MAT/ESS/RFQ
दि फ़र्टिलाईज़र्स एण्ड केमिकल्स ट्रावनकोर लिमिटेड
FACT
THE FERTILISERS AND CHEMICALS TRAVANCORE LIMITED
(भारत सरकार का उद्यम) / (A GOVERNMENT OF INDIA ENTERPRISE)
CORPORATE MATERIALS
PD ADMINISTRATIVE BUILDING
UDYOGAMANDAL - 683 501, KOCHI, KERALA, INDIA
GST No : 32AAACT6204C1Z2
Phone : 0484-2546778
2546629 / 2545222

निर्घ केलिऐ अनुरोध/REQUEST FOR QUOTATION

Detailed Specification

Enquiry:MM/172/G31439

Contact Details

Name: Binduja Menon
Phone: 0484 2568253 , 0484 2568204
Email ID: binduja@factltd.com

Please submit your offer for supply of the following items as per the instructions, technical specifications and other terms and conditions specified herein/ attached.

Note:
1. The delivery period mentioned in the BoQ is our indicative requirement. You may offer your earliest delivery period.

Please refer our above referred enquiry number in all correspondence.

SL No.	Material Code	Detailed Specification/s	Quantity	Unit of Measure
1	672308100	Supply of LT Air Circuit Breakers, Protection Relays and Auxiliaries for retrofitting of 7 panels of PMCC in NP Plant, FACT-CD, as per the attached Technical Procurement Specification (CD-NP-ACB-RETROFIT).	1	Set
2	672308101	Supply of spares of LT Air Circuit Breakers and Potection System of PMCC in NP Plant, FACT-CD, as per spare list of the attached Technical Procurement Specification (CD-NP-ACB-RETROFIT)	1	Set
3	CDE-NP-PMCC-RTC	Retrofitting, Site Testing and commissioning of LT Air Circuit Breakers, protection relays and Auxiliaries of 7 panels in NP plant PMCC.	1	Set

Detailed specifications and other terms and conditions are mentioned in the TPS.

LIST OF ENCLOSURES:
1.Technical Procurement Specification - CD-NP-ACB-RETROFIT.
2. Eligibility Criteria.
3.Compliance Statement
4. PAC under Rule No. 166 of GFR

TECHNICAL PROCUREMENT SPECIFICATION

TPS No.	CD-NP-ACB-RETROFIT
STATUS	■ ENQUIRY ☐ COMMITMENT
ORIGINATING DEPT.	ELECTRICAL
P.O / W.O NO.	
PROJECT	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF LT AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC.
LOCATION	NP PLANT PMCC
CLIENT	M/S. FACT COCHIN DIVISION
PURCHASER	M/S. FACT COCHIN DIVISION
VENDOR	

REV NO.	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
R2	26.03.2025	REV 2	JJM	SR	BKN
R1	16.12.2024	REV 1	JJM	SR	BKN
R0	19.09.2024	ORIGINAL ISSUE	JJM	SR	BKN

ATTACHMENTS	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC	CD-NP-ACB-RETROFIT-ATT
		PAGE 1 OF 1

SCOPE OF WORK	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC	CD-NP-ACB-RETROFIT-SW PAGE 1 OF 1

The scope of work includes the following

Sl. No.	Description	Required	Remarks
1.0	Supply of LT Air Circuit Breakers, protection relays and auxiliaries for 7 panels in NP plant PMCC as per material list (CD-NP-ACB-RETROFIT-ML), fully conforming to the attached specifications and documents. Design, engineering, manufacturing, shop testing, inspection, packing and delivery to site of all the items mentioned in material list (CD-NP-ACB-RETROFIT-ML) is also comes under the scope of vendor.	Yes	
2.0	Supply of spares as per spare list (CD-NP-ACB-RETROFIT-SL).	Yes	
3.0	Retrofitting, site testing and commissioning of LT Air Circuit Breakers, protection relays and auxiliaries of 7 panels in NP plant PMCC, fully conforming to the attached specifications and documents. Supply of items as per BOM (excluding material list) is also comes under the scope of vendor.	Yes	

1.0.0 SCOPE

1.1.0 The scope of work includes design, engineering, manufacturing, shop testing, inspection, packing, delivery to site, retrofitting, site testing and commissioning of LT Air Circuit Breakers, Protection relays and auxiliaries of 7 panels in NP plant PMCC, FACT Cochin Division, conforming to this specification. The scope of work also includes the supply of spare parts as per spare list CD-NP-ACB-RETROFIT-SL.

1.2.0 The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts shall be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.

1.3.0 The design of the switchgear shall be exclusive and specific responsibility of supplier and shall comply with current good engineering practice, the relevant codes and recommendation, the project specific requirements.

1.4.0 The Air Circuit Breakers offered should have been successfully type tested within the last five years from the date of tender. This shall be supported by authenticated copies of type test certificates as per relevant IS/IEC/ASTM standards, conducted within the last five years from any NABL accredited Lab/CPRI. The offered equipment shall be complete with all components necessary for their effective and trouble-free operation

2.0.0 STANDARDS

2.1.0 The equipment offered shall comply with the latest revisions of the following standards wherever applicable along with other related standards. If the equipment offered conforms to other latest amendments of standards, the tenderer shall furnish complete details by bringing out clearly the data at variance from the following standards.

Reference Standards	Description
IS 13947/IEC 60947	AC circuit breakers
IEC 60105	Aluminium Busbar
IS 3231/IEC 60255	Protective & control relays (Programmable)
IS 2705/IEC 60044	Current transformer
IEC 947	Protective Releases
IS 375	Marking and arrangement for switchgear busbars
IS 10118	Code of practice for selection, installation and maintenance of switch gear and control gear
IS 1901	Visual indicator lamps
IS 6875	Push buttons and related control switches
IS 13410	Glass reinforced polyester sheet moulding compounds (SMC)
IS 3043	Code of practice for earthing

3.0.0 RETROFITTING

3.1.0 General

3.1.1 NP plant PMCC has 2 switchboards as shown in attached single line diagram CD-NP-ACB-RETROFIT-SLD. 'Four' incomers, 'Two' bus couplers and 'One' tie feeder panels are to be retrofitted. The existing panels are energized and feeding power supply to all essential loads of NP plant. Work has to be taken up in a phased manner, panel wise, section wise and with minimal disturbance to loads in concurrence with the Engineer in Charge.

3.1.2 Any special tools and tackles required for erection, commissioning & maintenance are deemed to be included in the scope of supply.

3.1.3 Metering, circuit breaker and relay compartment's doors shall be replaced by 2.0 mm thick MS doors and suitably modified for fixing the switchgears. Modified doors shall be grounded properly.

3.1.4 All fabrication works for fixing the switchgears, doors etc. comes under the scope of vendor.

3.2.0 Busbar arrangement

3.2.1 Existing Copper/Aluminium busbars of the panel board shall be suitably modified for installing new circuit breakers. Vendor shall supply the required Aluminium busbar of adequate rating, shrouds, nut, bolt and all accessories required for the successful commissioning of the project. Busbar joints shall be properly shrouded.

3.2.2 Electrical grade Aluminium complying IEC 60105 shall be used for retrofit work.

3.2.3 Maximum allowable current density for Aluminium busbars shall be 0.78A/mm2.

3.2.4 The Hylam/FRP busbar supports in the retrofitting panels shall be replaced with new SMC supports. Vendor shall visit the site prior to start the commissioning activities to identify the number, size and position of SMC supports required for the work. SMC insulators, fixing 'SS' nut/bolt/washers and MS supports (if required) shall be supplied by the vendor. SMC insulator supports shall be provided at suitable locations to avoid stress on main busbar and busbar joints.

