| **SN** | **Bidder Sl. No** | **Clause reference**  | **Provision in Specification** | **Bidder’s Query** | **POWERGRID Reply** |
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| 1. |  | '2. Technical specifications folder: 1-4 Annexure-IV\_Details of System Studies to be performed.pdf, Page 1 of 6, section 3 | The load flow and dynamic file available with the owner shall be provided to the contractor in PSSE version 34 format. If additional data is required it shall be intimated to owner at least 3 weeks before study commencement. If data is not available (same shall be confirmed by owner), typical data shall be assumed by the contractor.  | One set of PSS®E load flow file (All India Solar Case v34.sav) and dynam-ic data (All India Solar Case.dyr file) received during bid stage. The dynamic study shows that the network is unstable/not converged after clearing the three-phase fault. Hitachi Energy assume that PGCIL will provide two revised network scenarios with stable and converged in PSS®E during post-bid stage/early stage.  | Available details/data shall be shared with the successful bidder during detailed engineering. |
| 2. |  | 4.0 STATCOM Specification Rev-2 May-2020.pdf Clause 10.1 Factory Tests of Controls | b. The simulator should provide an accurate network representation including network harmonic behavior, as well as synchronous condensers, power stations, generators (with AVRs), and pump storage schemes, existing HVDC, SVCs and STATCOMs, future SVCs and STATCOMs, FSC(fixed series capacitors), and shunt reactors/ capacitors/ filters. | In continuation to Sl no. 16 ( page 6), clarification No-01 ( Technical) dated 21/12/2023 ( Part 1 of 2), Dynamic data of nearby other STATCOM devices that are presented in the vicinity of Ramgarh STATCOM station is not provided in dyr file. In order to capture the dynamics of entire network, Bidder request the customer to provide the user defined model and standard library dynamic models of other STATCOM/SVC/HVDC and solar models.  | Available details/data shall be shared with the successful bidder during detailed engineering. |
| 3. |  | 4.0 STATCOM Specification Rev-2 May-2020.pdf10.1 b), Page 56 | The simulator should provide an accurate network representation including network harmonic behavior, as well as synchro-nous condensers, power stations, generators (with AVRs), and pump storage schemes, existing HVDC, SVCs and STATCOMs, future SVCs and STAT-COMs, FSC (fixed series capacitors), and shunt reactors/capacitors/filters. The bidders and vendor should provide information on the simulator studies to the client prior to the tests being undertaken. | In continuation to page 3, Sl No. 6, Clarification No. – 03 dated 01/01/2024 (Technical), The Above PPSE files can't be used for developing RSCAD files/model.  As per Sl no. 216 (page 65), clarification No-01 ( Technical) dated 21/12/2023 ( Part 1 of 2), The required data/details (the representative detailed models of synchronous condensers, generators (with AVRs), existing HVDC, SVCs and STATCOMs, future SVCs and STATCOMs models in RSCAD format without any need for additional tuning and adjustment) shall be shared with bidder during detailed engineering as mentioned by the customer.  | Available details/data shall be shared with the successful bidder during detailed engineering. |
| 4. |  | Technical Specification: Section-STATCOM Station, Rev02 (May, 2020) Clause 6.1 f) STATCOM Station Ratings: | The STATCOM Station should be capable of repeating temporary operation as defined in any one of item (d) and (e) as above for at least 3 charging cycles in 60mins. | The time duration to be considered in between the two consecutive charging cycles is not available in the tender specifications. The text in IEEE 1052-2018 8.1 i) also says "repeating temporary operation every \_\_\_min". Due to lack of information, Bidder assumes that the duration between two consecutive cycles is approximately 19 minutes. (3 cycles in 60mins). Kindly confirm. | Bidder to quote as per provision of bidding documents.  |
