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Bhutan Power Corporation Limited
(An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company)
Registered Office, Thimphu
Thimphu: Bhutan



103/BPC/CMS/2023/Vol-1/ 32

March 24, 2023

To,
All bidders

Subject: **Tender Document for Up-gradation of 33/11 kV GIS substation at Pelrithnag & Sarpangtar – Clarification.**

Tender No- BPC/C&PD/CMS/TENDER-2023/02

Sir,

Please find enclosed the clarification pursuant to queries from a prospective bidder for the subject cited document. Please note that this are no changes in the tender stipulations on account of these clarifications.

Thanking you,

Yours Sincerely,

(Dorji Kinley)
Senior Manager

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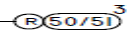
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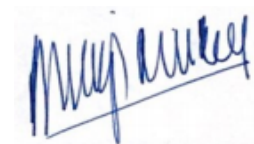
Sr. No.	Reference Document	Clause No.	Page No.	Item	Technical Comments	Remarks
1	Specification	1.8.1	5	Phase To Phase & Phase To Earth Clearance	Phase To Phase & Phase To Earth Clearance shall be as per Type Tested Design.	Noted
2	Specification	1.8.2	5	Creepage Distance	Creepage Distance shall be as per Type Tested Design.	Noted
3	SLD	NA	NA	Bus Riser Cum PT Panel	Bus Riser Cum PT Panel shall be on LHS of B/C Panel.	Noted
4	General	NA	NA	Paint Shade	1) The paint shade shall be RAL9003. 2) Paint shade shall be with Single coat. 3) Paint thickness shall be 50 to 60 Microns.	Should be as per tender specification
5	Specification	3.20	41	MFM	All MFM shall have class: 0.5 with MODBUS (RS 485) protocol. Optical port we have not considered.	Should be as per tender specification
6	Specification	3.6.3	44	Gasket	Gasket for doors and covers is not applicable as per Type tested design.	Noted
7	Specification	3.17.1	48	Control Wiring	1) The VCB Trolley will be wired as per Schneider Electric design. For LV Compartment, FRLS type, standard single-core non-screened PVC cable is used. 2) The following core cross-sections are used: 3) Bus wiring for Panel AC & DC distribution between panels 1.5mm ² black / Gray, 4) Control, interlock and remote signaling circuits: 1.5 mm ² Gray 5) Conventional current transformers: 2.5mm ² R, Y, B, Black, green 6) Conventional voltage transformers: 1.5mm ² R, Y, B, Black, green. 7) Control wiring and ferruling shall be done as per SEIL standard practice.	Noted
8	Specification	3.6.8	44	Construction details	1) The panels are fabricated from CRCA / AluZinc sheets. The use of CRCA is limited to doors and covers only. 2) Load-bearing members are 2.5mm thick sheets, and non-load bearing members are 2.0mm thick. 3) Painting is for the CRCA members only. AluZinc members do not require any painting. 4) All hardwares and construction shall be as per type tested design.	Should be as per tender specification
9	Specification	4.21	57	Routine & Type Test	Routine test shall be followed as per SEIL procedure & Type test already performed on the product, same shall not be repeat since, there is no change in design.	Routine Test shall be carried out as per IEC/IS
10	SLD	NA	NA	Current Transformer Class & VA Burden	Current Transformer VA Burden shall be 5VA/core. We shall provide the detailed calculations for the VA Burden. Also, all feeder CT considered with class: 1.	Please refer SLD and tender specification
11	SLD	NA	NA	Protection Relays	1) The main protection relays shall be as per offer submitted along with DI+DO. 2) Trip Circuit Supervision Relay shall be a part of Numerical Relay. 3) We shall provide comprehensive relay, wherever applicable. 4) Please refer Relay catalogue to confirm the model.	Should comply with tender requirement
12	SLD	NA	NA	Differential Protection	Any type of Differential protection is not applicable as per SLD. However, we shall consider Trafo Diff. Core (3rd core of CT) for the Incomer feeder.	Noted
13	NA	NA	NA	Reference Document	We have referred document "Section IV – Technical Specification" for this enquiry.	
14	General	NA	NA	Scope	1) Our scope is limited to supply of Air Insulated HT switchgear with Vacuum circuit breaker for indoor application only. 2) Installation, testing and commissioning of HT switchgear, delivery till site (panel freight), unloading at site, storage at site, dismantling of existing switchgear, supplying of adaptor panel with existing switchboard, erection and handing over, cable termination kit and related accessories, site testing & commissioning, relay programming, site training, supervision and performance, lodging & boarding shall exclude from our scope. 3) However, Delivery of panel till site (panel freight), Supervision and Commissioning, shall be done on demand basis. 4) Offered switchgear confirms IEC 62271-1 standard and shall be in line with type tested report.	Should be as per tender specification
15	General	NA	NA	Internal Arc	Offered HT panel is type tested for Internal Arc at 1sec as per type tested design.	Should be as per tender specification
16	Specification	3.3.1	41	Busbar	1) The main busbars shall be Copper with Flat type as per type tested design. 2) Busbar shall be provided with Honsung make PVC sleeve as per type tested design. 3) At joints insulation is done using PVC shrouds. FRP Shrouds are not applicable as per type tested design. 4) Busbar phase barrier shall not be applicable as per type tested design. 5) The rise in temperature over design ambient shall be governed by IEC 62271-1.	Should be as per tender specification



