| **SN** | **Bidder Sl. No** | **Clause reference**  | **Provision in Specification** | **Bidder’s Query** | **POWERGRID Reply** |
| --- | --- | --- | --- | --- | --- |
|  |  | **Electrical** |  |  |  |
| 1. |  | 4.0 STATCOM Specification Rev-2 May-2020.pdf | 6.1.2.6, Page 12The STATCOM shall provide necessary damping to power oscillations by modulating its output in its entire range based on measured rate of change of power/frequency at the 400 kV bus. The damping controller would track local area oscillations as well as wide area oscillations and control would include several loops each focused on different frequency&Clause 9.2.1 iii. | The power oscillation damping is probable only with the VSC branches. The power oscillation damping controller will be provided and its functionality shall be tested in the RTDS simulation setup on a test network and parameters to prove the working of the controller. The actual parameters for the POD controller needed for the project and the impact of the STATCOM on the inter-area oscillations are evaluated in a separate POD study that will be executed in the project execution phase in the software PSSE. As input for the design of a power oscillation damping function, information (amplitude, frequency and damping) of the expected and already known power oscillation modes is required. Furthermore, for the design and validation of the damping controller, a dynamic model of the AC network shall be provided by the customer in the software PSSE (both the load flow and the dynamic files), where the above-mentioned oscillations which are observable or expected can be simulated in the software. In case the necessary input data cannot be provided, a POD structure will be implemented, however the parameters to handle real life incidents will not be in the scope of bidder.  | POD Studies shall be carried out by the bidder as per simulation files provided to the bidder. In case, additional study files, for real time frame, are required by the bidder for additional POD studies, same shall be provided by bidder after receipt of same from CTU/Grid India at that stage, if available.  |
| 2. |  | 4.0 STATCOM Specification Rev-2 May-2020.pdf | 6.1.4, Page 14The system should be able to withstand any 3 phase 5 cycle (100 ms) and single phase 10 cycles (200 ms) fault with consequent loss of a 400 kV double circuit line and loss of a 500 MW generator. The fault duration mentioned above correspond to time assumed for persistence of fault. For other system parameters refer clause 5 above (Power System Characteristics). In addition to above requirement, system contingency cases attached in Section Project shall also be considered. | This requirement is vague and therefore only the contingency cases provided in Section Project will be considered. In case this particular statement needs to be considered, a network file where the 400kV double circuit line in question as well as the 500MW generator is identified, fault case defined and added as an addenum to the contingency cases provided in Annexure-I in the clarification phase. No additional cases shall be considered after project award or during project execution phase.  | Contingency cases to be performed mentioned in section project. |
| 3. |  | 4.0 STATCOM Specification Rev-2 May-2020.pdf | 9.2.1, Page 54System dynamic performance studies  | If possible most of the system dynamic performance studies will be performed on the real time simulator during FAT. If needed, some studies (namely the POD and interaction study) in this section will be performed in the software PSSE.  | Bidder to quote as per provision of bidding documents. |
| 4. |  | 4.0 STATCOM Specification Rev-2 May-2020.pdf | 9.3, Page 57Electromagnetic transients, control performance, and overvoltage studies  | If possible most of the system dynamic performance studies will be performed on the real time simulator during FAT. If needed, some studies (namely control interaction study) in this section will be performed in the software PSSE.  | Bidder to quote as per provision of bidding documents.  |
