TRANSMISSION CORPORATION OF TELANGANA LIMITED

Website: www.tgtransco.con. GST No. 36AAFCT0166J1Z9 CIN No. U40102TG2014SGC094248

From:
The Chief Engineer,
P&MM,TGTransco,
Vidyut Soudha,
HYDERABAD – 500 082.
Tel/Fax : 040-23303736
Email:ce.pmm@tgtransco.com

To
M/s. Siemens Energy India Limited,
E-76, MIDC, Waluj,
Chhatrapati Sambhaji Nagar
(Formerly Aurangabad) - 431 136
Maharashtra, India.

PO.No.4500003358/CE(P&MM)/SE(P&MM)/DE41/TGPMM41-02/2025/420KV CBs/
D.No. 85/2025, Dt: 31.07.2025.

Sirs,

Sub: Supply of 4Nos. 420kV Circuit Breakers (Without PIR) against Tender Specification No. TGPMM41-02/2025 – Detailed Purchase Order – Issued – Regarding.

Ref:
1. Tender Specification No.TGPMM41-02/2025
2. Your offer against Tender Specification No.TGPMM41-02/2025 on e - Platform.
3. LOI No.CE(P&MM)/SE(P&MM)/DE41/TGPMM41-02/2025/400kV CBs/ D.No.60/2025, Dt:12.06.2025.
4. Your Lr. No. SE GP T/SF 252344547/2, Dt: 16.06.2025.

* * *

I, acting for and on behalf of and by the order and direction of TRANSMISSION CORPORATION OF TELANGANA LIMITED, accept the prices offered by you against Tender Specification No.TGPMM41-02/2025**,** for supply of equipment detailed in clause (2) below, with the terms and conditions as per the Tender Specification No.TGPMM41-02/2025. This Purchase Order is issued as per your confirmation under ref (4th) cited, for the Letter of Intent issued vide ref (3rd) cited.

1. Scope of Contract:

This contract relates to the supply of the equipment detailed in clause –2 below and covers design, manufacture, acceptance, testing, dispatch and delivery F.O.R. destination/Stores/site within State of Telangana as detailed in this purchase order.

2. Schedule of Equipment & Prices:

(a) Supply of 4Nos. 420kV Circuit Breakers without PIR conforming to latest IEC/IS, Technical Specification, complete with expansion type Terminal Connectors suitable for 4.5” IPS Aluminium tube with Outer Diameter (O/D) of 120 mm and Inner Diameter (I/D) of 96 mm and as per the price break-up indicated below:

All Financial Figures are in Rs.

Sl. No.	Description	420KV Circuit Breakers (HSN Code: 85352913)
1	Ex-Works	44,00,000.00
2	Packing & Forwarding	0.00
3	Freight	1,00,000.00
4	Insurance	1,000.00
5	Total Taxable Unit Rate	45,01,000.00
6	IGST @ 18% on Ex-Works+ Freight+Insurance	8,10,180.00
7	**Unit FADS Price including Taxes**	**53,11,180.00**
8	Quantity (Nos.)	4
9	**Total Amount**	**2,12,44,720.00**
10	SF6 gas 15.6kgs spare (i.e.10% of the total SF6 gas requirement of all breakers) shall be supplied in separate cylinder, at free of cost.	**0.00**
Rupees Two Crores Twelve Lakhs Forty Four Thousand Seven Hundred Twenty only		

(b) The equipment shall be supplied from your Aurangabad works. The prices of equipment accepted above are FIRM and FOR delivery destination stores/site.

(c) The dispatch of the equipment is by road only. The transit insurance shall include storage cover for 45 days at destination stores.

(d) The present rate of IGST is18% on the total of Ex-works, Freight and Insurance.

(e) The TGTransco shall have the right to vary the ordered quantity by +/- 50% at any time during the execution of the order.

(f) The Price is inclusive of all incidental charges such as packing, forwarding, handling, unloading and other incidentals.

(g) TCS at prevailing rates is applicable on any payment made, if company's aggregate sales consideration during the relevant financial year exceeds Rs.50 Lakhs and total sales, gross receipts or total turnover including GST if any exceeds Rs.10 Crores in the financial year immediately preceding the financial year of subject sales.