Sr. No.	Reference Document	Clause No.	Page No.	Item	Technical Comments	Remarks
17	General	NA	NA	Circuit breaker	1) The breaker shall be provided with 6NO + 6NC for 6.6/11kV. 2) Breaker operating duty cycle shall be O-0.3s-CO-3min-CO. 3) VAcuum Circuit Breaker shall be supplied with E2-M2-C2 calss, all relavent interlocks, endurance operation (up to 10,000) shall be as per IEC 62271-1 by type tested design. 4) All breaker shall have two distinct position (Test & Service). The isolated position refered to as draw out position. 5) Berakers only with same rating are facilitate to interchange with each other. 6) Any additional contacts if required shall be provided through contact multiplication by auxiliary contactor / SE approved suitable relay.	Should be as per tender specification
18	General	NA	NA	Current Transformers	1) CTs shall be multi-core Ring/ Wound/Window type, as per design feasibility for offered panel. 2) CT Insulation Class: E 3) The jumpers connected to CT shall be rated according to CT rating as per specification. 4) Differential protection, if any shall be acheived through PS class core with same CT of Metering & Protection core.	Should be as per tender specification and SLD
19	General	NA	NA	Potential Transformers	1) VA burden for VTs shall be based on the connected load. Detail calculation for the same shall be provided during DE. 2) PT Insulation Class: E 3) Line PT shall be mounted on breaker trolley for 3.3/6.6/11kV, if any.	Noted
20	General	NA	NA	Protection Relays	1) The main protection relays shall be non-witdrawable/ non-draw out type. The same shall be multi function type. However, Rear terminals can be withdrawn for maintainance purpose. Protection functions have been considered as per specification via Goose messaging. 2) The main protection relays shall be based on communicable protocol of MODBUS (RS 485) . 3) DI/DO for relays have been considered as per our offer submitted. However, kindly provide excact DI+DO requirement, if any specific I/O list is available. 4) Trip Circuit Supervision Relay shall be a part of Numerical Relay. 5) Relay shall be as per offer submitted. Please confirm the same. 6) All Relays shall be connected in loop and final termination shall be connected with Ethernet Switch, if Ethernet Switch is applicable.	Should be as per tender specificaliton and please note that "The main protection relays shall be based on communicable protocol of MODBUS (RS 485)/IEC61850).
21	General	NA	NA	Meters	1) All provided meters on MODBUS (RS 485) protocol and concerned indication shall be given digital type. 2) Wherever required, converter shall be used for Ethernet Switch connection. 3) All Meters shall be connected in loop and final termination shall be connected with Ethernet Switch, if Ethernet Switch is applicable.	Should be as per tender specification
22	General	NA	NA	Surge Arrester	1) Surge Arrster shall be calss-I/Class-II type, depending on application. The same be applicable for motor / capacitor / dry type transformer feeders only. 2) We do not envisage the requirement of any additional RC unit for the same.	Noted
23	General	NA	NA	Operating & Mounting Height of Componenet	Operating & Mounting height of instrument shall be as per type tested design.	Noted
24	General	NA	NA	Loose Accessories, Ethernet Switch, Laptop, Loose cable, Fiber Optic Cable, LIU, BCU, RTU, Converters/Adaptors, etc.	1) Supply of any Loose Accessories, Ethernet Switch, LIU, CAT-6 cable, Fiber Optic Cable, Laptop, patch cord, BCU, RTU, finterface, external devices, hardwares, Ethernet Switch Protocol converters, converters/Adaptors, etc is not excluded from our scope of supply. 2) All numerical relays (RJ 45 cable) shall be connected in loop and final termination shall be connected with Ethernet Switch, if any.	Noted