3.2.5 SMC insulator supports shall be provided within 100mm from breaker contacts to minimize the stress on breaker contacts.

3.2.6 Cutting of SMC insulator support for the retrofit work shall be done with machine cut only. No hand cutter or grinder shall be used for cutting. SMC supports shall be free from burrs or unevenness.

3.2.7 The busbar supports shall be of modified S3S electrical grade SMC having improved electrical, mechanical, chemical, non-hygroscopic and fire retardant properties. The material shall be conformed to the Indian Standard 13410: 1992 and certified by CPRI.

3.3.0 Current transformers

3.3.1 Vendor shall supply Current Transformers suitable for busbar mounting as per data sheet for metering and protection. Vendor shall verify the dimensional suitability of current transformers before supply.

3.3.2 The existing CTs shall be replaced with the new one. Vendor shall arrange additional supports/SMC insulators/ 'SS' fasteners etc. required for mounting the CTs.

3.4.0 Circuit breaker

3.4.1 The scope covers disconnections of internal wiring of existing ACB in the existing switchgear panels, removal of existing breaker along with its guide frames and removal of primary / secondary disconnections. New circuit breaker guide frames shall be fixed in the existing switchgear compartment and door of breaker compartment shall be suitably modified.

3.4.2 The primary and secondary disconnections need to be modified, if required to suit for power and control circuit of new breaker inside the existing switchgear compartment.

3.5.0 Protection Relays

3.5.1 The scope covers disconnection all internal wiring and removal of existing 2 O/C +E/F relay, REF relay and watt-hour meter from Relay compartment (bottom side of breaker compartment) and installing new numerical protection relay and master trip relay.

3.6.0 Meters, indication lamps, control switches and anti-condensation heater

3.6.1 The scope covers disconnection and removal of all indications, analog meters and control switches from the existing metering compartment (above breaker compartment) and installing new ones.

3.6.2 Existing control fuses shall be disconnected and removed from the compartment and new control MCBs/Fuses shall be provided.

3.6.3 A multi-function meter shall be installed in addition to the analog voltmeter for remote load surveillance.

3.6.4 Existing anti-condensation heaters shall be disconnected and removed from the busbar compartment and new heaters with MCB/Fuse control shall be provided.

3.7.0 Interlocks

3.7.1 All 4 transformers have same rating and LT busbars are connected in switchboard in such a way that it can operate in parallel.

3.7.2 Incomer breakers shall have provision for inter-trip facility with transformer HT breaker.

3.7.3 Provision for tripping transformer HT breaker in the event of REF relay tripping shall be provided.

3.7.4 Close and Trip interlock for future shall be provided in all breakers.

3.8.0 Painting

3.8.1 Modified doors shall be painted neatly with Light Admiralty Grey colour, matching to the original shade of the panel. Powder coating shall be provided for newly fabricated doors.

3.8.2 Mimic diagram shall be painted on the front panels.

4.0.0 CIRCUIT BREAKER

4.1.0 General

4.1.1 The circuit breaker shall be of suitable type and rating as mentioned the data sheet and suitable for indoor use. The CB shall be of three pole, horizontal draw out, horizontal isolation type unless otherwise specified in the data sheet.

4.1.2 All parts of the CB shall be liberally dimensioned to have high factor safety to withstand electrical and mechanical stresses during the normal operation of the breaker and during short circuits.

4.1.3 Conformal coating shall be provided on all current carryings parts of the breaker including jaw cluster assembly.

4.1.4 Breakers shall be provided with inbuilt programmable microprocessor based release with adjustable current & time for basic electrical faults like Over load /Short time delay /Inst. short circuit protection/Ground fault (LSIG).

4.1.5 The guide frame shall be provided with proper earthing arrangement of ample capacity in such a way that carriage gets connected to earth when the CB is racked in to the cubicle.

4.1.6 Breaker carriage assembly shall be suitable to the existing compartment size. All breakers shall be of same rating specified in the data sheet.

4.1.7 All breakers shall be fully interchangeable without having to carry out any modifications for trouble free operation. The draw out arrangements shall be designed such that normal dimensional variations are taken care of by self-aligning feature of the breaker and guide frames. Wiring and termination of moving auxiliary disconnects shall be identical in all breakers.

4.1.8 Each control circuit tapping shall be provided with MCBs.

4.1.9 Emergency hand trip and Non-reset type operation counter shall be provided.

4.2.0 Circuit breaker contacts

4.2.1 The breaker isolating contacts shall be of self-aligning type and shall have ample area and contact pressure for carrying the rated current and short circuit currents such that there is no excessive temperature liable to bring about pitting or welding and it shall not show tendency to "blow off" when carrying rated short circuit currents.

4.2.2 Circuit breaker shall have minimum of 4 NO and 4 NC inbuilt auxiliary contacts. Auxiliary multiplier contactor can be used with an actuating element directly operated by breaker mechanism.

4.2.3 Auxiliary contacts shall have continuous rating of 10A at 240V. All auxiliary contacts shall be wired to the terminal block. Auxiliary contacts and limit switches shall be in dust tight enclosures.

4.3.0 Operating mechanism

4.3.1 The operating mechanism of the CB shall be quick make, quick break type and trip-free as per relevant code of protection.

4.3.2 Circuit breaker shall be provided with electrically operated motor charged spring closing mechanism with provision for manual charging through handle. Necessary operating handles shall also be supplied. The electrical circuit for spring charging motor shall cut off on initiation of manual charging.

4.3.3 In motor charged spring closing mechanism, the charging of the closing spring shall be automatically initiated after every closing operation. It shall be ensured that the closing operation shall be possible only when the springs are fully charged. Suitable protection circuit, limit switches, etc. shall be provided for protection of the spring charging motor and to cut out the motor when the springs are fully charged.

4.3.4 The closing solenoids / coils and auxiliary devices shall operate satisfactorily between 85 and 110% of the rated auxiliary supply voltage indicated in the data sheet. Trip coils shall operate satisfactorily at all voltages between 70% and 110% of the rated auxiliary voltage.

4.3.5 Irrespective of the mode of operation of the breaker, independent manual closing and tripping arrangements shall also be provided as a standard feature, for emergency and testing purpose.

4.3.6 Closing and tripping devices for both electrical and mechanical arrangements shall be provided and shall be located in the front of the CB.

4.3.7 A mechanical interlock shall be provided for preventing any inadvertent / undesired operation. For instance, closing the breaker when the springs are being charged, draw out of breaker while breaker is in closed and service position etc.

4.4.0 CB positions and indication

4.4.1 There shall be three distinct positions for circuit breaker, viz. service position, test position and isolated position and these positions shall be clearly marked and provided with mechanical stops at each position. Circuit breaker shall be electrically and mechanically trip free in all positions. The test position shall have locking device. Fully racked in, racked out, and isolated positions shall also be clearly marked.

4.4.2 Shutters shall automatically screen cable and busbar isolating connections before the CB reaches isolation position.

4.4.3 An automatic visual indication shall be provided to indicate spring charged / discharged positions.

4.4.4 All circuit breakers shall have mechanical ON/OFF indicator and spring charge indicator. These shall be visible from the front without opening the panel door.

4.5.0 Positive interlocks

4.5.1 It shall not be possible to close the circuit breaker unless it is fully plugged in (truck in service position) or fully isolated (truck in the test position) or has been completely removed from the cubicle.

