer current test on DS	1 No.		
	<b>A.3 Test Charges for Sl. No A.3 of Table-2 (As per IEC 62271-102)</b>			
	I. Short Circuit making test on FES (at 50kA)	1 No.		
	II. Induced current switching capability test	1 No.		
	All below mentioned additional services will be charged based on an actual cost price basis. In case the additional costs are less than 10% of the actual test charges, these costs will be balanced on the final invoice.			
2	Charges for filling and evacuation of SF6 gas during testing along with SF6 gas. Charges for fresh SF6 gas. (To be charged as per actuals).			
	SF6 Gas Charges for A.1	800 Kgs		
	SF6 Gas Charges for A.2.i	200 Kgs		
	SF6 Gas Charges for A.2.ii	200 Kgs		
	SF6 Gas Charges for A.3	400 Kgs		
3	Charges for suitable Assembly Bay to assemble / dismantle the Test Sample. Crane cable Height of assembly bay must be			

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	more than 8 meter or high. The assembly bay will be utilised for 35 days (Testing duration). (To be charged as per actuals). Note: Test object to be stored outside in lab premises on arrival. Assy. bay will be used when BHEL team reaches test lab.			
	Assembly bay Charges for A.1	15 Days		
	Assembly bay Charges for A.2.i	5 Days		
	Assembly bay Charges for A.2.ii	5 Days		
	Assembly bay Charges for A.3	10 Days		
4	Charges for Unpacking of the Test equipment & its Repacking after the completion of test. <b>(For total weight &amp; size of Packing Case Refer Table-4 )</b> (To be charged as per actuals).			
5	Charges for Testing assistance by lab and for providing necessary equipment such as 5 KV Megger, contact resistance measurement kit, etc. for checking by BHEL before the start of type test.			
6	Charges for Type test report. This Report of Performance shall consist of the title page, information sheet, table of contents, identification of the apparatus tested, test arrangements, general information, circuits applied, oscillograms and photographs in line with respective IEC and STL Guidelines. Total 7 reports. Necessary Set will be informed at the time of testing. a. For A.1 Tests- 3 Reports b. For A.2.i Test- 1 Report c. For A.2.ii Tests- 1 Report d. For A.3 Tests- 2 Reports			
7	Drawing verification & specimen identification Charges. (If Any) 1 set of drawings consists tentative 20 sheets. (To be charged as per actuals). a. For A.1 Tests- 3 Sets b. For A.2.i Tests- 1 Set c. For A.2.ii Tests- 1 Set d. For A.3 Tests- 2 Sets	1 Set for each test		
8	Additional shot during above testing (A.1, A.2.i, A.2.ii & A.3) for development – Total 6 shots (To be charged as per actuals). a. For A.1 Tests- 3 Shots b. For A.2.i Tests- 1 Shot c. For A.2.ii Tests- 1 Shot d. For A.3 Tests- 1 Shots	6 shots		
9	Test Lab Shall provide: 1. A CD/DVD/Pen Drive/Hard Disk with all raw data and a visualization program, within one week after the shift and test results within a day after each test. 2. A preliminary report within one day after the test shift. 3. Access to a workshop for any modification of component during assembly and testing for 3 days	7 Sets		
10	Other charges, if any.			



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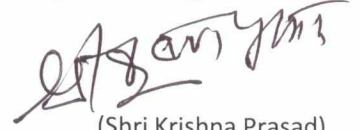
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Total			
Discount			
Net charges( will be considered to decide L1 )			
Net charges in words			

Notes:

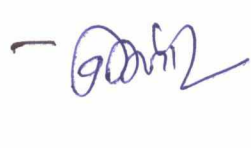
- 1) A.1, A.2.i, A.2.ii & A.3 Tests are independent.
- 2) Order will be placed on technically suitable L1 vendor for each independent test.
- 3) In case of discrepancy, the prices mentioned in words will be treated as final.
- 4) Over-writing in price bid is not acceptable.
- 5) Qty. mentioned at 2,3,4,5,6,7,8 are tentative and for calculation. However, lab to charge for actual consumption based on unit rate quoted.



(Shri Krishna Prasad)

DGM /SWE

श्री कृष्ण प्रसाद / Shri Krishna Prasad  
उप महाप्रबंधक / Dy. General Manager  
स्विचगियर इंजी प्रभाग / Switchgear Engg. Division  
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Approved By - 

**विवेक जौहरी / VIVEK JOHRI**

वरिष्ठ उप महाप्रबंधक / Sr. Dy. General Manager  
स्विचगियर इंजी. विभाग / Switchgear Engg. Division  
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