MAHARASHTRA STATE ELECTRICITY TRANSMISSION CO LTD
(CIN No.U40109MH2005SGCI53646)

From
Office of the Superintending Engineer
EHV O&M Circle, Pune
Administrative Building, 3rd floor, Block No.404, Rasta Peth, Pune-411 011
E-Mail: se6100@mahatransco.in

REF No. SE/EHV/O&M/CIRCLE/PUNE/TECH/ 1248 **DATE:- 05.06.2023**

E-ENQUIRY
(Through MSETCL webpage)

To,
WHOM SO EVER IT MAY CONCERN

Subject:- Work Contract for Supply, Installation, Testing & Commissioning of IEC 61850 complied Digital Communicable Distributed Architecture Based Transformer Auxiliary Monitoring System along with energy data acquisition module and automatic log sheet generation Feature (Customized Format) at 220kV Bhosari-I & 220kV Chinchwad-I Substation under EHV O&M Circle, Pune.

Dear Sir,

The budgetary offers through mail are invited for the above work as per Schedule 'A' enclosed herewith separately. You are requested to quote your lowest rate for the above work. The Terms & Conditions are as follows.

Terms & Conditions:-

1) The rate should be quoted on firm quotation basis.
2) The rates should be exclusive of all taxes. Taxes should be quoted extra.
3) You are requested to submit your best reasonable budgetary offer as per Schedule 'A' for above works on **Email ID: se6100@mahatransco.in upto 11:00 Hrs on dtd. 14.06.2023.**
4) Following documents should be submitted along with your offer:-
   a) Valid Electrical Contractor License.
   b) Work Experience Certificate for similar works in MSETCL or in any Power Transmission Utility in India as mentioned in subject above.
5) **Please note that said budgetary offer is only for estimate purpose & not considered for any bidding & No work order will be issued based on this Enquiry.**

Thanking you,

Yours Faithfully,

Sd/-
(Pramod Bhosale)
Superintending Engineer
EHV O&M Circle, Pune

Detailed Scope of work

The following scope of work should be considered while bidding the price of material to be supplied

1. The work of supply, installation, configuration & integration of TAMS system & MFM meter energy accounting system at 220 kV Chinchwad-1/ 220 kV Bhosari-1 substation is to be carried out as per BOQ and approved scheme. The TAMS Scheme & wiring details drawings, MFM meter communication network & total scheme drawings shall be got approved from office of SE TCC, MSETCL, Pune before starting the work.
2. The One IED shall be used for each of ICTs / TFs. Accordingly sufficient number of DI / BI, DO/ BO & 4-20 mA inputs shall be available to each the IEDs as mentioned in the material details & BOM.
3. The MB shall be installed in the yard near TFs / ICTs FCCB so that the length & cost of wire shall be saved.
4. The IED shall be capable of reporting output in the communication network of optical fiber ring up to gateway in the control room. The IEDs supplied shall be of any protocol that can give output in the laid FO ring & shall be report to the gateway installed in the control room. Accordingly the supplied gateway also support the protocol of supplied IEDs.
5. The IEDs shall be connected in the closed FO ring & report all data to the Gateway which is available in the control room. The Gateway available in the control room shall convert the IEDs data to required software protocol. The software installed in the server PCs shall read data from gateway for IEDs installed in the yard.
6. The Gateway / Protocol converter shall be installed & commissioned in the control room. All the IEDs & MFM meters shall report to/connected to the gateway. The gateway will give output to the HMI server software. The HMI server PC software shall display the TAMS data monitoring, control & MFM meter data monitoring in the control room. The MFM/ ABT meter, TAMS log sheet generation, event sheet generation, trends reports etc shall be done in the server PC.
7. The Tap raise / low, FANs & Pumps, any control command shall be controlled from FCCB & from TAMS software at control room. Accordingly the 03 position selection switch shall be provided in the scheme. The minor material like selection switch, controlled command relays shall be supplied by the concern agency / bidder. The cost of TAMS scheme wiring & yard

MB required in the yard & in the control room is inclusive of the cost of these material required i.e selection switch, MCBs, TBs, lugs, connectors, splicing etc.