The payment of TCS shall be subjected to furnishing of necessary documents. The stipulated conditions are to be verified by the DDOs while processing the bills.

The PAN No. of TG TRANSCO is AAFCT0166J.

(h) i) e-invoicing (IRN) is mandatory for businesses whose aggregate turnover exceeds 5 crores in a financial year.

ii) A declaration for turnover shall be submitted in case of non applicability of e-invoicing.

iii) Copy of the GST payment challan and proof of filing of GST return (the latest bill copies or previous bill copies) shall be submitted along with the bill/invoices Submission of the above documents may be ensured by DDO/UO while processing the bills

3. Delivery: To supply total quantity within 10 months from the date of Letter of Intent.

4. Performance Security:

Performance Security for 10% of the contract value i.e. for **Rs. 21,24,472**/- (Rupees Twenty One Lakhs Twenty Four Thousand Four Hundred Seventy Two Only) with a validity 60 days beyond the date of completion of performance obligations including warranty obligations is to be furnished within 15 days from the date of Purchase Order.

In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected/replaced material will be extended to a further period of 12 months and the Performance Bank Guarantee for proportionate value will be extended 60 days over and above the extended warranty period. It is entirely your responsibility to extend the validity of this Bank Guarantee to cover the period of guarantee well before its expiry.

5. Guaranteed Technical Particulars: The Guaranteed Technical Particulars are enclosed to this Purchase Order. The drawings shall be furnished immediately for approval.

6. Payment:

a) 100% payment will be arranged through PFC/REC/Bank/TGTransco funds within 45 days reckoned from the check measurement date in Form-13.

b) For Real Time Gross Settlement (RTGS) the details of your Bank Account are as follows:

(i)	Company Name	M/s. Siemens Energy India Limited.,
(ii)	Name of the Bank	Deutsche Bank AG
(iii)	Branch Address	TRS, DB House, Hazarimal Somani Marg, Fort, Mumbai 400 001
(iv)	Branch Code	002
(v)	City	Mumbai
(vi)	Account No.	0152421000
(vii)	MICR Code	400200002
(viii)	IFSC Code	DEUT0784BBY
(ix)	PAN No.	ABMCS6972R
(x)	GST No.	27ABMCS6972R1Z2

c) Applicable transaction charges will be recovered from the bill amount for each disbursement on LOA raised by unit officers.

d) The 100% payment mentioned above is subject to submission of performance security by the supplier as per clause (4) above.

e) The performance guarantee to be executed in accordance with this specification will be furnished on a stamp paper of value Rs.100/- as per the format indicated in Form-4 of the specification. The Bank Guarantee will be extended if required suitably in accordance with the provisions of Performance Security Clause of the Specification.

f) If the supplier has received any over payments by oversight or if any amounts are due to the TGTransco due to any other reasons, when it is not possible to recover such amounts under the contract resulting out of this specification, TGTransco reserves the right to collect the same from any other amount due to the supplier and / or Bank Guarantees given by the company due to or with TGTransco.

g) When the supplier does not at any time, fulfill his obligations in replacing / rectifying etc. the damaged / defective materials in part or whole promptly to the satisfaction of the TGTransco Officers, TGTransco reserves the right not to accept the bills against subsequent dispatches made by the supplier and only the supplier will be responsible for any demurrages, wharfages or damage occurring to the consignments so dispatched.

h) Any incidental charge such as stamp duty, bank charges etc., shall be to the Supplier's account and any charges in relation there to shall not be included in the bills submitted to TGTransco.

i) All payments will be made in non-convertible Indian Rupees.

j) The Bank details as above are final and shall not be revoked under any circumstances.

7. Responsibility of the supplier for Loss/Damage:

(a) The supplier is responsible for the safe delivery of the goods in good condition at the destination. He should acquaint himself of the conditions obtaining for handling and transport of the goods to destination and shall include and provide for security and protective packing of the goods so as to avoid damage in transit.

(b) External damages or shortages that are prima-facie the results of rough handling in transit or due to defective packing will be intimated within a fortnight of the receipt of the materials. Internal defects, damages or shortages of any internal parts which cannot ordinarily be detected on a superficial visual examination will be intimated subsequently.