4.5.2 It shall not be possible to discharge the closing spring if the CB is in closed position already.

4.5.3 It shall not be possible to close the circuit breaker unless the closing spring is fully charged.

4.5.4 Interlock shall be provided to prevent pushing in /drawing out of the breaker truck from any of the three positions to another when the breaker is in the closed position. Insertion of breaker into `Service' position shall not be possible if safety shutters are not free. Safety shutters shall be spring loaded, positively operated by the travel of the draw out truck. Independent operating mechanism for bus side and cable side shutters shall be provided. Busbar/ cable marking on safety shutters shall be provided.

4.5.5 Padlocking facility in test & isolated position to be made available.

4.5.6 Mechanical door interlock shall be provided to ensure that door can be opened only when the breaker is in "OFF" condition and in Test/Isolated position. The breaker shall close either in Test or Service position while the door is securely closed. Door interlock shall have defeat feature.

4.5.7 The above positive mechanical interlocks are the minimum requirements. Manufacturers can include any other safety interlocks, which may be necessitated by the particular design feature of the CB.

5.0.0 CURRENT TRANSFORMERS

5.1.0 CTs shall conform to relevant Indian / International standards and shall be cast resin insulated. They shall be mounted on switchgear stationary part.

5.2.0 Vendor shall supply CTs for metering and protection as required for successful completion of the work. Insulation class of CTs shall be Class E.

5.3.0 CTs shall withstand the maximum short circuit current for a minimum of one second and it shall be designed to withstand stresses resulting from the maximum short circuit currents.

5.4.0 CTs for metering and protection shall be selected suitably to meet the individual requirements of meters and relays specified in the data sheet. Low reactance CTs shall be used for protection.

5.5.0 CTs for metering purposes shall have adequate capacity to cater for 130% of full load conditions. Instrument security factor for metering CTs shall not be more than 5 and shall have an accuracy class of 1, unless otherwise specified.

5.6.0 CTs for protection purposes shall have sufficient accuracy, burden and accuracy limit factor for necessary co-ordination/discrimination for clearing the faults. Class 'PS' CTs shall be used for composite overcurrent and REF protection.

5.7.0 The minimum burden of the CTs shall be 20 VA. However, the actual burden of the CTs shall meet the requirements of relays, instruments and leads associated with the particular CT including 20% spare capacity.

6.0.0 PROTECTION RELAY

6.1.0 Composite over current and REF protection relay shall be of numerical type.

6.2.0 Protection relays shall be back connected, flush mounted and fitted with dust tight covers.

6.3.0 Conformal coating shall be given to the relays as it is to be used in harsh environments.

6.4.0 Relay shall be compatible with protection CT secondary current mentioned in the data sheet.

6.5.0 Relays shall be suitable for auxiliary power supply of 110V DC with 70-110% variation.

6.6.0 The IDMT characteristic of the relay shall be in complying with IEC curves.

6.7.0 Relays shall have self-monitoring facility and it shall have relay healthy/relay in operation indication on fascia.

6.8.0 Relays shall not operate at a current equal to or less than the setting. The minimum operating current shall not exceed 110% of the setting.

6.9.0 Relay shall have minimum of 9 numbers of programmable binary inputs and 6 numbers of programmable binary outputs.

6.10.0 Relay shall have front USB port for local PC connection and RS485 port for remote connection.

6.11.0 Relay shall have minimum of 8 numbers of programmable LED indications on the front side.

6.12.0 Relay shall have LCD/LED display unit, keypads, LED indicators and communication port for parameter setting, monitoring and controlling the protection relay. Adequate push buttons shall be provided on the fascia to display and edit the relay settings, to display and activate the control segment of the relay, to display the relays instrumentation and fault data and to reset the output relays and LED's.

6.13.0 The vendor shall supply relay software compatible with MS Windows and provide configuration support for commissioning. Relay technical catalogue, operation manuals, brochures etc. shall be supplied in both hard and soft copies.

6.14.0 Composite over current and REF protection relay shall be multifunction type with protection features such as Restricted Earth Fault, Instantaneous Phase over currents, Instantaneous Ground over currents, Time Delayed Phase over currents , Time Delayed Ground over currents, Thermal overload, Circuit breaker failure, Trip circuit supervision, Self monitoring/relay healthy, Disturbance record, Fault record, Event record etc.

6.15.0 External series stabilizing resistor and non-linear voltage limiting shunt resistor shall be used in the REF protection circuit. Resistor values shall be calculated and submitted for reference.

6.16.0 Measurement of Knee point voltage, winding resistance, burden and excitation current of existing CT in transformer neutral point for REF protection is in vendor's scope. Measurement of loop resistance, setting of stabilizing resistor and matching the CT secondary to avoid nuisance tripping shall be done by the vendor.

6.17.0 Testing of REF protection shall be done using current injection method. Fault within the protection zone and out of zone conditions shall be simulated and stability of the relay must be ensured. Current injection kit and accessories for testing shall be arranged by the vendor.

6.18.0 Latching and flagged type master trip relay shall be used for circuit breaker tripping.

7.0.0 INDICATING INSTRUMENTS

7.1.0 General

7.1.1 Meters shall be flush mounted and of a type and make approved by the buyer. Meters shall conform to relevant Indian standards.

7.1.2 All meters shall be magnetically screened and temperature compensated.

7.1.3 All meters rating shall correspond to full load requirements. Meters shall be vibration proof, suitable for vertical flush mounting with parallax free design and glare free front covers. All auxiliary equipment such as shunts, transducer, etc., as required, shall be under the scope of vendor.

7.7.1 MFM meter

7.2.1 Schneider Electric make EM6400NG model multifunction meter suitable for existing Energy Monitoring System shall be used for retrofit work.

7.2.2 MFM meters shall be configurable & programmable through the front panel.

7.2.3 Multi-function meter Voltage and current rating shall correspond to full load requirements. Multi- function meter shall be compatible for SCADA connectivity.

7.8.1 Analog Meters

7.3.1 Analog voltmeters and ammeters shall be square type of size 144 mm x144 mm.

7.3.2 Cushion stoppers and zero correction screws shall be provided for all meters.

7.3.3 Meters shall have knife edge pointer and preferably with anti-parallax mirror. Dials shall be white with black numerals and letters.

7.3.4 Ammeter shall be of moving iron type complete with selector switch. Ammeters for motor feeders shall have uniform scale up to rated full load current and suppressed scale at the end to indicate the motor starting current. A red mark shall be provided on the ammeter dial to indicate rated full load. Calibration of the ammeter shall tally with the ratio of the CT. Ammeters shall be of Class 1.5 accuracy as per IS:1248, unless other-wise specified.

7.3.5 Voltmeter shall be moving iron type complete with suitable selector switch and control fuses and it shall be of class 1 accuracy as per IS:1248. Operating voltage of the meter shall be directly taken from switch board incoming busbars of respective incomers through suitable MCBs.

7.3.6 All control/selector switches used shall be of rotary type, spring loaded and of robust construction. The operating handle of these switches shall be knob type and of black colour. The switches shall have 3 ways with OFF position. Necessary fascia plates shall be provided with black anodized aluminium with white lettering.

7.3.7 All auxiliary equipment such as shunts, transducer, etc., as required, shall be included in the supply of switchboard.

7.4.0 Annunciator

7.4.1 8 Window Annunciator with Acknowledged, Test, and Reset PB shall be provided for all 7 retrofitting panels. Auxiliary control supply for the annunciator shall be 110V DC.