Sr. No.	Reference 'Document	Clause No.	Page No.	Item	Technical Comments	Remarks
25	General	NA	NA	Thermal/ Humidity Sensors	1) We shall propose Thermal Sensors at cable compartment with HMI display, which shall provide 24X7 monitoring of temperature. 2) We shall also, propose Thermal Sensors at Busbar compartment with HMI display, which shall provide 24X7 monitoring of temperature. The same shall be considered as an optional offer. 3) This activity shall avoid physical activity to go to particular panel for physical measurement. 4) The same shall provide the early detection/alarm before failure, which will help to run your switchgear panel continuously. 5) In line with above, with support of above sensors we can achieve preliminary action as a preventive maintenance, which will help us to reduce downtime of maintenance & early failure alarm indication. 6) Further detailed insights shall be shared with customer based on request.	Noted
26	Specification	3.7.1	45	Earth bus	The earth bus shall be bare Copper with single run of max. size shall be 50X6 sqmm . Sizing of the same shall be as per our type tested design.	Should be as per tender specification
27	General	NA	NA	Earthing Truck	Optional offer for Earthing Truck shall be given with breaking capacity as per type tested report.	Panels are provided with earth switch / Earthing truck
28	General	NA	NA	Packing & Shipping	Our standard packing & Shipping procedure shall be followed. Kindly refer the detailed technical writeup.	Should be as per tender specification
29	General	NA	NA	Disconnecter/ Battery Bank/ Adaptor/ Adjacent/ Dummy/ Marshalling/ CRP/ Metering Panel	1) Disconnecter/ Battery Bank/ Adaptor/ Adjacent/ Dummy/ Marshalling/ CRP/ Metering panel, if any is not in our scope of supply. 2) However, requirement of dummy panel will be finalized during detail engineering.	As per the BoQ
30	General	NA	NA	Nameplates	Name plate shall be as per standard SEIL practice. '- Switchgear rating plates are performed as adhesive plastic foil. - Labels for internal devices are performed as plastic stickers. - Panel name plates are performed Black Acrylic Sheet (Dimension-140x70 Sqmm).	Should be as per tender specification
31	General	NA	NA	Warranty	We shall provide standard warranty of 12-18Months. If any additional warranty required same shall be finalized during commercial discussion.	Should be as per tender specification
32	General	NA	NA	Training	We shall arrange training for switchgear at Vadodara factory. The same shall be decided during commercial discussion. If any training required at site same shall be decided during commercial discussion.	Should be as per tender specification
33	General	NA	NA	Special Tools & Tackles	We do not envisage Special Tools & Tackles, if any.	Please refer tender specification clause 1.9 Spare Parts, Tools and Appliances
34	General	NA	NA	Make List of component	Make list of all component shall be as per attached.	Noted
35	General	NA	NA	Spares	Spares shall be as per offer submitted, if any.	Should be as per BoQ
36	SLD	SLD	NA	2.5 MVA Trafo outgoing feeder	As per Technical Specs section IV clause 4.19 REF (High impedance part of Main numerical relay) protection is considered for 2.5MVA Trafo feeder	Noted, however you are asked to provide PS class CT (3rd Core) as per the SLD
37	SLD	SLD	NA		We have not considered 87 trafo differential protection for any of the feeder	
38	SLD	SLD	NA		For O/g & I/c feeder Relay symbol is shown with 3 qty of relay  lease note the same shall be single numerical only	Please refer tender clause 4.0 (Relay and Protection) sub-clause 4.22
39	Note		NA		MFM and Numerical relay protocol shall be Modbus as per Technical specification.	Noted
40	SLD	SLD	NA	Primary fuse requirement at bus side and line side VT	We do not provide Primary fuse at bus side and line side VT since it is not applicable	Noted
41	SLD	SLD	NA	Cable sizes	As per Technical specs we have considered Cable sizes as follows 1 run X 3Cx300 sq.mm XLPE Al cable for incomer Feeder 1run X 3Cx185 sq.mm XLPE Al cable for outgoing feeder	To be clarified during the site visit (which is compulsory)
42	SLD	SLD	NA	BUSVT Panel	Bus VT will be part of any outgoing feeder separate Bus VT panel will not be provided	Noted
43	SLD	SLD	NA	MFM in Bus PT	We will not provide separate MFM in Bus PT as it will be part of outgoing feeder	Noted
44	SLD	SLD	NA	Energy meter	All feeders will be provided with MFM hence not separate additional meter /Energy meter shall be provided	As per tender specification



