

**Scope for supply, installation & commissioning of an Internet of things (IOT) project for display, monitoring & analysis of machine related actual values & historical data on BHEL intranet.**

**Project name: Development of a system for Real time recording & display of Critical machine condition related data through External sensors on PIETRO-CARNAGHI CNC vertical borer, Plan No 1-124**

**Machine: PIETRO CARNAGHI, CNC VERTICAL BORER Machine, Model-AP80TM, Plan no. 1-124, Block-3, HEEP, BHEL, Haridwar.**

**Brief About Project:**

An Internet of things (IOT) project for monitoring of analog actual values with the sensors as per material supply. These sensors may/ may not be with individual digital display (Individual sensor specifications as per Annexure). An industrial grade HMI to be installed on the machine to display actual values of all the sensors as per BHEL requirement. Sensors must be with analog(4 to 20 mA) interfaces or latest digital communication technology viz. IO Link, Profi-bus, Profi-net, TCP/IP, Can bus etc. These sensors will be installed at different locations (as per 'Location scheme'); Sensors will be terminated at Sensor boxes/ Master modules / Intelligent PLC modules etc. as per location scheme. Connection between these modules will be through digital communication bus viz. IO Link, Profi-bus, Profi-net, TCP/IP, Can bus etc. as per vendor's design. These are to be connected finally to BHEL network and also HMI for display as mentioned above. The complete software for display, historical analysis and message triggering etc. is to be provided by the vendor. The SMS & e-mail facility is already available in BHEL Haridwar and the same will be used for this project also. Each sensor feedback value will be used for generating triggers for early messages/ advance alarms through SMS/e-mail which will be configurable either through HMI or through software/application. The real time data should be available on HMI as well as on software/application through network. At least one week's data should be available on the HMI. All real time and historical data should be available through software and application. Historical data will have larger sampling interval to be finalized at the time of execution to keep database size under manageable proportions. The real time information should be available without any delay on HMI for data analysis and fault diagnosis. Data should also be exported to BHEL oracle database on automated regular basis for future use by BHEL. All data and software related to this project will be hosted in BHEL premises only. There should also be provision of connecting the IOT system with the Siemens make 840-D CNC controller. Communication with CNC system is to be established & data transfer of axes feed-rate, current etc. is to be demonstrated by the vendor but these data will not be incorporated in the IOT system. The IOT system will remain standalone to monitor CNC system performance. The proposed layout of the entire system is attached as Annexure -"Location scheme" which is indicative only.