8.0.0 INDICATING LAMPS

8.1.0 Three-phase supply indication shall be provided on incomer/tie feeder panels.

8.1.1 Indicating lamps shall be of cluster LED type. All lamps shall be indigenously available and rated for 7 watts maximum.

8.1.2 All signaling lamps must have clarity of colour. Lens for signaling lamps shall be so designed to prevent glare from the bulb and it shall be of dome shape to permit visibility from all directions. The material of lens should be such that it neither gets destroyed nor changes the colour due to heat from the bulb.

8.1.3 Necessary protective MCBs shall be provided for the lamp circuit.

9.0.0 ANTICONDENSATION HEATER

9.1.0 Anti-condensation heater with thermostat control shall be provided in busbar chamber. Control MCB of heater shall be mounted in the metering compartment of each section.

9.2.0 Heater shall be provided inside the panel in easily accessible position for removal / replacement.

9.3.0 Wiring of Anti-condensation heater shall be isolated or separately bundled from other internal wiring.

10.0.0 CABLE TERMINATION & WIRING

10.1.0 Control cable termination

10.1.1 Termination of wiring for external connection shall be done using terminals of reputed make and of proven design for long trouble free life.

10.1.2 Terminals shall be compact and shall have very high dielectric strength so as to prevent flashover and have thermal strength to prevent deterioration.

10.1.3 The moulding material of the terminal body shall preferably be melamine formaldehyde having high anti-tracking properties.

10.1.4 Identification/ numbering/ lettering shall be provided for each terminal. Such marks shall be legible even after years of service.

10.1.5 Minimum 20% spare terminals shall be provided on each terminal block.

10.1.6 Facilities shall be available for temporary or permanent short-circuiting of terminals for earthing and testing.

10.1.7 Shorting links shall be provided for all CT terminals.

10.1.8 Where duplication of a termination is necessary, it shall be achieved by solid bonding links.

10.1.9 Conductors shall be terminated with adequately sized compression type tinned copper lugs for connection to equipment terminals and strips. Stranded conductors shall be soldered at the ends before connection are made to the terminals.

10.1.10 All terminals shall be shrouded with plastic covers to prevent accidental contact.

10.2.0 Wiring

10.2.1 Control and power wiring shall be kept separate.

10.2.2 All wiring for controls shall in general be carried out with copper conductor of size not less than 2.5Sq.mm. Current transformer secondary wiring shall be selected based on the secondary current, distance to relay/meter and burden of CTs.

10.2.3 Wiring shall be terminated in easily accessible terminal blocks.

10.2.4 The wires shall be arranged neatly and the two ends of each wire and the terminal blocks shall bear the circuit number by using unbreakable ferrules for identification purposes.

10.2.5 Control wiring wherever terminated shall be in single layer formation.

10.2.6 All inter panel control wiring shall be taken through PVC sleeves.

10.2.7 All spare contacts of circuit breakers, auxiliary relays, auxiliary contactors, shall be wired up to the terminal block.

11.0.0 EARTHING

11.1.0 Earthing arrangement shall be in accordance with relevant Indian standards.

11.2.0 Earthing terminals shall be provided on the CB trucks to earth the body of the truck when racked-in into the cubicle.

11.3.0 One of the secondary terminals of the metering, protection and REF protection CTs shall be earthed.

11.4.0 All doors and movable parts shall be connected to earth bus with flexible copper connection.

11.5.0 All non-current carrying metal work (including metallic cases of instruments and other panel mounted components) of the equipment shall be earthed.

11.6.0 Looping of earth connection resulting in loss of earth connection to other devices when the loop is broken not permitted. Earth connection shall be directly taken from earth bus.

11.7.0 Withdrawable breaker units shall be provided with self-aligning, spring loaded, silver plated copper scrapping earth contacts of make before/break after type for ensuring earth continuity from service to the test position.

12.0.0 LABELING

12.1.0 Nameplates shall be fastened by screws/rivets and not by adhesives.

12.2.0 Nameplates shall be of white Perspex acrylic sheet with letters engraved in black.

12.3.0 Incomer side and Busbar side shutters shall be labelled for identification.

12.4.0 Nameplates shall be provided for all door/front mounted devices such as lamps, PBs, switches, relays, aux. contactors etc., directly below them, giving the nomenclature and purpose of the device.

12.5.0 Labels shall be made of non-rusting metal with engraved inscriptions of white letters on black background.

12.6.0 Label designation and size of lettering subject to approval.

13.0.0 SCOPE OF INSPECTION AND TESTS

13.1.0 The following inspection and test shall be conducted and records submitted.

a) Physical verification for compliance with P.O. specifications, scope of work, approved drawings, BOM, etc.
b) Insulation resistance test on power and control circuits.
c) Operational checks on protective releases/relays.
d) Circuit breaker Mechanical and Electrical operation test.
e) Testing of feeder protection relays by current injection method.
f) Testing of fault within the protection Zone and out of zone conditions for REF relay.
g) Tests of the auxiliary electrical devices.
h) Verification of nameplate information & marking.
i) Verification of wiring.
j) Interchangeability of all breakers.
k) Checking of mechanical work like surface finish, movement and proper engagement of withdrawable breakers, fixing of doors, etc.

14.0.0 DOCUMENTATION

14.1.0 Vendor shall submit the relevant documents as per the Vendor data requirement.

15.0.0 TRAINING

15.1.0 The bidder shall provide training to purchaser's technical personnel regarding the safe operation of the circuit breakers after the completion of work.

16.0.0 DEVIATION FROM SPECIFICATION

16.1.0 If the bidder wish to deviate from the provisions of the specifications, either on account of manufacturing practice or any other reasons, he shall draw attention to the proposed point of deviation in the compliance statement attached with this specification. Bidder shall submit such full information, drawing and specification so that merits of his proposal may be fully understood. The specification shall be held binding unless the deviations have been fully accepted as requested.

DATA SHEET	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC	CD-NP-ACB-RETROFIT-DS PAGE 1 OF 4

Sl.No.	Item description	Specification
1.0	Service conditions	
	a) Altitude	< 1000m above mean sea level
	b) Humidity	Min 64%
	c) Humidity	Max. 93%
	d) Humidity design	100% at 400C
	e) Ambient temperature 0 C-Min.	19.2
	f) Ambient temperature 0 C-Max.	35
	g) Ambient temperature 0 C-Design	50
	h) Rain fall – Max . Record in an hour	40mm
	i) Rain –fall Max record in 24 Hours	169.5mm
	j) Environment	Highly corrosive industrial area, Presence of SO2 and other corrosive gases and chemical dusts, which can form conductive tracks.
	k) Wind velocity for structural design	124 km/h
	l) Seismic factor for design	Within seismic Zone 3 as per IS 1893
2.0	Existing switchboard rating details	
	a) Make	Siemens
	a) Voltage	433 V
	b) Connection	3 phase and Neutral
	c) Frequency	50 Hz +/-5%
	d) Fault level (sym.)	35 MVA at 433V
	e) Neutral earthing	Solid
	f) Continuous rated current	3200A
	g) Location	Indoor
	h) Bus bars material	Aluminium
	i) Bus bar size	Per Phase- 3 Nos.x 102x13 mm Neutral- - 1 Nos.x 102x13 mm
	j) Mimic diagram	Provided on front panel
	k) Incoming bus bar entry	Bottom
3.0	Control supply	
	a) Auxiliary supply voltage for shunt trip coil, closing coil, protection relay, indication lamps, Multi-Function Meter and annunciator.	110V DC
	b) Auxiliary supply voltage for spring charging motor, DC unhealthy Indication and Anti- condensation heater etc.	230V AC

