



Specification No.	7214
Item No.	SP/SERV/MISC/18/7214
Location	SUSTATION -1
Quantity	1 SET

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF INSTALLATION OF ENERGY MONITORING SYSTEM IN BHEL JHANSI FACTORY

NOTE:-

- VENDOR must submit complete required information.
- VENDOR to furnish the offer using this standard template of the specification. While furnishing the offer, no change is to be made in the first three columns (i.e. 'S.NO.', 'DESCRIPTION FOR BHEL REQUIREMENT' & 'ACTION BY VENDOR'). Only the "Offered" column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the VENDOR and submitted along with the offer. Wherever "Vendor to specify" is mentioned in 'action by VENDOR' column, the VENDOR has to clearly provide the details. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.
- The offer and all documents enclosed with offer should be in English language only.
- Wherever "VENDOR to specify" or "suitable" is mentioned, suitable backup data or calculation or justification is required for establishing the suitability.
- Circuit diagram of the system offered is to be enclosed with proper writeup.

NAME & ADDRESS OF THE SUPPLIER :

TELEPHONE NOS. :

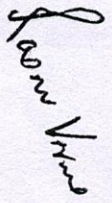
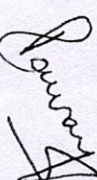
E-MAIL ADDRESS :

SCOPE: SUPPLY, INSTALLATION & COMMISSIONING OF ENERGY MONITORING SYSTEM IN BHEL JHANSI FACTORY WITH SPECIFICATIONS AS BELOW

S. NO.	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	DETAILS OF OFFERED ITEM	DEVIATION / REMARK
1.0	PURPOSE & WORKPIECE MATERIAL: It is desired to install a energy monitoring system to power feeders which shall comprise of Energy Meter with Maximum Power Demand Controllers for all Incoming Power Source/Feeders and Multifunction Energy Monitoring Meters for all the outgoing feeders and Load centers as per the following: a) Energy Meter with Maximum Power Demand Controllers for the following 4 Nos. Incoming Power Source/Feeders namely i) 11 kV UPPCL Incoming supply ii) 11kV 2.5MW Solar Power Plant iii) 11kV 1.5MVA DG sets and iv) 415 Volt 1.25MVA DG Set. b) Multifunction Energy Monitoring Meters for 16 Nos 11kV Outgoing Feeders located in Main Sub-Station-1. c) Multifunction Energy Monitoring Meters for 20 Nos. for Load centres spread out in different blocks of factory in a cluster of 3-4 Nos each. The detailed scope of supply and scope of work shall be as follows:	Vendor to Note & confirm		
2.0	DETAILED SPECIFICATIONS AND SCOPE OF SUPPLY:			
2.1	Multifunction Energy Meter with Maximum Power Demand Controllers : 4 Nos.			
2.1.1	Multifunction Energy Meter with Maximum Power Demand Controllers is required for accurate and reliable measurement of electrical parameters (Current, Voltage, Power, Frequency etc) and in addition to control/regulate maximum demand of the following 4 Nos. Incoming Feeders/Power Supply Sources namely a) Incoming UPPCL supply, b) 2.5 MW Solar Power Plant, c) 1.5MVA DG Set and d) 1.25MVA, 415V DG Set. They will have to be connected to the centralised Server Computer through existing BHEL LAN network by a 8-port Ethernet Switch (Specs as mentioned at clause no. 2.5 below)	Vendor to Specify Make/ Model Quoted & attach catalogue		

SCOPE: SUPPLY, INSTALLATION & COMMISSIONING OF ENERGY MONITORING SYSTEM IN BHEL JHANSI FACTORY WITH SPECIFICATIONS AS BELOW