In either case, the defective or damaged materials should be replaced by the supplier free of cost to the TGTransco. If no steps are taken within 15 days of receipt of intimation of defects or such other reasonable time as the TGTransco may deem proper to afford, TGTransco may without prejudice to its other rights and remedies cause to be repaired or rectified the defective material or replace the same and recover the expenditure incurred there for from the deposit such as Earnest Money, Security and Performance or other monies available with TGTransco or by resorting to legal action.

(c) For the purpose of any legal consideration, the material shall be deemed to pass into TGTransco's ownership only at the final destination where they are delivered and accepted.

8. Penalty for Late Delivery:

a) The delivery period as per agreed delivery schedule shall be deemed to be the essence of the contract. In case of delay in delivery of materials beyond the agreed delivery schedule or to perform the services within the period specified in the contract whatever be the reason the TGTransco may at its option, demand and recover from the supplier from the contract price, as liquidated damages, a sum equivalent to 0.5% per week on the undelivered portion subject to a maximum of 5% of total value of contract.

b) For penalty, the number of days of delay would be rounded off to the nearest week and penalty calculated accordingly.

c) Equipment which is not of acceptable quality (or) not confirming to specification would be deemed to be not delivered.

d) The penalty specified will be levied and would be adjusted against subsequent pending bills.

e) The check measurement date in Form-13 i.e., the date of receipt of equipment at the destination stores in good condition will be taken as date of delivery.

9. Force Majeure:

a) The Supplier will not be liable for forfeiture of its performance security, penalty for late delivery or termination for default if and to the extent that it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

b) For the purpose of this clause 'Force Majeure' means an event beyond the control of the Supplier and not involving the Suppliers' fault or negligence and not foreseeable. Such

events may include but are not restricted to wars or revolutions, fires, floods, epidemics, earth quakes, Tsunami, quarantine restrictions and freight embargoes.

c) If the Force Majeure situation arises, the supplier will promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier will continue to perform its obligations under the Contract as far as is reasonably possible, and will seek all reasonable alternative means for performance not prevented by the Force Majeure event.

10. Termination for Default:

(a) The Purchaser without prejudice to any other remedy for breach of Contract, by written notices of default sent to the Supplier, may terminate this Contract in whole or part :

i) If the Supplier fails to deliver any or all of the Materials/equipment within the period(s) specified in the Contract, or within any extension thereof granted by the Purchaser.

ii) If the Supplier fails to perform any other obligation(s) under the Contract.

iii) If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

(b) In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner, as it deems appropriate, Materials/equipment or services similar to those undelivered and the Supplier will be liable to the Purchaser for any excess costs for such similar Materials/equipment or Services. However, the Supplier will continue performance of the Contract to the extent not terminated.

11. Termination for convenience:

(i) The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination will specify the termination is for the Purchaser's convenience, the extent to which performance of the supplier under the Contract is terminated, and date upon which termination becomes effective.

(ii) However the Materials / equipment that are complete and ready for shipment within thirty (30) days after the supplier's receipt of notice of termination will be accepted by the Purchaser at the Contract terms and prices.

12. Warranty:

The material shall be guaranteed for satisfactory performance for a period of 18 months from the date of receipt of material/equipment at TLC stores or at site in good condition against defects proved to be due to faulty design of material/ workmanship. If during this period, any of the material is found defective they shall be repaired or replaced by you free of all costs to the TGTransco. To and fro freight charges shall also be to your account only.

13. Taxes:

Taxes as indicated in the price schedule at para (2) are applicable. You shall agree, that if, at any time, any GST reported to have been paid has not been paid, or a lesser amount has been paid, or on subsequent adjudication or appeal or revision it is decided that a lesser amount is payable, you shall refund such amounts irrespective of time lag.

14. Statutory Variations:

Any variation up or down in statutory levy or new levies introduced after tender calling date under this specification will be to the account of TGTransco, provided that in cases where delivery schedule is not adhered to by the supplier and there are upward variation/ revision after the agreed delivered date, the supplier will bear the impact of such levies and if there is downward variation / revision the TGTransco will be given credit to that extent.