Sl. No.	Item description	Specification
4.0	Circuit breaker requirement	
	a) Make	Siemens
	b) Type reference	3WT
	c) Nominal System Voltage	433 V
	d) Rated current	4000 A
	e) Rated insulation voltage	1000 V
	f) Rated impulse withstand voltage	8 kV
	g) Rated service short-circuit breaking capacity	66 kA
	h) Type of breaker	Air circuit breaker
	i) No of poles	3
	j) Mounting	Withdrawable
	k) Breaker closing (Motor charged spring closing/solenoid closing)	Motor charged spring closing
	l) Auxiliary supply voltage for shunt trip coil and closing coil	110V DC
	m) Auxiliary supply voltage for spring charging motor	230V AC
	n) Positive inter locks	Required
	o) Conformal coating on all current carrying path	Required
	p) Microprocessor based release option	Required
	q) Microprocessor based release type reference	ETU 37WT
	r) Emergency hand trip	Required
5.0	Meters	
	a) Multi-function meter	Schneider EM6400NG
	b) Make of Analog meters	As per sub vendor list
	c) Analog Voltmeter - accuracy class	Class 1
6.0	Protection Relay	
	a) Make of relay	Siemens
	b) Type	Flush mounted Numerical relay
	c) Conformal coating	Required
	d) IDMT characteristic	Following IEC curves
	e) Relay healthy and fault indications	Required

2.0	COMPONENT DETAILS – FEEDER WISE			
	Type of feeder	Incomer	Bus coupler	Tie-Outgoing
2.1	Number of feeders	4	2	1
2.2	Current Transformers	Required	-	Required
	a) For metering - 3 nos.	3000/1	-	3000/1
	b) For composite over current and REF protection (At panel side) - 3 nos.	3000/1	-	3000/1
	c) For Neutral for circuit breaker LSIG protection	3000/1	3000/1	3000/1
2.3	Existing busbar modification	Required	Required	Required
2.4	Existing busbar support modification	Required	Required	Required
2.5	LT Air Circuit Breakers with inbuilt microprocessor release conforming to Engineering specification	Required	Required	Required
2.6	Protection relays conforming to Engineering specification	Required	-	Required
2.7	Latching and flagged type Master trip relay	Required	Required	Required
2.8	Panel door modification and painting	Required	Required	Required
2.9	Indication Lamps			
	a) Breaker ON (Red)	Required	Required	Required
	b) Breaker OFF (Green)	Required	Required	Required
	c) Breaker auto trip (Amber)	Required	Required	Required
	d) Breaker trip circuit healthy(White)	Required	Required	Required
	e) Breaker in Test (Green)	Required	Required	Required
	f) Breaker in Service (Red)	Required	Required	Required
	g) Breaker ready for close (Clear)	Required	Required	Required
	h) DC unhealthy (Blue)	Required	Required	Required
	i) R-Phase healthy (Red)	Required	-	Required
	a) Y-Phase healthy (Yellow)	Required	-	Required
	b) B-Phase healthy (Blue)	Required	-	Required
2.10	Meters			
	a) MFM meter	Required	-	Required
	b) Voltmeter- Analog	Required	-	Required
	c) Ammeter Analog	Required	-	Required
	d) 8 Window annunciator	Required	Required	Required

	Type of feeder	Incomer	Bus coupler	Tie-Outgoing
2.11	Control Switches and Push Buttons			
	a) Breaker Trip-Neutral-Close switch"ODC"	Required	Required	Required
	b) 3 way & Off voltmeter selector switch	Required	-	Required
	c) 3 way & Off ammeter selectorswitch	Required	-	Required
	d) Emergency hand trip	Required	Required	Required
	e) Control MCB for AC aux. supply incomer	Required	Required	Required
	f) Control MCB for DC aux. supply incomer	Required	Required	Required
	g) Control MCB for breaker closing circuit	Required	Required	Required
	h) Control MCB for breaker tripping circuit	Required	Required	Required
	i) Control MCB and Thermostat for anti-condensation heaters	Required	Required	Required
	j) Control MCB for Spring Charging Motor	Required	Required	Required
	k) Trip circuit healthy check Push button	-	Required	-
2.12	Other Items			
	a) Breaker contact multiplier relay	Required	Required	Required
	b) Breaker operation counter	Required	Required	Required
	c) Anti-condensation heater	Required	Required	Required
2.13	Wiring and Terminals for			
	a) Control wiring modification	Required	Required	Required
	b) Closing interlock & shorting link	Required	Required	Required
	c) All relay terminals	Required	-	Required
	d) Breaker NO & NC spare contacts	Required	Required	Required
	e) Inter trip with HT breaker	Required	-	-
	f) REF relay trip contact for HT breaker tripping	Required	-	-
	g) Auxiliary relay for Breaker off status from down stream breaker	Required (only for Incomer- 4)	-	Required
	h) Auxiliary relay for trip status from down stream breaker	Required (only for Incomer- 4)	-	Required
	i) Auxiliary relay for trip command to down stream breaker	Required (only for Incomer- 4)	-	Required
	j) Auxiliary relay for Trip status to HT side	Required	-	-

Sl.No.	Description	Vendor's reply
1.0	**Circuit Breaker**	
1.1	Make	
1.2	Country of manufacture	
1.3	Type reference and serial number	
1.4	Type of circuit breaker	
1.5	Total weight of complete breaker (Kg.)	
1.6	Conformity to standards	
1.7	Rated voltage	
1.8	Maximum permissible operating voltage	
1.9	Rated current	
1.10	Rated frequency	
1.11	Number of poles	
1.12	Rated symmetrical short circuit breaking capacity (kA and MVA)	
1.13	Rated making current (KA peak)	
1.14	Type of main contacts	
1.15	Type of arcing contacts	
1.16	Whether conformal coating provided on all current carrying parts including jaw cluster assembly	
1.17	Type of arc control employed	
1.18	Number of aux. Contacts (NO+NC) (without multiplying contactor)	
1.19	Method of power closing offered	
1.20	Whether manual closing & tripping facility is available in addition to the power closing & tripping	
1.21	Normal voltage of the spring charging motor	
1.22	Power at normal voltage required for spring charging motor	
1.23	Normal and minimum operating voltage of closing mechanism	

Sl.No.	Description	Vendor's reply
1.24	Power at normal voltage required for closing coil	
1.25	Normal and minimum voltage required for trip coil	
1.26	Power at normal voltage required for trip coil	
1.27	Whether inbuilt programmable microprocessor release is available	
2.0	**Busbar**	
2.1	Busbar material	
2.2	Conformity to standards	
2.3	Continuous rated current considered for retrofit portions	
2.4	Busbar size considered for retrofit, current density	
3.0	**Current transformers**	
3.1	Metering CT - Bus bar mounting for 3 phases	
3.1.1	Conformity to standards	
3.1.2	Make	
3.1.3	VA capacity	
3.1.4	Accuracy class	
3.1.5	Insulation class	
3.1.6	Rated primary current	
3.1.7	Rated secondary current	
3.1.8	Epoxy resin cast or other type with details	
3.2	Protection CT - Bus bar mounting for 3 phases	
3.2.1	Conformity to standards	
3.2.2	Make	
3.2.3	VA capacity	
3.2.4	Protection class	
3.2.5	Insulation class	
3.2.6	Rated primary current	
3.2.7	Rated secondary current	
3.2.8	Epoxy resin cast or other type with details	