8. Similarly all the MFM meters & ABT meters in the control room shall be connected to the Gateway on RS 485 protocol directly or through MODBUS TCP IP protocol & Gateway shall convert the MFM meter data & give input to HMI server software for further processing & configuration. The software installed in the server PCs shall read data from gateway for MFM meters & ABT meters in the substation.
9. The required protocol configuration & integration of all IEDs in HMI server software should be done by TAMS supplier / bidder. Accordingly the files suitable for TAMS scheme software should be configured & same should be use for IED integration in TAMS.
10. The cost of material required, hardware required, accessories required for mounting arrangement & for installation of Gateway shall be inclusive in the cost of Gateway.
11. All the required input, outputs / command signals, 4-20 mA wiring, monitoring & trouble signals from FCCB to TAMS IEDs & OLTC to TAMS IEDs, PT input wiring from PT MB to IEDs in the TAMS scheme shall be done by bidder.
12. The WTI , OTI & TPI meters installation & its input & output wiring upto IEDs shall be done by bidder. The cost of material required, hardware required, accessories required for mounting arrangement & for installation of WTI , OTI & TPI meters shall be inclusive in the cost of WTI , OTI & TPI meters.
13. The WTI, OTI, TPI transducers installation & its input & outputs upto IEDs shall be done by bidder. The cost of material required, hardware required, accessories required for mounting arrangement & for installation of WTI , OTI & TPI transducers shall be inclusive in the cost of WTI , OTI & TPI transducers.
14. The cables for 4-20 mA input & DC / AC cables shall be separate. The 4-20 mA signals shall not mixed with each other.
15. The 06 core optical fibre cable ring shall be formed between Control room and bay IEDs installed in yard as per approved architecture with all required accessories & hardware at 220 kV Chinchwad-1 /220 kV Bhosari-1 substation.
16. The LIUs shall be installed in the supplied MBs. All fiber core shall be terminated in the LIUs. The cost of material required, hardware required, accessories required for mounting arrangement & for installation of WTI , OTI & TPI transducers shall be inclusive in the cost of WTI , OTI & TPI transducers.
17. The armoured optical fibre cables / LAN cables in the cable trench should be laid through HDPE pipe (High Density Poly Ethylene Pipe) of suitable size with proper clipping,

hardware & accessories required. The cost of FO armoured cable is inclusive of the cost of HDPE pipe required, clip & hardware required for installation & laying of FO cable.

18. UPS along with battery set (minimum 06 to 08 hrs backup in case of AC supply fail) should be provided, installed and commissioned for TAMS at 220 kV Chinchwad-1/220 kV Bhosari-1 substation. The maintenance free battery shall be supplied & installed in the proper RACK arrangement. The cost of UPS & Battery set is inclusive of the Material required i.e RACK, MCBs, input & output cable required, hardware required for installation & commissioning of UPS & batteries.
19. The TAMS / software licence should be dongle based instead of machine base to avoid dependency in case of failure of PC. The licence should have lifetime expiry.
20. TAMS & MFM meter Report generation, log sheet generation, trends generation should be configure in TAMS server PCs as per MSETCL requirement at site. The same shall be customized.
21. The MFM meter RS 485 MODBUS chain shall be formed. The sufficient number of MFM meters shall be connected in the chain. Maximum 25 numbers of MFM meters shall be connected in the one ring. Each ring shall be separately connected the each RS 485 port of the gateway.
22. All MFM meters at 220kV Chinchwad-1/220kV Bhosari-1 substation should be configured & integrated in the respective TAMS software on MODBUS protocol. The reports, log sheet, trends should be generated for MFM meters for respective bay and entire substation.
23. The MFM meters / ABT meters shall be directly report to gateway in control room. And the gateway shall report the MFM meter data to server TAMS / software.

If Any MFM meter RS 485 MODBUS to ethernet LAN converter or MFM meter MODBUS RS485 to IEC 61850 converter or RS 485 DC for MFM meter shall be supplied by bidder at own cost & risk.