| 5. |  | 4.0 STATCOM Specification Rev-2 May-2020.pdf | 9.7 b), Page 56The vendor should provide a detailed STATCOM Station transients model for use in [PSCAD and EMTP-RV] transients simulation software. The model detail should be appropriate and complete for transient response calculation of the STATCOM Station. All appropriate control features for such analysis will be modeled, and necessary documentation on the theory and use of model should be provided.  | To conform to SIEMENS intellectual property rights, the PSCAD user defined model will be encrypted, allowing the customer to modify the essential HMI-parameters itself, to perform their own studies. The PSCAD model is coded for the customer exclusively, not allowing distribution to 3rd party (e.g. consultants). No source code will be delivered. In case there are multiple entities involved (especially CEA/CTU/GRID-INDIA) the UDM shall remain within CEA/CTU/GRID-INDIA and confidentiality shall be maintained.Can Powergrid confirm if EMTP-RV model is needed or is this is a copy from an older version of the specification? | Kindly refer amended clause no 13.9 of section project. |
| 6. |  | 4.0 STATCOM Specification Rev-2 May-2020.pdf | 10.1 b), Page 56The 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. The bidders and vendor should provide information on the simulator studies to the client prior to the tests being undertaken. | In case the simulator model should have an accurate representation, the necessary models in the corresponding software (RSCAD) should be submitted by the customer. In case this is not available, a generic representation of these elements (HVDC, SVC, FSC, future SVCs, Solar parks, windfarm parks, user defined models etc.) will not be considered owing to the result mismatch or system instability owing to generic models/dynamic parameters. The conclusions resulting from such assumptions are not technically viable. | Network files i.e PSSE load flow(.raw) & dynamic(.dyr) files are already provided The above files may be used for developing RSCAD files/ model.  |
| 7. |  | 1.0 Sections\_Project\_Statcom Ramgarh.pdf | Section 1 Annexure-IV, Page 1STUDIES TO BE CARRIED OUT BY THE CONTRACTORI. Load flow studies : 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.  | No typical data shall be assumed by the Contractor. Any assumptions if any need to be updated in the respective PSSE files by the customer and re-submitted back to Pns. Any revisions or updates of these PSSE files shall be provided within 1 Month from Date of Award to avoid delays and additional work. | Bidder to quote as per provision of bidding documents.  |
| 8. |  | 1.0 Sections\_Project\_Statcom Ramgarh.pdf | Section 1 Annexure-IV, Page 1II. Other Design studies: POD controller needs to be tuned based on the present and future scenario. | The actual parameters for the POD controller needed for the project and the impact of the STATCOM on the inter-area oscillations are evaluated in a separate POD study that will be executed in the project execution phase in the software PSSE. As input for the design of a power oscillation damping function, information (amplitude, frequency and damping) of the expected and already known power oscillation modes is required. Furthermore, for the design and validation of the damping controller, a dynamic model of the AC network shall be provided by the customer in the software PSSE (both the load flow and the dynamic files), where the above-mentioned oscillations which are observable or expected can be simulated in the software. In case the necessary input data cannot be provided, a POD structure will be implemented, however the parameters to handle real life incidents will not be in the scope of bidder.  | Kindly refer reply at Sl no.1. |
| 9. |  | 1-4 Annexure-IV\_Details of System Studies to be performed.pdf | Section 1 Annexure-IV, Page 3Contingency Cases for Ramgarh STATCOM | In case there are contingencies defined which involves modelling of any network elements in the real time digital simulator namely - HVDC, SVC, FSC, future SVCs, Solar parks, windfarm parks, user defined models etc, these will simulated only if the above comment on the submission of the respective models in RSCAD format is accepted by the customer.  | Bidder to quote as per provisions of bidding documents. |
| 10. |  |   | GeneralSafe Bearing Capacity | We have considered SBC of 15ton/Sqm at a depth of 1.5M from the FGL for proposed STATCOM portion. Kindly confirm. | Soil Investigation is in the scope of bidder.  |