Statutory variation if any allowed, it is allowed only once during delivery period, i.e. at the time of delivery of goods at factory. In case of sub-vendor items, taxes & duties are inclusive in tender price and no statutory variation is applicable.

In cases where the bidder assumes less tax rates and become lowest, upward variation of taxes will not be considered. In case of the bought out items for which the prices are quoted all-inclusive of taxes, statutory variation shall not be applicable.

15. Dispatch Instructions:

The dispatch instructions for the equipment will be issued after inspection/satisfactory routine/acceptance tests results. The prices indicated in clause (2) above shall remain unaltered whatever be the destination.

16. Inspection:

After completion of manufacture of the equipment/ material, routine tests shall be performed as per relevant standards and requisite copies of test certificates shall be furnished to the purchaser. Various components of the equipment shall be routine tested in accordance with approved standards and manufacture standards.

As soon as the material/ equipment are ready the supplier will duly send intimation to TGTransco by post/fax and carry out the tests in the presence of the representative of TGTransco. The Supplier shall give at least 15 days advance intimation to enable the Purchaser to depute his representative for witnessing acceptance and routine tests. All charges in connection with inspection shall be borne by the supplier.

The equipment should not be dispatched without final inspection of the tests, approval of test certificates and issue of specific dispatch instructions or specific waiver thereof from this office. The equipment shall reach the destination store/site within three weeks of issue of Dispatch Instructions.

17. Contract Drawings:

Approval by TGTransco to the supplier's drawings shall not relieve the supplier of his responsibility for correctness thereof or from results arising out of error or omission therein or from any obligation or liability under the contract. Any supplementary drawings necessary to permit the complete design of the installation prior to receiving the equipment shall also be supplied. Within two weeks of approval, six sets of all approved drawings and soft copy of drawings shall be furnished. One set of drawings and instruction manuals along with soft copy shall be sent along with each equipment at the time of dispatch. Copies of the drawings and manuals shall also be sent to other offices as indicated below.

Consignee	:	One set of approved drawings per consignee
Two Sets	:	Concerned Executive Engineer
To this office	:	Three sets.

18. Erection, Operation & Maintenance Manuals:

Erection, operation and maintenance manuals along with soft copy shall be supplied as per distributions given below giving detailed instructions with illustrations along with the equipment. They shall contain clear recommended schedule of maintenance for the guidance of the operating staff. Any items requiring the special attention of the operation engineer should be highlighted.

Consignee	:	One set per consignment
Concerned Executive Engineer	:	Two sets
To this office	:	One set

These shall be sent to the Divisional Engineers / Executive Engineers concerned.

19. Completeness of Contract:

All minor accessories that are normally necessary for satisfactory and efficient operation of the equipment shall be supplied by you free of cost to the TGTransco whether these are specifically mentioned or not in the specification, your tender schedules or in this purchase order and the equipment shall be complete in itself.

20. General Conditions of Contract:

Except in so far as it is provided otherwise in this contract, you shall abide by the terms and conditions appended to the specification. Except as specifically accepted in this order the terms and conditions mentioned in your quotation under reference are not accepted.

21. Risk:

The risk in the property is entirely yours till the goods are received in good condition at the destination.

22. Packing:

Each equipment shall be securely packed separately in such a manner as to withstand rough handling during rail and road transit upto site and as per latest IS/BSS/IEC.

23. Material & Workmanship:

All the materials shall be of the best class and shall be capable of satisfactory operation in the tropics under service conditions without distortion or deterioration. No welding or filling or plugging of defective parts shall be permitted, unless otherwise specified they shall conform to the requirement of the appropriate Indian, British or American standards (where a standard specification covering the material in question has not been published the standards of the American society for testing of materials should be followed).

The entire design and construction shall be capable of withstanding the several stresses likely to occur in actual services and of resisting rough handling during transport.

24. Insurance:

As insurance charges are included in your prices you should cover the equipment against transit risks and also for further period of 45 days towards storage from the date of receipt of equipment at site. It is entirely your responsibility for arranging the insurance through your underwriters. The damages and shortages will be intimated to you as stipulated in purchase order and you shall arrange for replacement/repairs immediately without awaiting settlement from insurance authorities.

Note: The material will not be taken into stock unless documentary evidence for Freight and Insurance is furnished along with material.