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31/03/2018

| Sl. No | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Quantity | Accepted (Yes/No) | Deviation | Remarks                            |
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| 1.     | <b><u>MATERIAL SUPPLY INCLUDING SCOPE OF WORK:</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |                   |           |                                    |
| 1.1    | <p>Analog Sensors: The required sensors for the project are mentioned below. All the sensors must necessarily comply to the following specifications:</p> <p>a) Nominal Input Supply: 24VDC</p> <p>b) Output Interface: Sensors must be either with analog(4 to 20 mA) interfaces or latest digital communication technology viz. IO Link, Profi-bus, Profi-net, TCP/IP, Can bus etc.</p> <p>c) Accessories: Pre-assembled connectors with minimum 5 m cable, dust proof safety cover &amp; mounting clamps to be included.</p> <p>d) The required sensors should be either of IFM/ BAUMER/ SICK/ SCHNEIDER/ SKF/ HYDAC/ GE/ SIEMENS/ FESTO/ SMC/ PEPPERL+FUCHS/ HONEYWELL make.</p> |          |                   |           | Bidder to provide details & comply |
| 1.1.1  | Analog Temperature sensor for Hydraulic oils with overall probe length of 400 to 500 mm (Detailed specifications as per Annexure - 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 01 Set   |                   |           | Bidder to provide details & comply |
| 1.1.2  | Analog Temperature sensor for Hydraulic oils with overall probe length of 550 to 650 mm (Detailed specifications as per Annexure-1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 01 Set   |                   |           | Bidder to provide details & comply |
| 1.1.3  | Analog Temperature sensor for Hydraulic oils with overall probe length of 750 to 850 mm (Detailed specifications as per Annexure - 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 01 Set   |                   |           | Bidder to provide details & comply |
| 1.1.4  | Analog Temperature sensor for rigid mounting (Detailed specifications as per Annexure-2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 02 Set   |                   |           | Bidder to provide details & comply |
| 1.1.5  | Analog Level sensor for Hydraulic oils with overall probe length of 150 to 250 mm (Detailed specifications as per Annexure - 3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 02 Set   |                   |           | Bidder to provide details & comply |
| 1.1.6  | Analog Level sensor for Hydraulic oils with overall probe length of 400 to 500 mm (Detailed specifications as per Annexure: 3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 01 Set   |                   |           | Bidder to provide details & comply |
| 1.1.7  | Analog Level sensor for Hydraulic oils with overall probe length of 550 to 650 mm (Detailed specifications as per Annexure: 3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 01 Set   |                   |           | Bidder to provide details & comply |
| 1.1.8  | Analog Level sensor for Hydraulic oils with overall probe length of 750 to 850 mm (Detailed specifications as per Annexure: 3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 01 Set   |                   |           | Bidder to provide details & comply |
| 1.1.9  | Analog Level sensor for Water based emulsion with overall probe length of 800 to 900 mm (Detailed specifications as per Annexure - 4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 01 Set   |                   |           | Bidder to provide details & comply |



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| 1.1.24 | Master PLC CPU/ micro-controller (If required): All the Sensor boxes/ intelligent/ PLC modules/ Master modules are proposed to be connected to this unit before being finally connected to BHEL network and HMI for display of sensor values. There should also be provision of connecting with the CNC controller which is Siemens make 840-D.                                                                                                                                                                       | 01 No  |  |  | Bidder to provide details & comply |
| 1.1.25 | HMI: 19" or more industrial grade touch HMI of reputed make for display & setting of:<br>a) Values of all the analog sensors with trigger levels (Both minimum & maximum). Settable trigger levels to be provided (Password Protected).<br>b) Setting of sensor values for triggers for early messages/ advance alarms. Two level set-points will be required for each high & low level.<br>c) Display of historical recorded data of sensors.<br>d) Programming (read/write) & Calibration of sensors (if required). | 01 No  |  |  | Bidder to provide details & comply |
| 1.1.26 | All the Sensor boxes/ intelligent PLC modules/ Master modules, Master PLC CPU/ micro-controller, HMI and other electronic units viz. Power supplies etc. should be housed in small dust and vermin proof panels of reputed make at each of the 7 locations including 1 No. for HMI. In case additional quantity is required as per vendors' scheme, the same has to be incorporated.                                                                                                                                  | 01-Set |  |  | Bidder to provide details & comply |
| 1.1.27 | A SMS and e-mail notification/alert should be automatically sent based on settable trigger points by the installed system to the concerned personnel as per BHEL requirement. The concerned text will be finalized by BHEL.                                                                                                                                                                                                                                                                                           | 01 No  |  |  | Bidder to provide details & comply |
| 1.1.28 | The supplied system should display the real time data of all sensors as well as store/record historical data of all sensors. This data should be available & accessible through the intranet via web browser as well as the HMI.                                                                                                                                                                                                                                                                                      |        |  |  | Bidder to provide details & comply |
| 1.1.29 | The HMI screen/ requested sensor data should be accessible on any remote computer in the intranet by authentication based login/ restricted access.                                                                                                                                                                                                                                                                                                                                                                   |        |  |  | Bidder to provide details & comply |
| 1.1.30 | The data captured for all the sensors should be displayed in digital & analog/graphical format on the HMI as well as accessible through the intranet via web browser.                                                                                                                                                                                                                                                                                                                                                 |        |  |  | Bidder to provide details & comply |
| 1.1.31 | The historical data from the supplied system should be automatically exported to BHEL's existing ORACLE based system. The frequency to be jointly decided with BHEL.                                                                                                                                                                                                                                                                                                                                                  |        |  |  | Bidder to provide details & comply |
| 1.1.32 | All types of communication cables with licensed version of installable software used to install/prove-out of the supplied system & their components (viz. PLC/ HMI/ routers/Sensors etc.).                                                                                                                                                                                                                                                                                                                            |        |  |  | Bidder to provide details & comply |