| 11. |  |   | Billing Price ScheduleBilling Price Schedule | Bidder understand that as per BPS Statcom Portion shall be measured and payable under item no 20 i.e Civil Works (AS PER CONTRACTOR DRAWING) and Interconnecting and 400 kV Portion shall be measured and payable under item no 9. i.e Civil works as per Technical Specification and Employer supplied drawings.Kindly confirm.  | Confirmed. |
| 12. |  |   | SiteDrain Outfall point | Bidder requests PGCIL to provide the distance of drain outfall point from the STATCOM yard fencing. | Shall be provided during detailed engineering. |
| 13. |  |   | Technical specification: Section-Project- Rev-00Annexure VI- STATCOM BUILDING - GENERAL REQUIREMENTSStatcom Building | Bidder understand that they are free to design the size, number of floors and height of the building. Kindly confirm. | Area & height of STATCOM building shall be decided during detailed engineering complying the requirement of technical specifications. |
| 14. |  |   | Technical specification: Section-Project- Rev-002. SCOPE OF WORK 2.2.2 Civil works3 aSite levelling of STATCOM Yard & 400 kV Yard as per contours provided by the contractor. HFL (Highest Flood Level) data shall be arranged by contractor duly verified by employers site officials for finalization of FGL (Finished Ground Level). | Bidder understand that the said work of site levelling shall be measured and payable under respective line items of BPS . Kindly confirm. | Confirmed. |
| 15. |  |   | SiteExisting Fencing | Bidder understand that there is no existing fence for proposed substation. Hence no dismantling is required. Kindly confirm. | Confirmed. |
| 16. |  |   | SiteLandscaping | No landscaping/ beautification of yard considered under present scope. Kindly confirm | Confirmed. |
| 17. |  |   | SiteDismantling | No dismantling works and any kind of work regarding underground structures/cables/sewage etc. has not been considered under present scope of work. Kindly confirm. | Confirmed. |
| 18. |  |   | SiteLevel of Substation | We have considered that complete station shall be on single bench/level only. Kindly confirm | To be decided during detailed engineering as per contour layout. |
| 19. |  |   | SiteRetaining Wall/ Structures | Bidder understand that there is no retaining wall or retaining structure in the present scope of works. If required the work shall be measured and payable under respective line items of BPS. Kindly confirm. | Confirmed. |
| 20. |  |   | SiteUnderground/ overhead services | We assume that no underground or overhead services like transmission line, water pipes, drinage, burried cables, underground structures etc.. are not envisaged with proposed Switchyard. Kindly confirm | Confirmed. |
| 21. |  |   | SiteTemporary Bench Mark | Bidder requests PGCIL to share the coordinates and elevation of temporary bench mark within site premises. | Contouring is in the scope of bidder |
| 22. |  |   | SiteSite office/labor colony/store | Please confirm us that necessary land for site office/store/labor colony/batching plant will be provided to us by PGCIL in the area under present scope. | Bidder to quote as per the provisions of the tender documents. |
| 23. |  |   | SiteHinderance Register | Hinderance register shall be maintained by us at site which shall include the delays due to local land issues, force majures, natural calmaities etc. and extension/compensation shall be provided to us for the same. Please confirm. | Bidder to quote as per the provisions of the tender documents. |
| 24. |  |   | SitePoint of disposal | Bidder Request M/s PGCIL to confirm the distance and location of disposal point for excavated earth and dismantled debris. | Please refer clause no. 5.5 of Technical Specifications, Section: Civil Works Rev 11A. |
| 25. |  |   | SiteUse of Manufacture Sand | Kindly confirm, Manufacture sand can be used as an option to river sand for all the civil works. | Confirmed. kindly refer SFQP uploaded on POWERGRID website. |
| 26. |  |   | SiteTree, Vegetation and Land Clearance | The Bidder understands that M/s PGCIL shall provide ready to construct land to start the construction activities. Kindly confirm. | Bidder to quote as per the provisions of the tender documents. |
| 27. |  |   | SiteConstruction power and water | We assume that construction power and water will be provided at one point within the proposed Switchyard free of cost. Kindly confirm | Kindly refer, clause no 14.3 of Section GTR rev 15 for Facilities to be provided by Employer. |