Sl.No.	Description	Vendor's reply
3.3	Protection CT – for neutral bus for breaker LSIG	
3.3.1	Conformity to standards	
3.3.2	Make	
3.3.3	Type (Bus bar mounting or Ring)	
3.3.4	VA capacity	
3.3.5	Protection class	
3.3.6	Insulation class	
3.3.7	Rated primary current	
3.3.8	Rated secondary current	
3.3.9	Epoxy resin cast or other type with details	
4.0	**Composite Overcurrent and REF Protection Relay**	
4.1	Make	
4.2	Serial number	
4.3	Conformity to standards	
4.4	Mounting: Flush / projection	
4.5	Number of digital inputs and outputs	
4.6	Whether conformal coating provided	
5.0	**Meters**	
5.1	Analog Voltmeter	
5.1.1	Make	
5.1.3	Mounting: Flush / projection	
5.1.4	Size of meters	
5.1.5	Scale size	
5.1.6	Class of accuracy	
5.2	Analog Ammeter	
5.2.1	Make	
5.2.2	Type	

Sl.No.	Description	Vendor's reply
5.2.3	Mounting: Flush / projection	
5.2.4	Size of meters	
5.2.5	Scale size	
5.2.6	Class of accuracy	
5.3	Multi-function meter	
5.3.1	Make	
5.3.2	Model number	
6.0	**Indication Lamps**	
6.1	Make	
6.2	Type	
7.0	**Breaker Trip-Neutral-Close switch**	
7.1	Make	
7.2	Type	
8.0	**3 way & Off voltmeter selector switch**	
8.1	Make	
8.2	Type	
9.0	**3 way & Off ammeter selector switch**	
9.1	Make	
9.2	Type	

VENDOR DATA REQUIREMENTS	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC	CD-NP-ACB-RETROFIT-VDR
		PAGE 1 OF 1

Sl. No.	Description	Offer	After commitment	Final	
		Soft copy	Soft copy	Soft copy	Print copy (2 Nos.)
1.0	Duly filled and signed Technical Particulars as per pro forma enclosed.	Reqd.			
2.0	Duly filled and signed Compliance Statement as per pro forma enclosed.	Reqd.			
3.0	Type test certificate of circuit breaker.	Reqd.			
4.0	Bill of material.		Reqd.	Reqd.	Reqd.
5.0	Calculation of series stabilizing resistor and non-linear voltage limiting shunt resistor values.		Reqd.	Reqd.	Reqd.
6.0	Dimensioned general arrangement drawings – internal & external, including busbar disposition.		Reqd.	Reqd.	Reqd.
7.0	Controls schematic, wiring diagrams, inter panel wiring, terminal and bus wiring diagrams.		Reqd.	Reqd.	Reqd.
8.0	Sectional views showing the general constructional features of the circuit breaker including operation mechanism, arcing chambers, contacts with lifting dimensions for maintenance. Circuit breaker O&M manual.		Reqd.	Reqd.	Reqd.
9.0	Characteristic curves of relays and their rangeof adjustments. Relay O&M manual.		Reqd.	Reqd.	Reqd.
10.0	Type test certificates of breakers, busbars, protective relays and SMC insulators.		Reqd.	Reqd.	Reqd.
11.0	Routine test certificates of breakers, protective relays and SMC insulators.		Reqd.	Reqd.	Reqd.
12.0	Certificate of short circuit rating of breakers.		Reqd.	Reqd.	Reqd.
13.0	Test certificates of bought out items like energy meters, anti-condensation heaters,selector switches etc.			Reqd.	Reqd.
14.0	Technical literatures, pamphlets, brochures and O&M manuals relating to the various equipments used.			Reqd.	Reqd.
15.0	As built drawing			Reqd.	Reqd.
16.0	Relay software			Reqd.	

SUB VENDOR LIST	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC	CD-NP-ACB-RETROFIT-SVL
		PAGE 1 OF 1

Acceptable makes of switchgears are listed below.

CIRCUIT BREAKERS	**ANALOG METERS**
SIEMENS	SCHNEIDER ELECTRIC
PROTECTIVE RELAYS	SIEMENS
SIEMENS	ABB
CONTROL & SELECTOR SWITCHES	AUOTMATIC ELECTRIC
KAYCEE	RISHAB
ALSTOM	MECO
SULZER	SELEC
SIEMENS	**HRC FUSES/MCB**
EASUN REYROLLE	SIEMENS
KHAITAN	L&K (L&T)
JYOTI	HAVELLS
ABB	ALSTOM
L&K (L&T)	BUSSMAN
SCHNEIDER ELECTRIC	SCHNEIDER ELECTRIC
INSRUMENT TRANSFORMERS	ABB
AUTOMATIC ELECTRIC	
PRAGATHI	
SILKANS	
SIEMENS	
ALSTOM /AREVA	
ABB	
ECS	
INTRANS	
KAPPA	
SCHNEIDER ELECTRIC	
L&K (L&T)	

MATERIAL LIST	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC	CD-NP-ACB-RETROFIT-ML PAGE 1 OF 1

Sl. No.	Description	Quantity	UOM
1.0	LT Air Circuit Breaker with inbuilt microprocessor release	7	NO
2.0	Current Transformers		
	a) For metering - 3 nos.	5	SET
	b) For composite over current and REF protection (At panel side) - 3 nos.	5	SET
	c) For Neutral for circuit breaker LSIG protection	7	NO
3.0	Composite over current and REF Protection relay	5	NO
4.0	Latching and flagged type master trip relay	7	NO
5.0	Indication Lamps		
	a) Breaker ON (Red)	7	NO
	b) Breaker OFF (Green)	7	NO
	c) Breaker auto trip (Amber)	7	NO
	d) Breaker trip circuit healthy(White)	7	NO
	e) Breaker in Test (Green)	7	NO
	f) Breaker in Service (Red)	7	NO
	g) Breaker ready for close (Clear)	7	NO
	h) DC unhealthy (Blue)	7	NO
	i) R-Phase healthy (Red)	5	NO
	a) Y-Phase healthy (Yellow)	5	NO
	b) B-Phase healthy (Blue)	5	NO
6.0	Meters		
	a) MFM meter	5	NO
	b) Voltmeter- Analog	5	NO
	c) Ammeter- Analog	5	NO
7.0	Control Switches and Push Buttons		
	a) Breaker Trip-Neutral-Close switch"ODC"	7	NO
	b) 3 way & Off voltmeter selector switch	5	NO
	c) 3 way & Off ammeter selector switch	5	NO

SPARES LIST	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC	CD-NP-ACB-RETROFIT-SL
		PAGE 1 OF 1

Sl. No.	Description	Quantity
1.0	Vertical Terminal with conformal coating	6 Nos.
2.0	Jaw cluster assembly (Lamination block) with conformal coating	6 Nos.
3.0	Closing coil	2 Nos.
4.0	Tripping coil	2 Nos.
5.0	Composite overcurrent and REF relay	1 No.
6.0	Master trip relay	2 Nos.
7.0	External series stabilizing resistor for protection relay	2 Nos.
8.0	Voltage limiting resistor for protection relay	2 Nos.
9.0	Breaker Trip-Neutral-Close switch "ODC"	2 Nos.
10.0	3 way & Off voltmeter selector switch	2 Nos.
11.0	3 way & Off ammeter selector switch	2 Nos.
12.0	110V DC LED Indication lamps (Red, Green, Amber, White, Clear)	Each colour - 5 numbers
13.0	230V AC LED Indication lamps (Red, Yellow, Blue)	Each colour - 5 numbers
14.0	Analog Ammeter	2 Nos.
15.0	Analog Voltmeter	2 Nos.