25. Interchangeability:

All similar equipment and removable parts of similar equipment shall be interchangeable with each other.

26. Spares:

You shall supply any spares required for the equipment that will be supplied under this order, whenever called upon to do so at fair prices and at the TGTransco's standard terms of payment within a period not exceeding the deliveries accepted therein.

27. Progress Reports:

You shall furnish the program of works and progress reports on the manufacture of equipment to this office every month in triplicate till the supplies are completed.

28. Correspondence:

a) Your acknowledgement of this order and all correspondence of general or technical nature shall be addressed to the Chief Engineer/P&MM, TGTransco, Vidyut Soudha, Hyderabad –500 082.

b) All correspondence regarding dispatches, payments and any other field matters shall be addressed to the concerned paying officer. Copies of such correspondence shall be marked to the concerned Superintending Engineer and to the Chief Engineer/P&MM, TGTransco, Vidyut Soudha, Hyderabad –500 082. Copies of the correspondence regarding payments should also be marked to the Executive Director/Finance, TGTransco, Vidyut Soudha, Hyderabad –500 082.

c) You shall submit invoices for materials directly to the paying officer.

29. Jurisdiction:

All and any disputes or differences arising out of or touching this order shall be decided only by courts or tribunals situated in Hyderabad or Secunderabad cities. No suit or other legal proceedings shall be instituted elsewhere.

30. Supervision of erection, testing and commissioning:

You have to provide services of qualified personnel for supervision of erection, testing at site and commissioning of the equipment wherever required. The above services, if requested for, should be provided at free of Cost.

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31. Acknowledgement:

Please acknowledge the receipt of this purchase order with your confirmation of its acceptance by you and the extra copy enclosed may please be returned with your signature in token of your acceptance.

Encl: GTP.

Yours faithfully,

31/07/25

Chief Engineer/P&MM
(Acting for and on behalf of TGTRANSCO)

WE ACCEPT THE TERMS AND CONDITIONS OF THIS PURCHASE ORDER

SIGNATURE OF THE CONTRACTOR
WITH SEAL AND DATE

Copies to:
The FA & CCA (A/cs) & CFO/TGTRANSCO /TGTransco/Vidyut Soudha/Hyderabad.
The Chief Engineer/Transmission/TGTransco/Vidyut Soudha/Hyderabad.*
The Superintending Engineer/Transmission/TGTransco/Vidyut Soudha/Hyderabad.
The Superintending Engineer/OMC/Metro-Central/TGTransco/2nd Floor,132kV NIMS GIS SS premises/Erramanzil/Panjagutta/Hyderabad -82
The Superintending Engineer/QC/TGTransco/Vidyut Soudha/Hyderabad
The SAO/Pay & accounts/TGTransco/Vidyut Soudha/Hyderabad along with Form-40.
The SAO/Metro-Central/TGTransco/2nd Floor, 132kV NIMS GIS SS premises/ Erramanzil/ Panjagutta/Hyderabad -82.
The Divisional Engineer/Transmission & Stores/Metro/Erragadda/ Hyderabad, 500 045.
The AEE/Construction Stores/TGTransco/Erragadda/Hyderabad.

*This order is placed against the indents indicated below:

Sl. No.	Indent Reference	Qty (Nos.)	Required for
1	U.O.No.CE(Tr)/SE(Tr)/DE-SS/ADE-1/ F.Rolling Stock 24-25/D.No.485/24, Dt.06.09.2024.	4	Rolling stock 2024-25