| 28. |  |   | SiteTesting Laboratory | We request you for the details on the approved construction material testing laboratory. | Details can be collected from POWERGRID regional office. |
| 29. |  |   | SiteHinderances in the proposed site  | We understand that encumbrance free land shall be handed over to us. No dismantling, tree cutting, jungle clearance etc. is under present scope of works. Please confirm. | Bidder to quote as per the provisions of the tender documents. |
| 30. |  |   | SiteConstruction material field testing | Request M/s PGCIL to provide the detail of approved test labs. | Details can be collected from POWERGRID regional office. |
| 31. |  |   | SiteConstruction material Approved Makes | Request M/s PGCIL to provide the detail of approved makes for Cement, Reinforcement Steel, Structural Steel etc. | Kindly refer Compendium of Vendor and SFQP uploaded on POWERGRID website. |
| 32. |  | Price ScheduleSch-1b | 1.1.3 MV Switchgear for STATCOM Unit1.1.4 MV Switchgear for STATCOM Unit including bypass switch1.1.5 Charging Resistor  | As per existing provision in Price Schedule, allocation of MV switchgear equipment is ambiguous since it is covered both in 1.1.3 and 1.1.4. Bidder request PGCIL to amend the Price schedule as follows:1.1.3 MV Switchgear for STATCOM Unit1.1.4 Bypass switch including Charging Resistor for STATCOM Unit | Quantities and items types in Part-A of BPS are to be assessed by vendor, hence, Bidder to quote in BOQ (part-A), considering that all the items required for scope completion have been envisaged. No Change is envisaged in BPS items.  |
| 33. |  | Price ScheduleSch-1b | 1.1.9 Other misc. item, accessories etc. | Bidder requests to amend the Price Schedule as follows:1.1.9 Other misc. item, accessories etc. **(If required as per bidder design)** | Kindyl refer reply at sl. no 32. |
| 34. |  | Price ScheduleSch-1b | 10 Erection hardware items & other miscellaneous item for STATCOM Station installation (if not covered under any head) | Bidder requests to amend the Price Schedule as follows:10 Erection hardware items & other miscellaneous item for STATCOM Station installation (if not covered under any head)**(If required as per bidder design)** | Kindyl refer reply at sl. no 32. |
| 35. |  | Price ScheduleSch-1b | Sl No. 9.1MV & **HV Bus work** Including Post Insulators, Bus Bar Material, Clamp, Connectors, Clamps ,Connectors, Earthing Material, insulator hardware, hardware string, spacers, erection hardware for auxilliary system etc including all accessories. | Bidder understands that HV Bus work items and Erection hardware from 400kV Bay in Substation to 400kV Bushing of Coupling Transformer is included in *"Sl No. 13 Erection Hardware (400 kV Switchyard upto take off Gantry)".* Please confirm.If required, please amend price schedule as follows:*"Sl No. 9.1 MV ~~& HV~~ Bus work Including Post Insulators, Bus Bar Material, Clamps ,Connectors, Earthing Material, insulator hardware, hardware string, spacers, erection hardware for auxilliary system etc including all accessories."*and *"Sl No.13 Erection Hardware (From 400kV Bay to Coupling Transformer 400kV Bushing)"and"Sl No. 9 Bus Work (from STATCOM MV yard to 400kV Coupling Transformer Bushing)"* | Bidder to quote as per provisions of bidding documents. |
| 36. |  | Price ScheduleSch-1b | Sl No. 13.2 Bus Post Insulator including support structures | Bidder understands that mentioned item covers 400kV BPI requirement from 400kV Bay in Substation to 400kV Bushing of Coupling Transformer. | 400kV BPI’s required in 400kV bay up to 400kV takeoff gantry are covered under this head. |
|  |  |  |  |  |  |
| 37. | 1. 1.
 | Amendment No. – 01 (Technical) dated 21/12/2023  | SL No. 2The following document are included in the tender drawing of technical specifications: -1. All India Solar Case V34.raw2. All India Solar Case.dyrThe main network files (for solar maximized. Raw) & dynamic (.dyr) files are attached herewith. Network file for evening peak load shall be provided to the selected bidder. **Further, attached data will be updated subsequent to award of package with the latest information available at that time.** | Bidder requests that final and updated Network files are to be provided within 1 month of Award of Contract. Please confirm. | Bidder to quote as per provisions of bidding documents. |
| 38. | 1. 2.