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| 1.1.33 | BHEL will provide network connectivity to the nearest network point at site. Any other connectivity between the sensors/ controller and network connectivity up to BHEL's network point shall be in the scope of the vendor.                                                                                                                                                                                                                  |        |  |  | Bidder to comply |
| 1.1.34 | Intel processor (4 core) based server and SAN storage (up to 1 TB) with RHEL OS and Apache Tomcat Web Server is available with BHEL as a specific resource for this project. The vendor may use the above mentioned resources or provide their own resources for storage of data, installation of its software as well as hosting of application developed by them. All required hardware and software shall be hosted in BHEL premises only. |        |  |  | Bidder to comply |
| 1.1.35 | The complete IOT system designed by vendor must comply with OWASP IOT framework. All Top IOT vulnerabilities of OWASP must be plugged by vendor.<br>The application designed by vendor must have proper built-in authentication and authorization mechanism for different BHEL users at different levels. Based on the requirements, the access role, user, group will be added/updated/deleted by BHEL in future.                            |        |  |  | Bidder to comply |
| 1.1.36 | Vendor should provide detailed documentation, libraries, third party library and plug-in, perpetual licenses and preferably source code for the software/application etc. used in the system.                                                                                                                                                                                                                                                 |        |  |  | Bidder to comply |
| 1.1.37 | Supplied Software/ Application should follow a standardized software development lifecycle process and methodology. BHEL may perform application vulnerability testing at the time of acceptance. In case any bug and/or vulnerability is detected, the same must be fixed by the vendor free of cost and obligation.                                                                                                                         |        |  |  | Bidder to comply |
| 1.1.38 | The proposed solution should preferably have capability for predictive analysis of machine based on captured parameters.                                                                                                                                                                                                                                                                                                                      |        |  |  | Bidder to inform |
| 1.2    | <b><u>ELECTRICAL FEATURES:</u></b>                                                                                                                                                                                                                                                                                                                                                                                                            |        |  |  |                  |
| 1.2.1  | All electronics at the various terminating locations for the sensors to be installed and dust and vermin proof panels of reputed make.                                                                                                                                                                                                                                                                                                        |        |  |  | Bidder to comply |
| 1.2.2  | All types of Wires & Conduits of LAPP/IGUS or reputed make.                                                                                                                                                                                                                                                                                                                                                                                   | 01 Set |  |  | Bidder to comply |
| 1.2.3  | Shield terminal plates/gland plates and earthing schematic for all the modules.                                                                                                                                                                                                                                                                                                                                                               | 01 Set |  |  | Bidder to comply |
| 1.2.4  | Terminal boxes, screwed terminal blocks, mounting accessories etc. as required should be provided of reputed makes viz. Wago, Phoenix contact etc.                                                                                                                                                                                                                                                                                            | 01 Set |  |  | Bidder to comply |