24. The OS of TAMS & MFM meter monitoring system PC should be strictly **windows 10 & above.**
25. The unmanaged / managed Ethernet switches provide should have suitable number of Multimode FO ports & single mode FO ports & sufficient RJ 45 ports which should be as per MSETCL standard specification, BOM & should fulfilled scheme requirement. Some spare ports of each type should be available for future use.
26. Any communication cable, multi-strand copper wire, lugs, ferrules, clipping, tags, any hardware, any accessories required, ACMCBs, DCMCBs, MCB boxes, plastic labels to patch cords & T&P required during installation & commissioning of TAMS then same should be

supply by bidder / agency / TAMS supplier. Accordingly the rate of material shall be quoted. There shall not be ant extra item or extra cost for mentioned above & other than bill of material.

27. The TAMS scheme shall be thoroughly tested by the bidder.
28. The GA, GTP, bill of material of each & every equipment to be used for installing and commissioning of TAMS at 220 kV Chinchwad-1/ 220 kV Bhosari-1 should be submitted along with drawings.
29. Before bidding / quoting the price the concern agency should visit 220 kV Chinchwad-1/220 kV Bhosari-1 substation for clarification of work to be done if required for avoiding future misunderstanding & delaying in the work execution.

SCHEDULE 'A'

Work Contract for Supply, Installation, Testing & Commissioning of IEC 61850 complied Digital Communicable Distributed Architecture Based Transformer Auxiliary Monitoring System along with energy data acquisition module and automatic log sheet generation Feature (Customized Format) at 220kV Bhosari-I & 220kV Chinchwad-I Substation under EHV O&M Circle, Pune.

Number of ICT & TF available in the respective Substation 220kv Chinchwad I:- 8 nos & Bhosari I S/s:- 3 nos

Sr No	Description	220kV Chinchwad 1	220kV Bhosari 1	Qty Total	Ex Rate	GST	Unit Rate (Ex rate + GST)	Amount
1	Suitable HMI server software that can be used for Transformer Auxilliary Monitoring System (TAMS) & MFM meter MODBUS / RS485 data reading having features of required supervision, control, Monitoring, data aquasition, automatic log sheet generation, event sheet generation, trend view, customised HMI display screen as per MSETCL requirements. The @ 1500 tags or tags required for integration of TAMS signals & all MFM meter all data in server software which ever is more should be provided.	1	1	**2**				
2	IEDs having following features 1. Non compliant of IEC 61850 protocol 2. IED should be communicable to SAS , Gateway either IEC 103 or IEC 104 2. 4-20 mA Inputs :- 08 Nos. 3. Digital Inputs :- 16 Nos. 4. Digital Outputs :- 08 Nos. 5. 04 Nos. of PT inputs (R,Y,B,N) 6. 02 Nos. of RJ45 LAN communication ports. 7. IED auxilliary DC should be rated for either 220 VDC or 110 VDC which ever is applicable.	8	3	**11**				
3	08 port Unmanaged Ethernet Switch 1. 04 Nos. of MM FO port for 2KM 2. 04 Nos. of RJ45 LAN ports 3. Substation rated DC auxiliary supply i.e 220 VDC or 110 VDC which ever is applicable.	8	3	**11**				
4	Managed Ethernet Switch 10 port Unmanaged Ethernet Switch 1. 04 Nos. of MM FO port for 2KM 2. 06 Nos. of RJ45 LAN ports 3. Substation rated DC auxiliary supply i.e 220 VDC or 110 VDC which ever is applicable.	1	1	**2**				
5	LIU 06 ports	18	8	**26**				
6	Server / SAS PC for TAMS 1. Indusrial PC suitable for 24 X 7 Operation. 2.Windows 10 & above OS 3. 8 GB RAM 4. Minimum 1 TB hard disk capacity 5. Processor Minimum i5. 6. Dual CPU processor above base frequency is above 1.8 GHz 7. 32 inches Monitor	1	1	**2**				