Annexure

GUARANTEED TECHNICAL PARTICULARS of 420kV SF6 Circuit Breakers

Particulars	**M/s. Siemens Energy India Ltd (SEIL)**			
1) Manufacturer's/Suppliers name address and country	SEIL, Aurangabad, India			
2) Manufacturer's type designation	420kV - 3AP2FI			
3) Governing Standards	IEC 62271-100			
4) Rated Voltage/Maximum (kV)	420kV			
5) Rated Frequency (Hz)	50			
6) Number of poles	Three			
7) Outdoor/Indoor	Outdoor			
8) Rated Normal Current (A)				
a) Under site conditions	3150A			
b) Under normal conditions as per IS/IEC	3150A			
9) Rated short circuit breaking current				
a) RMS value of S.C. component (kA)	63kA			
b) Percentage D.C. component (%) (%)	51%			
c) Asymmetrical breaking current (kA)	77.6kA			
d) Is it possible to increase the rupturing capacity at a later date. Yes/No	No			
10) Short time current rating for 1 sec. (KA)	63kA			
11) Rated operating duty cycle	O-0.3 sec-CO-3 min-CO			
12) Rated short circuit making current (KApeak)	157.5kAp			
13) First pole to clear factor	1.3			
14) Rated characteristics for short time faults and rated breaking Capacity KA peak)	As per Iec 62271-100			
15) Rated line charging current breaking capacity and corresponding over voltage recorded during test	600A, 1.4 pu			
16) Rated out of phase breaking current and corresponding transient recovery voltage(kA, kV peak)	15.8kA			
17) Rated small inductive breaking current with corresponding switching over voltage (Amp, p.u.)	0.5 to 20 Amps, < 2.3 pu			
18) Limit of switching over voltage for switching of 50 MVAR, 63 MVAR, 80MVAR & 125MVAR shunt reactors(KV peak)	2.3 pu			
19) Capacity for Interrupting Transformer in rush current (Amp)	0.5 to 20 Amps, < 2.3 pu			
20) Rated of cable charging breaking current and over voltages recorded during test (Amp p.u.)	400A, 1.4 pu			
21) Rated (single) capacitor bank breaking current and corresponding over voltages recorded during test (Amp p.u.).	400A, 1.4 pu			
22) Data on restriking voltage for 100% 60% 30% 10% terminal faults capacity	T100	T60	T30	T10

Particulars	**M/s. Siemens Energy India Ltd (SEIL)**			
a) Amplitude factor	1.4	1.5	1.54	1.76
b) Phase factor	1.3	1.3	1.3	1.3
c) Rate of rise of restriking voltage	2.0	3.0	5.0	7.0
d) Transient recovery voltage (kV peak)	As per IEC 62271-100			
23a) Is circuit breaker restrike free under all conditions of operation YES/NO	Yes			
b) Means adopted if any to check the voltage rise	Not Applicable			
24) Max. arcing time under any duty condition with limiting conditions of voltage and pressure (ms)	< 25 ms			
25) Maximum total break time under any duty condition for any current upto rated breaking current with limiting conditions of voltage and pressure(ms)	< 40 ms			
26) Maximum closing time (ms)	<80 ms at rated voltage			
27) Minimum opening time under any duty condition with limiting voltage and pressure(ms)	< 30 ms at rated voltage			
28) Maximum close open time under any condition with limiting voltage and pressure(ms)	< 80 ms			
29) Minimum reclosing time at rated interrupting capacity from the instant of trip coil energisation (ms)	300 ms			
30) Minimum dead time for				
a) Three phase reclosing (ms)	300ms			
b) One phase reclosing (ms)	300ms			
c) Limits of adjustment of dead time for three phase reclosing. (ms)	Not Applicable			
31) Difference in the instants of closing opening of contacts at rated voltage and pressure (ms)				
a) Within a pole	2.5 msec(opening) 3.3 msec(Closing)			
b) Between poles	Opening - 3.3 msec Closing - 5 msec			
32) Type of device, if any, used to obtain uniform voltage distribution between contacts.	Not Applicable			
33)Maximum temperature rise for				
a) Main contacts over ambient temperature at site (deg.C)	Within limits as per IEC 62271-1			
b) Terminals to be connected to the external conductors (deg.C)	Within limits as per IEC 62271-1			
34) One minute power frequency withstand test voltage for complete circuit breaker				
a) Between line terminal and ground objects with circuit breakers contacts closed (kV rms)	520kV			
b) Between terminals with breaker contacts open (kV rms)	610kV			