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| 1.3   | <b>APPLICATION FEATURES:</b>                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |                  |
| 1.3.1 | Visualization of the localized inputs from sensors should be available on HMI screen (as per clause 1.1.25).                                                                                                                                                                                                                                                  |  |  |  |  |  | Bidder to comply |
| 1.3.2 | Application accessed through the intranet via web browser as well as the HMI should be developed as per the below mentioned pattern:                                                                                                                                                                                                                          |  |  |  |  |  |                  |
|       | 1) <b>Location wise:</b> Pictorial images of different location should be displayed with module information and upon selection of location, all sensors at a particular location/ node should be visualized. Sensors should be displayed with graphical real-time value & trigger values. Display of sensors should be 2/4 sensors per page.                  |  |  |  |  |  | Bidder to comply |
|       | 2) <b>Type wise:</b> Tabs mentioning different sensor types should be displayed and upon selection, respective sensors of the selected type should be displayed in alphabetical order. Sensors should be displayed with graphical real-time value & trigger values. Display of sensors should be 2/4 sensors per page.                                        |  |  |  |  |  | Bidder to comply |
|       | 3) <b>Custom wise:</b> All the sensors should be displayed along with a checkbox in a single scroll down menu arranged by type of sensors in alphabetical order. Upon selection of one or more sensors as per the requirement, graphical real-time value & trigger values of the selected sensors should be displayed. Display should be 2/4 sensors per page |  |  |  |  |  | Bidder to comply |
|       | 4) In all above mentioned patterns, there should be a password protected provision to access historical data of sensors as well as authorization for Programming of sensor (read/write), setting of trigger values & Calibration of sensors (if required) upon selection of specific sensors.                                                                 |  |  |  |  |  | Bidder to comply |
|       | 5) <b>Breakdown history:</b> A password protected provision to display sensor malfunctions, generated triggers for early messages/ advance alarms which have been sent through SMS/e-mail.                                                                                                                                                                    |  |  |  |  |  | Bidder to comply |
|       | 6) Software developed should have real time monitoring of IOT system, dashboard reports for different level of users, different types of graphs and charts, Historical reports, analysis etc. The reports must be customizable and drill down as per BHEL's requirement.                                                                                      |  |  |  |  |  | Bidder to comply |
|       | 7) Software/Application should ensure data transfer with optimization of data, performance, and fast communication preferably using open technologies.                                                                                                                                                                                                        |  |  |  |  |  | Bidder to comply |

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|       | 8) The customization of the visualization, data management, reports is to be done as per BHEL requirement and would be finalized at the time of execution with the purpose as mentioned above. The same should be included in the offer.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |  |  | Bidder to comply |
| 1.4   | <b>OTHER FEATURES:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |  |  |                  |
| 1.4.1 | Installation & wiring of all modules, sensors, hardware, HMI, router (If used)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 01 Set |  |  | Bidder to comply |
| 1.4.2 | Lapp/ IGUS/ Phoenix contact or reputed make hose pipes, DIN rails, cable ducts, insulated lugs, printed ferrules and other material required for the wiring of required elements & Operator panels as per requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 01 Set |  |  | Bidder to comply |
| 1.4.3 | Party shall supply all clamps, fixtures and fasteners required to complete the work.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 01 Set |  |  | Bidder to comply |
| 1.4.4 | Any other material not mentioned above but found necessary to complete the IOT project shall be in party's scope of supply.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |  |  | Bidder to comply |
| 2.    | <b>FINAL ACCEPTANCE:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |  |  | Bidder to comply |
| 2.1   | Bidder shall undertake commissioning of all the supplied components at HEEP, BHEL, Hardwar. All material required for commissioning of the system with the machine shall be arranged by the bidder free of cost and obligation. All commissioning materials shall be arranged by party for successful running of the machine                                                                                                                                                                                                                                                                                                                                                                  |        |  |  | Bidder to comply |
| 2.2   | Final Acceptance shall be at HEEP, BHEL, Haridwar after:<br>a) Completion of the scope of supply and scope of work at BHEL-Haridwar.<br>b) Final acceptance shall include clearance of all pending issues.<br>c) Demonstration of various features as envisaged in the technical scope.<br>Bidder shall demonstrate operation of all parts of the system supplied along with all the features as specified above.<br>After settlement of all pending issues related to purchase order, a certificate for Completion of works in all respect shall be released within 15 days by our technical team, which will be the referred document for Final Acceptance and final payment to the Bidder. |        |  |  | Bidder to comply |