 | Amendment No. – 01 (Technical) dated 21/12/2023  | SL No. 58.2.2 Operator Interfacec. The local HMI shall include the following diagrams as different screens in the display system:i. Complete STATCOM Units and STATCOM Station single line diagram including HV and MV buses showing the switchgear status & measured values. The single line diagram shall be dynamic in nature.ii. STATCOM Valve Sub module Status.**iii. AC Auxiliary supply and distribution.iv. DC Auxiliary supply and distribution.**v. STATCOM Valve cooling systems.vi. Interlocking system.vii. Network Architecture.**All the above screens shall be dynamic in nature.** Further, different color shall be used energized and de-energized state.  | iii. AC Auxiliary supply and distribution.: Dynamic picture up to incomers and bus couplers can be provided. For Distribution (Outgoing feeders), dynamic representation shall not be provided.iv. DC Auxiliary supply and distribution.: Dynamic picture for incommers and coupling module can be provided. For Distribution (Outgoing feeders), dynamic representation shall not be provided. Kindly accept. | Bidder understanding is generally in order. |
| 39. | 1. 3.
 | Clarification No. – 01 (Technical) dated 21/12/2023 (Part 1 of 2)  | Sno. 16Please refer Amendment-I  | The main network files (for solar maximized. Raw) & dynamic (.dyr) files are received. However, response to bidder's query is still pending.  | Bidder to quote as per provision of bidding documents. |
| 40. | 1. 4.
 | Clarification No. – 01 (Technical) dated 21/12/2023 (Part 1 of 2)  | Sno. 441). Confirmed2) Please refer Clause 2.2.1 l) of Section project wherein it is mentioned The hydrant system shall be extended from existing firefighting system in the yard. The Details of existing hydrant system shall be provided to successful bidder during detailed engineering stage.3) The fire detection & alarm system for STATCOM Building is in scope of bidder. These fire detection systems shall be connected to a separate Fire annunciation system clearly identifying the zone. | 1. Noted.2. Kindly provide the tentative location/distance of existing fire hydrant for tapping for STATCOM Building so that we can calculate pressure drop accordingly. | Existing fire hydrant system is capable to cater the requirement additional tap/fire hydrants for STATCOM package. Capacity enhancement of existing FFPH system is not envisaged in present scope of work. |
| 41. | 1. 5.
 | Clarification No. – 01 (Technical) dated 21/12/2023 (Part 1 of 2)  | Sno. 50(1) Required.(2) the design of reactor shall be as per meteorological data from authorized government department/website. | 1. We understand the bird cage protection is not required if bidder confirms compliance to availability and reliability requirements considering air core rector design without bird cage.2. Noted. | Bidder understanding is generally in order, subject to meeting the compliance to availability and reliability requirements. |
| 42. | 1. 6.
 | Clarification No. – 01 (Technical) dated 21/12/2023 (Part 1 of 2)  | Sno. 52Surge counter shall be required for all voltage class HV as well as MV. | We understand surge counters shall mandatorily be provided for Surge arrestors on HV side of coupling Transformers. Providing surge counter for surge arrestor installed in MSR is not possible. | Surge counter shall be required for all voltage class HV as well as MV, except MSR branch, wherein surge arrestor has been installed across the MV reactor. |
| 43. | 1. 7.
 | Clarification No. – 01 (Technical) dated 21/12/2023 (Part 1 of 2)  | Sno. 53The VMS system for is to be provided as per clause 2.2.1 (t) of Section Project. | Noted. However, provision of bidding document is not clear. Please clarify following:- 1. It is not clear that the term "entire switchyard" refers to STATCOM Station switchyard only or associated 400 kV bays and interconnection area also. Please clarify.  | Kindly refer clause no 2.2.1 (t), wherein entire switchyard covers associated 400 kV bays and interconnection area also |
| 44. |  | Clarification No. – 01 (Technical) dated 21/12/2023 (Part 1 of 2)  | Sno.1171) Kindly refer amendment -I2) Communication for control of external devices via existing SAS is to be adopted by the bidder. | 1) Relevant information is not available in Amendment-I.2) Noted | Kindly refer clause no 2.2.1.j for externally contractor devices. It is further clarified that future re requires also subsumed under said clause. |