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7	Gateway / Protocol converter having following features 1.Required suitable protocol converter which shall support HMI server software. 2. MFM meter MODBUS to IEC 61850 / required suitable protocol converter having facility to connect 75 MFM meters 3. Shall be work as client & server feature of required protocol. 4.02 Nos. of programmable ports for server communication 6. 02 Nos. of IEC 103 protocol / suitable protocol port for commincation with IEDs used for TAMS. 8. 03 Nos. of MOBBUS ports each port will support minimum 24 MFM meters for MFM meter communication with gateway / Server 7. 02 Nos. of programmable IEC 104 procol port 9. 02 Nos. of progarmmable IEC 101 serial ports DB9	1	1	**2**				
8	Armoured Optical fiber cable along with HDPE pipe	1	0.6	**1.6**				
9	12 core, 1.5 Sqmm Copper Armoured control cable for IED wiring	0.8	0.3	**1.1**				
10	2 Core, 2.5 Sqmm Copper Armoured control cable	0.3	0.4	**0.7**				
11	04 core, 2.5 Sqmm Copper Armoured control cable for PT wiring	0.3	0.15	**0.45**				
12	Fuse & base unit for PT supply to IED	16	8	**24**				
13	WTI meter in TF / ICT FCCB having input of capiliary tube of suiable lenght & CT inputs from ICT turret. The WTI meter should have analog display dial of 0-150 deg Cen. & having inbuilt current converter unit of 4-20 mA dual output	1	0	**1**				
14	OTI meter in TF / ICT FCCB having input of capiliary tube of suiable lenght. The WTI meter should have analog display dial of 0-150 deg Cen. & having inbuilt current converter unit of 4-20 mA dual output	2	0	**2**				
15	Tap Position Indicator, 0-17 Kohm resistance inputs & 4-20 mA dual outputs	8	3	**11**				
16	WTI repeater, either 0-2.8 Kohm resistance input & 4-20 mA dual outputs as per site requirement	12	1	**13**				
17	OTI repeater, either 4-20 mA input or 0-28 Kohm resistance input & 4-20 mA dual outputs	5	1	**6**				
18	Ground mounted MB for accomodation of IED & various termination termination	4	2	**6**				
19	Wall mounted rack for accomodation of Gateway, GPS device along with AC & DC supply provision	1	1	**2**				
20	UPS along with maintenace free battery set having backup of minimum 05 hours 1 KVA	1	1	**2**				
21	Table for Server, Keyboard, mouse, pronter & UPS along with 01 Nos. of chair	1	1	**2**				
22	FO patch cords MM from LIU to ethernet switch	18	8	**26**				
23	RJ45 LAN CAT 6 cable along with required RJ45 connectors & slicing work threreof..	0.1	0.1	**0.2**				
24	2 Pair Telephone cable screened	0.15		**0.15**				
25	GPS device along with remote display clock with 02 no. of SNTP LAN port	1	1	**2**				
26	Three in one printer (Printer, Scanner & Copier)	1	1	**2**				

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Sr No	Description	220kV Chinchwad 1	220kV Bhosari 1	Qty Total	Ex Rate	GST	Unit Rate (Ex rate + GST)	Amount
27	Installation work 1. Installation of MBs 2. Installation of IED / Gateway & WTI, OTI, TPI meters & repeaters. 3. All total required wiring of IEDs to be done from OLTC DM to MB, FCCB to MB & from MB to CR as per approved drawings. 4. IED/ Gateway configuration & testing work.	9	4	**13**				
28	Formation of armoured FO ring i.e 1. laying of FO cable through HDPE pipe, 2. All required splicing work at site 3. Installation of LIUs in MB & splicing work thereof.. 4. Testing of ring & troubleshooting thereof.. 5. Formation of MFM meter chain upto Gateway	1	1	**2**				
29	Software configuration, integration work 1. TAMS Software Engineering, configuration & integration of all IEDs & Gateway 2. Configuration of HMI as per MSETCL requirement 3. MFM meter configuration & integration	1	1	**2**				
30	Three way switches for mode selection	8	3	**11**				
							TOTAL	

Amount of offer is Rs……