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| 3.  | <b><u>DELIVERY: (IF DELIVERY PERIOD IS NOT OFFERED, ACCEPTABLE, OFFER WILL BE REJECTED)</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |  |  |                  |
|     | i) <b>Material:</b> 6 months from date of purchase order.<br>ii) <b>Work:</b><br>a) Part-I :- Machine will be provided for a maximum of 15 days for installation of the items envisaged in the project. Since the machine is a very critical facility, any delay beyond 15 days will attract Late delivery penalty (LD) @ 2% per week of total order value.<br>b) Part-II :- 90 days after completion of Part I work. The delivery period of work for the purpose of LD shall be considered from the date of start of Part-II work to the date of successfully completion of the project (as per clause no. 2 above). |         |  |  | Bidder to comply |
| 4   | <b><u>LATE DELIVERY PENALTY (LD) CLAUSE:</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |  |  | Bidder to comply |
| 4.1 | LD will be applicable as per clause no. 9 of "General Instructions and Standard Terms & Conditions for bidding against Tender Enquiry (GISTC)" for delay in deliveries for material and Part-II work (Deliveries as per clause no. 3 above).                                                                                                                                                                                                                                                                                                                                                                          |         |  |  | Bidder to comply |
| 4.2 | LD will be applicable as per clause no. 3.ii a) of for delay in deliveries for Part-I work (Deliveries as per clause no. 3 above).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |  |  | Bidder to comply |
| 4.3 | The overall limit of LD will be as per clause 9 of GISTC.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |  |  |                  |
| 5.  | <b><u>DOCUMENTATION:</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |  |  |                  |
|     | Following documents shall be supplied by the bidder:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |  |  |                  |
| 5.1 | Hard and Soft copy of Commissioning and service manuals of all the sensors, HMI, routers etc. with their setting procedures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 03 Set  |  |  | Bidder to comply |
| 5.2 | New electrical schematic of the interfacing of supplied System (including wiring diagrams) & PLC program (if used) in hard copy as well as in soft copy.                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 03 Sets |  |  | Bidder to comply |
| 5.3 | Instructions for data back-up & restoration for supplied system & components in hard copy and soft copy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 02 Sets |  |  | Bidder to comply |
| 5.4 | All documentation (soft copy), ghost backup / Image of Hard disk (if used), Parameters & Setting of all sensors, router (if used), Written Installation procedure of all software, Operating manual & HMI & PLC Data back-up on Portable hard disk (min. 1 TB).                                                                                                                                                                                                                                                                                                                                                       | 01 Set  |  |  | Bidder to comply |
| 5.5 | Complete list of bill of materials including make/manufacturer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 02 Sets |  |  | Bidder to comply |