S. NO.	DESCRIPTION FOR BIDDAL REQUIREMENT	ACTION BY VENDOR	DETAILS OF OFFERED ITEM	DEVIATION / REMARK
2.1.2	The meter shall have following features: a) Programmable Maximum Demand to forewarn, take corrective measures and check maximum demand crossovers. b) Priority based automatic load control mechanism to disconnect low priority loads in phased manner. c) Online load planning by continuously indicating loads that can be added or need to be disconnected (within the safe operating limits) d) Average THD measurement for voltage, current & power e) True RMS metering f) Configurable current and voltage range g) Check meter with accuracy of 0.2s class h) Large four-line seven segment display with quadrant identification i) Ethernet connectivity with host server for power monitoring and report generation.	Vendor to Confirm		
2.1.3	The meter shall have following specifications: a) Suitable for HT3/HT4 & LT connections. b) Voltage Connection Range: Potential transformer of 110VAC, LT supply of 415VAC c) Current Connection range: 1-5 Amps AC. d) Accuracy Class: 0.2s e) Short time over current rating: 20X I(Max) for 1 sec, 7X I(Max) for 10 sec f) Power Supply: 80-300 VAC/DC. g) Compliance standards: IS13779, IS14697, IEC62052-11, IEC62053-23, IEC61010. h) Dimension: Cut-out size 92 X 92 mm i) Operating Temperature: 0-50 degrees. j) Humidity: 95% non-condensing	Vendor to Confirm		
2.1.4	Each Maximum demand meter shall be supplied with a wall mountable Multi-Tone Sounder. This sounder shall be wired with programmable output of Maximum Demand meter and configured such that alarms are generated whenever the power drawn from the feeder exceeds a preset level. The sounders shall be multi-tone type so that separate tone can be selected for each Incoming Power Feeder. The sounders shall be wall mounted type having an audible sound level of 110dB, operating voltage 230VAC.	Vendor to Specify Make/ Model Quoted & attach catalogue		
2.2	Multifunction Energy Meter : 36 Nos.			
2.2.1	a) 16 Nos out of above 36 Nos. Multifunction Energy Meter shall be used for measurement of electrical parameters (Current, Voltage, Power, Frequency etc) of 20 Nos. outgoing 11 kV feeders located centrally in Main Sub-Station-1. B) Balance 20 Nos. Multifunction Energy Meter shall be used for measurement of electrical parameters (Current, Voltage, Power, Frequency etc) of 415 Volts LT Feeders/Load Centres/Machine. These LT Feeders/Machines are spread out in different blocks of factory in a cluster of 3-4 Nos. These meters in a group of 4-5 shall be connected in a RS 485 network and communicate with centralised Personal Computer via existing BHEL LAN network through RS485-Ethernet converter placed at respective location(Specs as mentioned at clause no. 2.3 below). The LAN connection point at respective location shall be provided by BHEL.	Vendor to Specify Make/ Model Quoted & attach catalogue		


SCOPE: SUPPLY, INSTALLATION & COMMISSIONING OF ENERGY MONITORING SYSTEM IN BHEL JHANSI FACTORY WITH SPECIFICATIONS AS BELOW

DESCRIPTION FOR BHEL REQUIREMENT

S. NO.	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	DETAILS OF OFFERED ITEM	DEVIATION / REMARK
2.2.1	The meter shall have following features: a) Average THD measurement for voltage, current & power b) True RMS metering c) Configurable current and voltage range d) Maximum demand recording e) Large four-line seven segment display with quadrant identification f) RS485/Ethernet connectivity with host server for power monitoring and report generation.	Vendor to Confirm		
2.2.2	The meter shall have following specifications: a) Suitable for HT3/HT4 & LT connections. b) Voltage Connection Range: Potential transformer of 110VAC, LT supply of 415VAC c) Current Connection range: 1-5 Amps AC. d) Accuracy Class: 0.2s e) Short time over current rating: 20X I(Max) for 1 sec, 7X I(Max) for 10 sec f) Power Supply: 80-300 VAC/DC. g) Compliance standards: IS13779, IS14697, IEC62052-11, IEC62053-23, IEC61010. h) Dimension: Cut-out size 92 X 92 mm i) Operating Temperature: 0-50 degrees. j) Humidity: 95% non-condensing	Vendor to Confirm		
2.3	RS485/Ethernet Converter: 08Nos.			
2.3.1	RS485/Ethernet Converter shall be supplied for connecting the above Energy Meters located in clusters of 4-5 to fast 10/100Mbps BHEL local LAN network using IEEE802.1X network protocol. The converter shall be Industrial grade, Microprocessor based, High speed upto 600Kbps, which allows bi-directional transparent data transmission between RS232/RS485 and RJ45 port Ethernet along with suitable Power adapter for connecting to 230VAC power supply.	Vendor to Specify Make/ Model Quoted & attach catalogue		
2.4	RS485 Serial Port Cable: 300m			
2.4.1	RS485 Serial Port cable for connecting Energy Meters at various locations to respective RS485/Ethernet Converter. The cable shall be twisted pair, multi-standard copper (0.35sq.mm approx), PVC insulated, aluminium/polyester tape helically wound, tinned copper drain wire and tinned copper braid, coverage atleast 70%, with overall PVC jacket.	Vendor to Specify Make/ Model Quoted & attach catalogue		
2.5	Ethernet switch: 1 Nos.			
2.5.1	A 8 port Ethernet Switch shall be supplied for connecting the 4 Nos Multifunction Energy Meter with Maximum Power Demand Controllers directly over a fast 10/100Mbps LAN network using IEEE802.1X network protocol. Power supply shall be 230VAC. The switches shall be housed in a suitable wall mounting cabinet capable of working in 0-50 degrees ambient temperature conditions.	Vendor to Specify Make/ Model Quoted & attach catalogue		
2.6	Server Computer: 1 Nos.			
2.6.1	Latest All-in-One Desktop PC powered by 10th Generation Intel® Core™ i7-10510U Processor, 16GB RAM, 256GB M.2 PCIe NVMe SSD (Boot) + 2TB HDD (approx), 27-inch FHD (1920 x 1080) Display & Windows 10 Pro Software and a HP make A4 size Colour Laserjet printer	Vendor to Specify Make/ Model Quoted & attach catalogue		
2.7	Power Monitoring Software: 1 Nos.			