Particulars	**M/s. Siemens Energy India Ltd (SEIL)**
35) 1.2/50 microsecond lightning impulse withstand test voltage for complete circuit breaker	
a) Between line terminal and ground with circuit breaker contacts closed (kV peak)	1425 kVp
b) Across terminals with circuit breaker contacts open (kV peak) One terminal lightning impulse (kV peak) Opposite terminal power frequency (kV peak)	1425 kVp impulse on one terminal and 240kVp of opposite polarity on other terminal.
36) 250/2500 microsecond switching surge withstand voltage	
I) Between line terminal and ground with circuit breaker contacts closed (kV peak)	1050kVp
II) Between terminals with breaker contacts open One terminal switching impulse (kV peak) Opposite terminal power frequency (kV peak)	900kVp + 345kV
37 a) Corona extinction voltage (kV rms)	320kV rms
37 b) Corona inception voltage (kV rms)	320kV rms
38 i) Radio interference voltage at (micro volts)	< 1000 micro volts
a) 0.5 MHz	< 1000 micro volts
b) 1.0 MHz	< 1000 micro volts
c) 1.5 MHz	< 1000 micro volts
d) 2.0 MHz	< 1000 micro volts
ii) Partial discharge level (pico coulomb)	Not applicable
39) Whether the circuit breaker is fixed trip or trip free	Trip free
40 a) Rated voltage of closing coils (Volts)	110V DC / 220V DC
b) Range of pick up value (Volts)	85% to 110%
41) Trip coil	
a) Rated voltage of tripping coil (Volts)	110V DC / 220V DC
b) Range of pick up value (Volts)	70% to 110%
42) Normal power consumption at rated voltage for	
a) Trip coil (watts)	1800 watts
b) Closing coil (watts)	300 watts
43) Number of trip coils	Two
44) Type of main contact	Contact Multilam, Multilam, Heat Cylinder
45) Whether arcing contact provided	Yes
46) Material of	
a) Main contact	Main contact – Copper Chromium Alloy.

Particulars	**M/s. Siemens Energy India Ltd (SEIL)**
b) Arcing contact	Arcing contact – Copper tungsten alloy.
c) Whether contacts silver plated	Yes, main contacts
d) Minimum thickness of silver plating (mm)	As per Siemens proven design
e) Contact pressure of main contact (kg/cm)	Adequate
47) Number of auxiliary contacts per pole provided for Purchaser's use.	
a) NO	10
b) NC	10
48) Rated voltage of auxiliary contacts.	220V DC
49) Current capacity of auxiliary contacts	
a) Continuous (Amp)	10
b) Breaking (Amp)	2
c) Time constant (ms)	20 ms
50) Whether auxiliary contacts silver plated. YES/NO	Yes
51) Quantity of SF6 gas required for each pole of circuit breaker (kg)	13 kg per pole
52) a) Guaranteed maximum leakage rate of SF6 gas per year (%)	<= 1 % per year
b) SF6 density monitor provided YES/NO	Yes
53) Limits of pressure of SF6 gas at which breaker operate correctly (kg/cm2)	5.0 bar at 20 deg'
54) Number of operations after which SF6 gas replacement is necessary	
a) At full rupturing capacity	14
b) At 50% of rated rupturing capactiy	90
c) At 10% of rated rupturing capacity	6000
d) At rated current	6000
55) Details of Interrupter	
I) No of chambers	Two (two interrupters)
ii) Function of each chamber	Shall be provided during detailed engg
56) Material of contacts	
a) Arcing contacts (Main & Auxiliary)	
Material of Tips	Cu reinforced with WCu
Ratio of Material (if more than one)	WCU85/15
Production technique	EBW (Electron Beam Welding)
b) Nozzle	