| 5. |  | Technical Specification: Section-STATCOM Station, Rev02 (May, 2020): Clause 6.1.3, | Undervoltage strategy:For transmission system voltages down to 0.3 pu, the STATCOM units must operate unrestricted, producing its rated capacitive current. | During Unsymmetrical faults, the rated VSC capacitive current is not possible to deliver to grid. The STATCOM will support the grid by injecting maximum capacitive reactive current within its physical limitation. The amount of current an MMC valve can output during these scenarios is fault type dependent where the converter can output rated current for symmetrical faults but less current during unsymmetrical faults (since a portion of the converter capacity will be required for VSC valve DC capacitor balancing).  | Bidder to quote as per provision of bidding documents. |
| 6. |  | Amendment No. – 01 (Technical) dated 21/12/2023 to the Bidding Documents of STATCOM PACKAGE ST-02T for a). ± 1x300 MVAr STATCOM with 2x125 MVAr MSC, 1x125 MVAr MSR at Ramgarh along with associated bays in Bus Section-I; b). ± 1x300 MVAr STATCOM with 2x125 MVAr MSC, 1x125 MVAr MSR at Ramgarh along with associated bays in Bus Section-II under “Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part C1”; Spec. No.: CC/NT/W-STAT/DOM/A00/23/11098. S.No:6 | a) With the STATCOM Station operating at any load upto rated value and within the design range of firing angle, the radio interference level from electromagnetic or electrostatic inductions generated by the STATCOM station shall not exceed 100 micro-volts/m, under fair weather conditions, at any point of substation boundary or 500m outside the STATCOM station fence whichever is closer. The actual points of measurement shall be decided during detailed engineering. The RIL criteria shall be achieved at all frequencies within the range of 150 KHz to 300 MHz and with the STATCOM operation at any level upto and including rated value, the design shall provide correcting measures, should the specified design not being realized in the final installation. | “Based on Hitachi Energy expertise and experience, we don’t foresee any STATCOM can meet the requirement on radio interference levels of 100 micro-volts/m at site boundary if the distance between the STATCOM and the boundary is shorter than 500 meters. Performing measurement and evaluating radio interference inside the near field of the source is not relevant nor reliable when comes to electromagnetic fields in the range of 100 kHz – 10 MHz. Additionally, at this distance, corona discharges and sparking from the substation will heavily inflict on the measurements. Hitachi Energy considers that Cigré Technical Brochure 391 is the only applicable standard to evaluate electromagnetic disturbance from a STATCOM and the proposed 2x300 Mvar Hitachi Energy SVC Lights will meet the requirements presented in Table F.1 (limit 2) at 200-meter distance.Radio interference measurements will be performed according to Cigré Technical Brochure 391.” | Bidder to quote as per provision of bidding documents. |
| 7. |  | Technical Specification: Section-STATCOM Station, Rev02 (May, 2020) Clause 8.3.2 r) STATCOM Branch | Protection:Overcurrent Protection (50, 51) | Bidder proposes to have Valve overcurrent protection (VOCP) in STATCOM control system (Which is much faser and efficient) that shall provide the necessary overcurrent protection in place of 50, 51 IED protection. | Bidder to quote as per provision of bidding documents.  |
| 8. |  | Technical Specification: Section-STATCOM Station, Rev02 (May, 2020) Clause 6.1.2.13 - Control of Direct current: | During STATCOM operations, any flow of direct current to transformer MV side must be less than 25% of transformer magnetizing current. | Bidder request to modify it as below to be a realistic implementation:"During STATCOM operations, any flow of direct current to transformer MV side must be minimized so that transformer saturation will not occur. " | Bidder to quote as per provision of bidding documents.  |
| 9. |  | Section: Project, 13.7 New para under 8.9 | : Dynamic short circuit test:The Coupling Transformer shall be designed based on the design of similar type of Transformer which has been tested successfully for dynamic short circuit type test.  | As per Cl.no: 13.7 of Technical specification: Section-Project- Rev-00; Short Circuit test report of transformer meeting two conditions absorbed power (30-130%) and Impulse level 1425kVp will be provided. As per IEC 60076-5 Annexure-A, Cl.no: A.3.1, Evaluation of the transformer shall be done by check against the manufacturer’s design rules for short-circuit strength, same will be provided during order stage. IEC 60076-5 Annex-B “Axial forces and winding stresses occurring at short circuit not exceeding 120 % of reference transformer cannot be fulfilled”.Please confirm the acceptance | Bidder to quote as per provisions of bidding documents. |