Sr. No.	Reference 'Document	Clause No.	Page No.	Item	Technical Comments	Remarks
45	Technical Specs section IV	Clause 1.10 .e page no 8 of 105	NA	Wiring	The drive cabinet will be wired according to Schneider Electric design. For LV Compartment Standard single-core non-screened PVC cable is used. The following core cross-sections are used: Bus wiring for Panel AC & DC distribution between panels 2.5mm ² black / Gray, CB , disconnecter basic circuits: 1.0mm ² Black (Standard) Control, interlock and remote signalling circuits: 1.5 mm ² Gray Releases and mechanism motors: 1.5mm ² Gray Conventional current transformers: 2.5mm ² R, Y, B, Black, green Conventional voltage transformers: 1.5mm ² R, Y, B, Black, green	Noted
46	Technical Specs section IV	1.8.1	NA	Clearance	Clearance shall be as per our Type tested design panels	Noted
47	Technical Specs section IV	1.8.1	NA	Creepage	Creepage shall be as per our Type tested design panels	Noted
48	Technical Specs section IV	1.10,	NA	Control Supply	240V AC control supply and 110 V Dc supply source shall not be in our scope we shall only make necessary arrangement to distribute the same inside switchboard	Noted
49	Technical Specs section IV	2.4.1	NA	Feeder and Busbar rating	As per SLD we understand that busbar rating , Incomer B/c and outgoing rating is 630 A kindly confirm	Noted
50	Technical Specs section IV	3.2	NA	Operating sequence	Rated Operating Sequence shall be O-0.3Sec-CO-3Min-CO	Noted
51	Technical Specs section IV	3.2	NA	Earthing truck	panels are provided with earth switch , Earthing truck is not applicable	Panels are provided with earth switch / Earthing truck
52	Technical Specs section IV	3.20,	NA	TTB	TTB shall not be provided .CT terminals are provided with disconnecting terminals	Noted
53	Technical Specs section IV	4.2	NA	Master trip , TCS	Master trip & TCS shall be integral part of Main numerical relay , hence seprate relay for the same shall not be provided	Noted
54	Technical Specs section VI	List of approved makes	NA	Lightning arrestors	Make of components for Lightning arrestors shall be NKT or Euromold	Noted
55	Technical Specs section VI	List of approved makes	NA	CT/PT	Make of CT / PT shall be NPT/ECS for Feeder & for B/c Ritz / Zelisko make	Noted (Appendix - II)
56	Note			CT	CT ratio is not specified we have assumed the same as mentioned in BOQ and in case of any change in the same during detailed engg shall be charged extra	Noted
57	Technical Specs section VI	Section VI-B (1.1.5.2)(m)	2	Bi-directional flanged wheels suitable for 1676 mm rail gauge	Rail gauge = 1000 mm	Should be as per BPC tender specification
58	Technical Specs section VI	Section VI-B (1.1.6.1)(g)	2	Tap changer = On load on HV Winding	Tap changer = Off Circuit Tap Changer onHV Winding	Noted
59	Price Schedule	Schedule 1 - Supply and Schedule 2 - Gelephu- Erection, Testing & commissioning		33/11 KV, 2.5 MVA power transformer with NCT (including RTCC Panel)	33/11 KV, 2.5 MVA power transformer withNCT	Noted
60	Technical Specs section VI	Section VI-B (1.1.14.1)	5	Marshalling box : The degree of protection shall be atleast IP65	Degree of protection =IP55	Should be as per BPC tender specification



Sr No	Description	Make
1	CTs	ECS, NPT, Pragati
2	PTs	ECS, NPT, Pragati
3	Numerical relays	SE/GE/Ashida/C&S/GE/Equivalent
4	Auxiliary relays	SE, ABB, Avana, Ashida, C&S
5	Electro mechanical relays	SE, Alstom, ABB
6	Timers	ABB, GE
7	Conventional Indicating meters	SE/Rishabh/Secure
8	Digital Indicating meters	SE, Rishabh
9	Multi Function meters	SE
10	TVM with 0.2S accuracy Class	Secure, L&T
11	MCBs	Schneider
12	Breaker Control Switch	Recom, Kaycee, Shirke , Switron
13	Local Remote selector switch	Recom, Kaycee, Shirke , Switron
14	Rotary / Toggle switch	Recom, Kaycee, Shirke , Switron
15	Fuse	Eaton
16	Fuse base	Eaton
17	Indicating lamps	Schneider, L&T, Teknic
18	Push Buttons	Schneider, L&T, Teknic
19	Auxiliary / Power contactors	SE, Siemens, L&T
20	Annunciators	Alan, Minilec
21	Terminal Block	Elmex, Phoenix
22	Transducer	Rishabh, Secure
23	Wire	Finolex , Relicab, Polycab , Salzer
24	Test Terminal Block	JVS, Kaizen
25	3 Pin socket	Schneider
26	Illuminating Lamp – LED / CFL	Reputed.
27	Ethernet Switch	Schneider
28	Surge Arrester	TYCO/Raychem