(Signature) *Sanjay Kumar* *Sanjay*

(Signature)

SCOPE: SUPPLY, INSTALLATION & COMMISSIONING OF ENERGY MONITORING SYSTEM IN BHEL JHANSI FACTORY WITH SPECIFICATIONS AS BELOW

DESCRIPTION FOR BHEL REQUIREMENT

S. NO.	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	DETAILS OF OFFERED ITEM	DEVIATION / REMARK
2.7.1	The software shall be a web based real-time data acquisition and monitoring software for effective management of electrical system through the ethernet connected Power Meters. It shall acquire data, process it and display it in ergonomically designed tables, gauges, graphs or mimics as per user requirement.	Vendor to Specify Make/ Model Quoted & attach catalogue		
2.7.2	The software shall also be capable of generating energy bills as per the UPPCL norms. The energy consumption also needs to be segregated in four tariff time zone TOD- 1 to 4. All the factors like, fixed charges, demand charges, cess etc as per UPPCL billing system also needs to be incorporated in the software and variable field shall be created so that the dynamic tariff rates can be entered/modified from time-to-time. The report format shall also be similar to UPPCL electricity bill. A copy of UPPCL bill is enclosed as Annexure-1 for reference	Vendor to Confirm		
2.7.3	The software features are as follows: a) Online data acquisition over ethernet (TCP/IP) b) Multiple Screens for viewing such as tabular, configurable gauge, trend graphs. c) Trend Graphs must have selectable parameters, Selectable feeders and configurable X-axis time scale to select the period for which the trend information is required. d) All the screens shall have distinct separation of Incoming power feeders and Outgoing load feeders. e) Power, Energy, Power factor etc of Incoming power feeders and Outgoing Feeders are to be configured separately and distinctly in a flexible report formats. f) Control and regulation of maximum demand of Incoming Feeders Power Feeders. Software shall also have configurable Maximum Demand Monitoring system and raise alarm when the set maximum demand is exceeded. g) Software for calculation of Energy bill as per UPPCL Tariff Structure. Configurable time zone TOD-1 to 4, Configurable Tariff rates, cess etc. h) Organised storage of fetched data with auto/manual clean-up in FIFO mode. i) Export of Reports, Trend Graphs in excel format.	Vendor to Confirm		
2.7.4	Web based remote access of data over BHEL LAN network. The report in desired format to be developed in consultation with BHEL shall be available to PC's connected over the LAN. The parameters, time period desired to be monitored shall be configurable through dropdown menus, from remote access PC..	Vendor to Confirm		
3.0	SCOPE OF WORK:			
3.1	The vendor shall carry out installation of all the supplied Energy Meters in the respective breaker control cabinet, carry out all the necessary wiring, Route the ethernet cables through necessary conduits to the Ethernet Switch and to the Server PC located around 100m away. All required accessories for wiring are also to be supplied. Manpower assistance shall be provided by BHEL wherever required.	Vendor to Confirm		
3.2	Loading the Power Monitoring Software in the Server PC. Establishing connectivity with all installed Energy Meters. Commissioning the software, Demonstrating all the software features, Demonstrating Remote PC Connectivity etc.	Vendor to Confirm		
4.0	TRAINING:			
4.1	BHEL persons are required be trained in the field of operation and maintenance of the complete supplied equipment, Software features, Procedure for installation of Software on standard Windows PC etc.	Vendor to Confirm		
5.0	DOCUMENTATION:			
5.1	Four sets of O&M Manual (Hard copies) in English language in suitable box folders having following details should be supplied	Vendor to Confirm		
5.1.1	Operation & Maintenance Manual comprising of a) Description of all the software features, b) Wiring Diagram of all Energy Meters, c) Procedure for installation of Software on new standard PC, d) List of IP addresses configured for all Energy Meters.	Vendor to Confirm		

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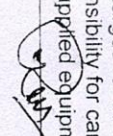
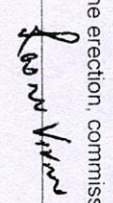
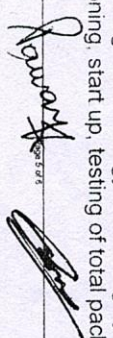
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SCOPE: SUPPLY, INSTALLATION & COMMISSIONING OF ENERGY MONITORING SYSTEM IN BHEL JHANSI FACTORY WITH SPECIFICATIONS AS BELOW