Particulars	**M/s. Siemens Energy India Ltd (SEIL)**
Material	PTFE
Colour	Blue
Filled/unfilled	Filled
Rate of acceleration	inline with CB design
57) Number of operations after which main and auxiliary contacts replacement is necessary.	
a) At full rupturing capacity	11
b) At 50% of rated rupturing capacity	61
c) At 10% of rated rupturing capacity	6000
d) At rated current	6000
58) Number of operations at rated current after which routine inspection/maintenance of breaker is necessary.	6000
59) Number of operations at full rupturing capacity after which routine inspection/maintenance of circuit breaker is necessary.	6000
60) Parameters of SF6 gas required for initial filling and satisfactory operation	
a) Governing standard	IEC 60376
b) Density (kg/m3)	6.07 g/l @ 20 deg C at 1 bar
c) Dielectric strength (kv/mm)	As per Iec 60376
d) Acidity (ppm)	0.1 ppm
e) Water content (ppm)	<= 15 ppm
f) Oil content (ppm)	<=0.2 mm
g) Condensation temperature (Deg. C)	As per IEC 60376
h) Resistivity	As per IEC 60376
I) size of SF6 Gas Cylinder	18kg, 50kg
61) Support insulation column/units	
a) Manufacturers name, address & country	Aditya Birla/Modern/IEC
b) Make and type	Hollow porcelain
c) Numbers per pole	Two
d) Weight	Part of breaker
e) Material its composition and effect of SF6 Gas degradation of the material	Not such effect observed
f) Transport dimensions (mm)	As per GA drawing
g) One minute power frequency withstand/flashover voltage (kV rms)	520kV
h) Lightning impulse withstand/flash over voltage. (kV peak)	1425kVp
I) Switching impulse withstand flashover voltage (kV peak)	1050kVp

Particulars	**M/s. Siemens Energy India Ltd (SEIL)**
j) Corona extinction and inception voltage (kV rms)	320kV
k) Creepage distance (mm)	25mm/kV / 10500 mm
l) Permissible safe cantilever strength (kg)	Shall be as per approved drawings
62) Type of operating mechanism for	
a) Closing	Spring
b) Opening	Spring
63) No. of trouble free operations for virtually maintenance free operation of Circuit Breaker.	6000 nos at rated current
64) Rated pressure and limits of pressure of operating mechanism in case of pneumatic mechanism (kg/cm2)	Not Applicable
65 Spring charged mechanism	
a) Name of manufacturer	SEIL, Aurangabad, India
b) Rating of motor (Volts, Amp, H.P.)	220V DC/240V AC, 500 watts
c) Time required for charging the closing spring (secs)	< 15 ms
d) Number of CO-operations possible after failure of auxiliary supply	One
e) Whether indication for spring charged condition provided in central control cabinet. YES/NO	Yes
66) Control Cabinet	
a) Manufacturer's name	SEIL, Aurangabad, India
b) Thickness of sheet steel (mm)	
Front	2.5 mm
Back	2.5 mm
Side walls	2.5 mm
c) Degree of protection provided and test certificated enclosed.	IP55
d) Colour of finish paint	
i) Outside	As per specifications/ 631 IS:5
ii) Inside	As per specifications/ 631 IS:5
e) Control wiring	
i) Rated voltage (Volts)	As per specifications
ii) Size (mm)	2.5 sq. mm
f) Terminal Block	Stud type
i) Make	connectwell/Elmex/equivalent
ii) Current rating (Amp)	
g) Locking Mechanism Yes/No	Yes

Particulars	M/s. Siemens Energy India Ltd (SEIL)
h) Illuminating lamp Yes/No	Yes
I) Whether all cabling for wiring out contacts to control cabinet included in scope of supply.	Yes
67) Terminal clamps and connectors	Shall be as per approved drawings
a) Manufacturer's name	
b) Applicable standard	
c) Material	
i) Clamp body	
ii) Bolts and nuts	
iii) Spring washer	
iv) Liner if any	
d) Rated current (Amp)	
e) i) Rated terminal load	
ii) Factor of safety	
f) Radio interference voltage (micro-volts)	
g) Corona extinction voltage (kV rms)	
h) Maximum allowable span for aluminum tube of 114.2mm outer diameter and 97.18mm inside diameter on equipment terminal pad with rated fault current and 7m, phase-to phase spacing for 420kV, respectively.(Meters)	Our breaker is suitable for Terminal load values as per IEC 62271-1
68) Overall dimensions	
a) Height (mm)	7871
b) Width (mm)	5000
c) Length (mm)	15000
69) Clearances	
a) Between poles (mm)	7000 mm
b) Between live part and earth (mm)	min 3660 mm
70) Weight of	
I) Each pole	apprx 1400 kg without support structure
ii) Complete breaker	4300 kg approx without support structure
71) Noise level (db)	
a) at base	As per specification
b) at 50 mtrs. and 100 mtrs. Distance from base	As per specification

Chief Engineer/P&MM