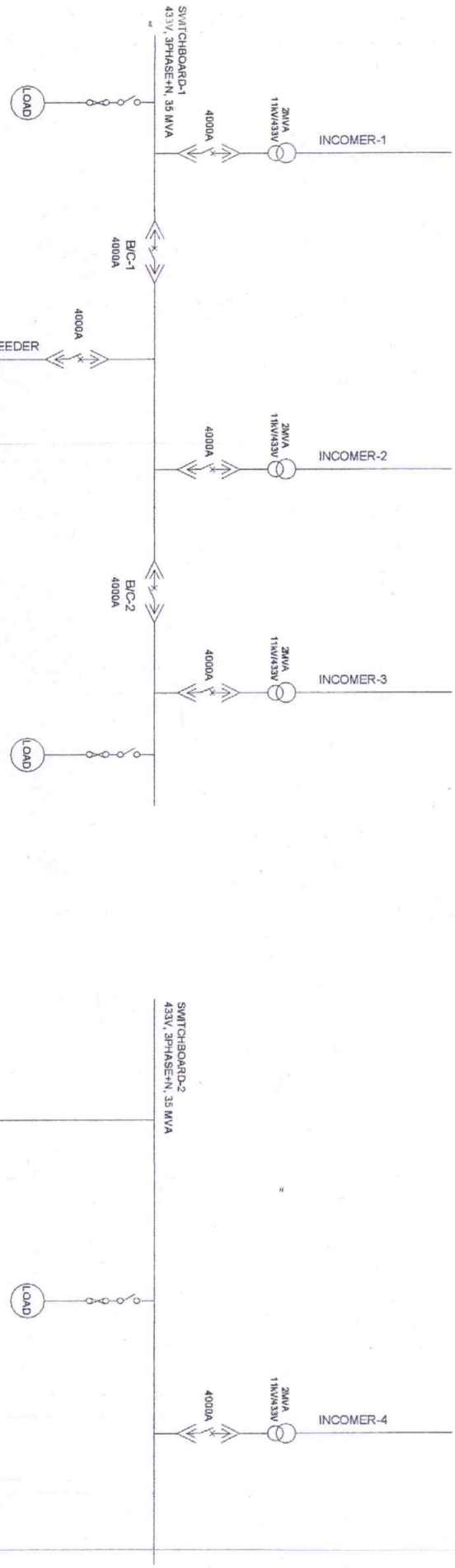
PRICE FORMAT	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC	CD-NP-ACB-RETROFIT-PF
		PAGE 1 OF 1

Sl. No.	Description	Quantity	Unit price	Tax	Total price
1.0	Supply of LT Air Circuit Breakers, protection relays and auxiliaries for 7 panels in NP plant PMCC as per material list (CD-NP-ACB-RETROFIT-ML), fully conforming to the attached specifications and documents. Design, engineering, manufacturing, shop testing, inspection, packing and delivery to site of all the items mentioned in material list (CD-NP-ACB-RETROFIT-ML) is also comes under the scope of vendor.	1 SET			
2.0	Supply of spares as per spare list (CD-NP-ACB-RETROFIT-SL).	1 SET			
3.0	Retrofitting, site testing and commissioning of LT Air Circuit Breakers, protection relays and auxiliaries of 7 panels in NP plant PMCC, fully conforming to the attached specifications and documents. Supply of items as per BOM (excluding material list) is also comes under the scope of vendor.	1 SET			

1.0	**General**
1.1	FACT's general terms & conditions are applicable to this work.
1.2	The contractor is advised to visit the site to ascertain the work before quoting.
1.3	NP plant PMCC is located at first floor of NP plant building. Transportation of equipment from place of storage to place of installation comes under the scope of vendor. Crane/Fork lift and vehicle for transportation shall be arranged by the vendor. Transportation / handling of materials shall be done at the risk and cost of the vendor.
1.4	The rates quoted shall be firm and valid till the entire work completion period.
1.5	Plant shutdown shall be planned in advance in consultation with the Engineer-In-Charge.
1.6	Qualified and well-experienced supervisors and workers shall be engaged for executing the work. All workers shall attend safety class conducted by safety department, FACT-Cochin Division.
1.7	All tools, tackles, testing equipment etc. shall be in contractor's scope.
1.8	Removing all debris, clearing the work site and transporting the debris to scrap yard are under the scope of the contractor.
1.9	The workmen engaged for doing this contract work should obtain/posses photo identity card issued by CISF, FACT-Cochin Division.
1.10	All safety precautions for workmen are to be taken by the vendor while doing the work. Clearance for work shall be taken from sections / plants concerned and if necessary from the safety department as well. The person engage to the work shall wear safety helmet and shoes. The worker shall wear safety belts while doing works above 2 meter.
2.0	**Period of contract**
2.1	<u>General</u>
2.1.1	The Supply part and retrofitting part as per below time frames [ie, entire work as per work order] shall be completed within work order validity period of 12 months from date of issue of work order.
2.2	<u>Supply Part</u>
2.2.1	Vendor shall submit Technical literatures/Test certificates of all items mentioned in Material List (CD-NP-ACB-RETROFIT-ML) and Spares List (CD-NP-ACB-RETROFIT-SL) within a period of 15 days from the date of issue of work order.
2.2.2	Vendor shall supply all items mentioned in Material List (CD-NP-ACB-RETROFIT-ML) and Spares List (CD-NP-ACB-RETROFIT-SL) within a period of 60 days from the date of getting approval from FACT.

2.3	Execution Part
2.3.1	Vendor shall submit all the drawings as per the Vendor Data Requirement (CD-NP-ACB-RETROFIT-VDR) and get approval from FACT within a period of 75 days from the date of issue of work order. The time taken by FACT for approval of drawings submitted by the Vendor shall be deducted for the purpose of finding the actual time taken.
2.3.2	After supply of items and drawing approval, vendor has to retrofit the items in the existing switchboard. The work is planned to execute in phased manner. Clearance will be given to retrofit 4 numbers of breaker panels in first phase and 3 numbers of breakers panels in second phase. The retrofitting, testing and commissioning of each phase shall be completed in all respects within 10 days from the date of giving clearance to start the work. Clearance given for executing the work may not be continuous in nature. Vendor shall submit detailed project execution plan and shall engage adequate number of workers on round the clock basis to complete the work within stipulated time.
2.4	Documentation
2.4.1	After completion of work at site, bidder shall prepare "AS BUILT DRAWINGS" and submit to FACT within 15 days from retrofit work completion.
3.0	**Payment Terms**
3.1	Supply Part
3.1.1	The payment for 80% of the cost of supply items (Sl.No.1 & 2) + 100% GST shall be made within 30 days of delivery & acceptance of all items as per work order at FACT-Cochin Division.
3.1.2	The balance 20% payment shall be made within 30 days of successful installation & commissioning of the items as per FACT's TPS and on submission of Performance Bank Guarantee for an amount of 10% of the initial contract value of work order for a period of 12 months.
3.1.3	In case if shutdown is not available for retrofitting within 60 days from delivery & acceptance, then total 20 % withheld amount shall be released on submission of above PBG.
3.2	Execution Part
3.2.1	The payment of retrofitting works (Sl.No.3) shall be given within 30 days of successful installation & commissioning and on submission of above PBG.
4.0	**Liquidated damages**
4.1	In case supply of items or drawings/document approval or retrofitting / commissioning work delayed beyond the stipulated time mentioned in the work order, LD @ 0.5% of the individual item value for every week or part thereof delay, limited to a maximum of 7.5% of the individual item value will be deducted from the bill.
5.0	**Insurance**
5.1	All Insurances in Vendor's scope

6.0	**Freight charges**
6.1	Freight charges for supply of items shall be borne by the vendor
7.0	**Transport & Accommodation**
7.1	The cost of transportation and accommodation for retrofitting work shall be borne by the vendor.
8.0	**Liability**
8.1	Liability of Supplier whether in indemnity contract, tort or otherwise shall not exceed and shall be limited to aggregate to 100 % of the contract value/order value. Neither party shall be liable whether in indemnity, contract, tort or otherwise for loss of profit or revenue, loss of production, interruption or operations or loss of use, cost of capital, loss of interest, loss of information and/or data, for claims arising from third party contracts or for any indirect, special, ancillary or consequential damages of any kind whatsoever.