DESCRIPTION FOR BIDDING REQUIREMENT

S. NO.	DESCRIPTION FOR BIDDING REQUIREMENT	ACTION BY VENDOR	DETAILS OF OFFERED ITEM	DEVIATION / REMARK
5.1.2	Manufacturer's Catalogue of Maximum Demand Energy Meter and Multi-function Energy Meter comprising of Operation features and procedure, Parameterisation details, Specifications etc.	Vendor to Confirm		
5.2	Soft copy of above O & M Manual in a Pen Drive is to be provided	Vendor to Confirm		
5.3	Ghost backup of the Hard Disk of the PC, such that the complete operating system and software can be restored on a blank Hard Disk	Vendor to Confirm		
5.4	Original Calibration certificate of all instrument /meters issued by NABL accredited lab.	Vendor to Confirm		
6.0	WARRANTY:			
6.1	The supplied equipment shall be under warranty for a period of 24 months from Date of Commissioning	Vendor to Confirm		
7.0	GENERAL			
7.1	Vendor may visit the site to assess the actual site condition & scope of work before submitting the offer.	Vendor to Note		
7.2	Original software shall be provided, software shall be licenced for one time payment only.	Vendor to Confirm		
7.3	All the meters/instruments shall be calibrated by NABL accredited lab.	Vendor to Confirm		
7.4	Any thing else which is required for the satisfactory functioning of the the system, will be in the scope of vendor without extra cost.	Vendor to Confirm		
7.5	Pre-Dispatch inspection- i. Before dispatch complete package consisting of all the items mentioned in scope of supply will be inspected by BHEL representative as per specification at vendors works. However the final inspection and acceptance will be at BHEL JHANSI only. ii. The supplier shall provide at least 15 days advance notice/intimation for inspection call. iii. Modifications or changes, if found necessary during inspection, will have to be carried out, free of charge, by the supplier/manufacturer.	Vendor to Confirm		
8.0	QUALIFYING CONDITION			
8.1	The following conditions have to be satisfied by the Bidder. Documentary proof are to be enclosed with techno-commercial bid. In case the tenderer fails to enclose the same the tender will be rejected.	Vendor to submit		
	Bidder must be OEM (Original Equipment Manufacturer) or authorized dealer of the OEM. The dealer have to submit a valid authorization letter in this regards from the OEM including undertaking that OEM will provide all necessary technical & future service & spares support for the offered items. Vendor to confirm & submit			
8.2	The offer will be considered if at least 03 No. system (energy monitoring system) had been supplied and commissioned by OEM/any of its dealer in the past 10 years from the tender opening date, and the same should be performing satisfactorily(atleast 02 no. system) for at least last one year after commissioning. The copies of performance certificate and purchase order are to be submitted along with the offer	Vendor to submit		
8.3	Vendor should submit following documents. Vendor to note (A) Purchase Order copy as per above(03 No.). (B) Commissioning certificate of above supplied energy monitoring system(03 No. of above submitted purchase order). (C) Performance certificate of above supplied energy monitoring system(any 02 No. of above submitted purchase order).	Vendor to submit		
9.0	ERRECTION AND COMMISSIONING			
	The complete erection & commissioning/proving of the system must be done by supplier at BHEL JHANSI with his own labour and tools.	Vendor to Confirm		
	The offer must include the charges for the complete erection and commissioning of the energy monitoring system. Supplier shall take full responsibility for carrying out the erection, commissioning, start up, testing of total package, it's control & all types of other supplied equipment, etc.	Vendor to Confirm		

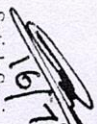




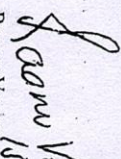
SCOPE: SUPPLY, INSTALLATION & COMMISSIONING OF ENERGY MONITORING SYSTEM IN BHEL JH

DESCRIPTION FOR BHEL REQUIREMENT

S. NO.	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	DETAILS OF OFFERED ITEM	DEVIATION / REMARK
	Special tools, tackles, instruments, spares and other necessary equipment if required to carry out all above activities, should be brought by the supplier.	Vendor to Confirm		
	Interconnection work with existing set up will be done by supplier.	Vendor to Confirm		
	Available Power Supply: 220 V A/C $\pm 10\%$, Frequency 50 Hz $\pm 3\%$.	Vendor to Confirm		
	Erection & commissioning work must be completed within 02 months from our call.	Vendor to Confirm		
10.0	BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.	Vendor to Confirm		


Y.K. Dhangra
Dy. Mgr.(WEX)


Satish Soni
Dy. Mgr.(WEX)


Raanu Verma
15/7/20
Mgr.(WEX)


Pawan Kumar
Sr. Mgr.(WEX)