| 10. |  |  SECTION- TRANSFORMER (UPTO 400 KV CLASS) REV 13 | Clause 10.2 Bushings 420kV, 245kV, 145kV and 52kV Bushings shall be either of the following type: a) RIP (Resin Impregnated paper) condenser type with composite polymer insulator (housing) b) or RIS (Resin Impregnated Synthetic) condenser type with composite polymer insulator (housing).  | Bidder would like to clarify the following,1. Our MV nominal voltage is 45.6kV and rated current is greater than 4100A2. We do not find any manufacturer supplying RIP / RIS bushings of this rating anywhere across globe.Therefore We kindly request PGCIL to accept to have MV side of the Coupling Transformer shall be of OIP type, due to the non-availability of RIP bushing at the desired rating. | Bidder to quote as per provisions of bidding documents. |
| 11. |  |  Technical Specification: Section-STATCOM Station, Rev02 (May, 2020), Section 6.1.2.1, | Voltage Control Mode (Automatic and Manual) | Bidder understands that only Automatic voltage control mode is applicable for STATCOM unit. Bidder assumes that the Manual mode referred to here is a provision to have voltage reference setpoint from a user interface (HMI). | Voltage control mode shall be automatic as per Technical specification and shall also additionally be settable on manual mode.  |
| 12. |  |  Technical Specification: Section-STATCOM Station, Rev02 (May, 2020), Section 6.1.2.2,  | Fixed Reactive Power Control Mode:In this mode, the reactive power output of the STATCOM as well as switching of MSRs and MSCs, should be manually controlled, by direct operator action. | Bidder assumes that the switching of MSCs and MSRs will be manual operated from the operator end, when STATCOM is under fixed reactive power control mode. Bidder also would like to clarify that an automatic control of MSCs and MSRs from STATCOM control system is possible only when STATCOM is in Voltage Control Mode. | Bidder to quote as per provisions of bidding documents. |
| 13. |  |  SPECIFIC REQUIREMENT’S (Section- Project) C/ENGG/SPEC/SEC-PROJECT/SPECIFIC REQUIREMENT REV NO 08, Annexure S5, | Typical Architectural Drawing of Substation Automation System. | Based on discussions with PGCIL, Bidder understands that the redundant Gateways shown in hot-hot configuration is part of the substation SAS scope and from STATCOM control building only necessary communication interfaces will be terminated to these gateways to facilitate the communication of STATCOM related signals via SCADA to both RSCC and AMC control centers. | Kindly refer clause no 2.2.1. h) of section project. |
| 14. |  |  SPECIFIC REQUIREMENT’S (Section- Project) C/ENGG/SPEC/SEC-PROJECT/SPECIFIC REQUIREMENT REV NO 08, Annexure S5, | Typical Architectural Drawing of Substation Automation System. | Bidder assumes that the substation's IEC 61850 network will be a non-PRP network and hence necessary conversion devices are considered to faciliate the data exhange between the PRP network (STATCOM control system) and the non-PRP network (substation SAS). | Bidder to quote as per provisions of bidding documents. |
| 15. |  | General |  |  Exact site location, plot details demarcated for STATCOM station and geotechnical information of the  | Tentative coordinate of site location already conveyed to bidder through amendment. Further, Soil Investigation is in the scope of the bidder. |
| 16. |  | General |  | Amendments defining the spare parts for VSC Converters either in terms of percentage (%) or Rating (in MVAr) as highlighted in our letters dated on 26th December 2023 and 08th January 2024  | Bidder to quote as per provisions of bidding documents |
| 17 |  | General |  | Provision of Price variation for the coupling transformers, as this is special application transformer neither our own factories nor 3rd party OEMs are willing to offer Firm price  | Kindly refer reply of similar query under clarification-I & IV |