SINGLE LINE DIAGRAM - NP PMCC

COMPLIANCE STATEMENT	SUPPLY, RETROFITTING, TESTING AND COMMISSIONING OF AIR CIRCUIT BREAKERS, PROTECTION RELAYS AND AUXILIARIES OF 7 PANELS IN NP PLANT PMCC	CD-NP-ACB-RETROFIT-CS
		PAGE 1 OF 1

We here by state that our Quotation No ..... is in full compliance with the documents issued against the Enquiry No ..... except for the deviations listed below.

LIST OF DEVIATIONS

Sl. No.	Description	Reasons for Deviation

Name of Vendor:

Date: Name & Designation Signature & Seal

(54)

08-05-2025

Proprietary Article Certificate under Rule No. 166 of GFR 2017

Proprietary Article Certificate in the following form is to be provided by the Ministry/ Department before procuring the goods from a single source under the provision of Sub Rule 166(i) and 166(iii) as applicable.

1. **The intended goods are manufactured by:**
   M/s SIEMENS Ltd.

2. **No other make or model is acceptable for the following reasons:**
   M/s Siemens is the OEM of LT Power & Motor Control Centre (PMCC). ACBs and Relays are the most vital components of the PMCC. For ensuring compatibility and reliability of the switchboard and to reduce downtime for retrofit work, the work shall be undertaken by the OEM of the switchboard or their authorized integrators. Approval for proprietary item codification is attached separately.

3. **Concurrence of finance wing to the proposal vide:**
   Copy of administrative approval with WBS No. RNM-24-CE-41 is attached.

4. **Approval of the competent authority vide:**
   Copy of administrative approval with WBS No. RNM-24-CE-41 and Capex Approval for the project are attached.

Signature with date & designation
of Indenting Officer

शरत आर. / SARATH R.
व. प्रबंधक अनुरक्षण (इलेक्ट्रिकल) II सी सीडि
SENIOR MANAGER MAINTENANCE (ELECTRICAL) II - c (CD)
फेक्ट लिमिटेड / FACT LIMITED
कोचीन डिविज़न/ COCHIN DIVISION
अम्बलमेड / Ambalamedu - 682 303
कोच्ची, KOCHI, केरल, KERALA

ELIGIBILITY CRITERIA for Supply, Retrofitting , Testing, And Commissioning of LT AIR Circuit Breakers , Protection Relays And Auxiliaries of 7 Panels in NP Plant PMCC

TENDER No. MM/172/G31439 Dated 03-06-2025

Sl No	Eligibility Criteria Conditions	Documents to be submitted along with bid	Bidders compliance
1	a) The Bidder shall be a manufacturer or their authorized dealer /distributer/channel partner of existing switchboard (SIEMENS). b) The bidder shall be in the business of retrofitting LT Air Circuit Breakers for more than 5 years as on the final due date of the submission of technical bid. c) The bidder shall supply OEM's factory assembled Air Circuit Breakers only.	1. Self-declaration from manufacturer OR tender specific valid authorization letter from the manufacture in the case of authorized dealer/distributer/channel partner. 2. Relevant supporting documents to satisfy PQ condition/s, on 5 years business experience. 3. The type test certificate of ACBs offered for the project.	
2	The bidder or OEM shall have successfully completed Purchase/work orders as per any one of the three conditions given below for retrofitting LT Air Circuit Breakers during the last 10 years in any industrial / commercial establishments as on the final due date of the submission of technical bid. a) One work of similar nature as per the scope of work, costing not less than Rs. 36,00,000/- b) Two works of similar nature as per the scope of work, each costing not less than Rs. 22,50,000/- c) Three works of similar nature as per scope of work each costing not less than Rs. 18,00,000/-.	1. Copies of Purchase Orders/Work Orders. 2. Completion certificate / dispatch documents / final invoice etc. of the respective orders to prove successful completion of the work.	
3	a) Average annual turnover of the bidder for the last three financial years ending on 31-03-2024 shall be at least Rs. 90 /- Lakhs or above and b) Annual turnover for each year shall be at least Rs. 14 /- lakhs or above during the last three financial years ending on 31-03-2024	Self-attested copies of audited financial statements (Profit & Loss Account and Balance Sheet/ audited turnover certificate) for the last three financial years ending on 31-03-2024	

NOTE: -

1) All relevant documents for satisfying the eligibility criteria shall be enclosed in the techno-commercial bid , without which the offer is liable to be rejected without seeking further clarifications. FACT shall have the liberty to verify the documents/data submitted by the vendor as proof for meeting the criteria with Users.
2) Qualified bids as per the Criteria will only be considered for Technical Evaluation. Technically and commercially acceptable Bidders will only be considered for Price Bid opening. Copies of all the above documents shall be duly attested by the bidder.
3) Submission of authentic documents for meeting the above technical and financial criteria is the prime responsibility of the bidder. Whenever FACT has concern or apprehension regarding the authenticity/ correctness of any document , FACT reserves the right of getting the documents cross verified from the document issuing authority.
4) IMPORTANT: In case of ambiguity or incomplete or non submission of required relevant documents along with bid, FACT reserves the right, at its option, to reject the Bidders Bid without assigning any reason and without notice.

COMPLIANCE STATEMENT

Sl. No.	Terms	Bidder confirmation
1	The items shall be supplied as per data Sheet No: CD-NP-ACB-RETROFIT	
2	The equipment supplied shall be warrantied for 12 months from the date of commissioning or 18 months from the date of supply at FACT CD stores, whichever is earlier.	
3	Period of Contract: As per Clause No. 2.0 of Special Terms and Conditions of the TPS.	
4	Payment Terms: As per the clause 3.0 of the Special Terms and Conditions of the TPS.	
5	Liquidated Damages: As per Clause 4.0 of the Special Terms and Conditions of the TPS.	
6	Please confirm : Price Basis – FOR FACT Stores (as per Gem T & C)	
7	Please confirm : Taxes and Duties - The Price offered in GEM is all inclusive of TAX. (as per Gem T & C) Please mention the GST %.	
8	Please Confirm: A Performance Bank Guarantee of 10 % of the total contract value shall be furnished as per the FACT Proforma valid for a period of 12 months with a claim period of 6 months from the date of expiry.	
9	Please confirm: The BG shall be submitted strictly as per the FACT provided proforma without any deviations	

Note : All the above columns shall be filled properly, without leaving blanks. Please upload / return this document duly filled-in, along with your bid.