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| 5.6  | Detailed documentation of application/software to be provided                                                                                                                                                                                                                                       | 02 Sets |  |  |                                    |
| 6    | <b>SPARES:</b>                                                                                                                                                                                                                                                                                      |         |  |  |                                    |
| 6.1  | Party shall compulsorily quote mandatory spare parts for 2 years trouble-free operation.                                                                                                                                                                                                            |         |  |  | Bidder to comply & provide details |
| 7.   | <b>WARRANTY:</b>                                                                                                                                                                                                                                                                                    |         |  |  |                                    |
|      | Party shall stand warranty for all the supplied material and work executed for a period of one year from the date of successful hand-over after completion of work (Ref. Clause no. 2) at BHEL, Haridwar.                                                                                           |         |  |  | Bidder to comply                   |
| 8.   | <b>TRAINING:</b>                                                                                                                                                                                                                                                                                    |         |  |  |                                    |
| 8.1  | Party shall impart training to BHEL staff, for software management, operation & maintenance of the system supplied by them during installation & commissioning. Party to also arrange one week structured training, at BHEL Haridwar, on software and hardware management, operation & maintenance. |         |  |  | Bidder to comply                   |
| 9.   | <b>VENDOR'S OBLIGATION:</b>                                                                                                                                                                                                                                                                         |         |  |  |                                    |
|      | The vendor shall bring all tools, tackles and testing equipment with them for successful commissioning of supplied system.                                                                                                                                                                          |         |  |  | Bidder to comply                   |
| 10.  | <b>PRE-DISPATCH INSPECTION (PDI):</b>                                                                                                                                                                                                                                                               |         |  |  |                                    |
| 10.1 | Pre-dispatch inspection of all the items covered under Scope of Supply at Para (1) shall be carried out by BHEL personnel at vendor's works.                                                                                                                                                        |         |  |  | Bidder to comply                   |
| 10.2 | Supplier shall invite BHEL for carrying out pre- inspection.                                                                                                                                                                                                                                        |         |  |  | Bidder to comply                   |
| 10.3 | Deputed BHEL persons shall do pre-acceptance of material under scope of supply at vendor works and give dispatch clearance.                                                                                                                                                                         |         |  |  | Bidder to comply                   |
| 10.4 | Expenses of Boarding and lodging of BHEL personnel during PDI shall be borne by BHEL.                                                                                                                                                                                                               |         |  |  | Bidder to comply                   |
| 11   | <b>GENERAL CONDITIONS:</b>                                                                                                                                                                                                                                                                          |         |  |  |                                    |
| 11.1 | A point wise compliance statement shall be submitted by the bidder with reference to the above scope of supply against each clause/ sub-clause with relevant details & comments. Non-compliance to any of the clauses & quoting                                                                     |         |  |  | Bidder to comply                   |

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|      | inadequate quantity can lead to dis-qualification of the offer.                                                                                                                                                                                                                                                                                                       |  |  |  |                  |
| 11.2 | The bidder is advised to inspect the machine, on which the system is to be installed & commissioned, to ascertain all the relevant details required for successful completion of the work.                                                                                                                                                                            |  |  |  | Bidder to comply |
| 11.3 | The proposed electrical schematic & Bill of Material for the supplied system shall be provided by the vendor prior to pre dispatch inspection.                                                                                                                                                                                                                        |  |  |  | Bidder to comply |
| 11.4 | Complete specifications such as part no./Model/Type of sensors, PLC, router & HMI of supplied System shall be stated in the offer by the party. Ordering brochure/catalogue should be attached wherever necessary.                                                                                                                                                    |  |  |  | Bidder to comply |
| 11.5 | Bidder must compulsorily quote the quantity exactly as per the Scope of supply. No reduction in quantity as per the above Scope of supply is permissible.                                                                                                                                                                                                             |  |  |  | Bidder to comply |
| 11.6 | Bidder must note that all the work in the scope of this tender has to be carried out at BHEL works only. In any case, vendor will not be allowed to transport any major assemblies outside BHEL works. Therefore, bidder is advised to inspect the machine before bidding to collect & ascertain all the relevant details required for successful completion of work. |  |  |  | Bidder to comply |
| 12.  | <b>BHEL'S OBLIGATION:</b>                                                                                                                                                                                                                                                                                                                                             |  |  |  |                  |
| 12.1 | Crane facility along with lifting tackles, trolleys etc. will be made available free of charge while working in BHEL premises only.                                                                                                                                                                                                                                   |  |  |  | Bidder to comply |
| 12.2 | Facilities of minor welding, brazing, minor machining limited to fitting work /rework etc. will be made available free of cost inside BHEL premises subject to availability.                                                                                                                                                                                          |  |  |  | Bidder to comply |
| 12.3 | Minor civil work required for the installation of the supplied system shall be done by BHEL.                                                                                                                                                                                                                                                                          |  |  |  | Bidder to comply |
| 12.4 | Bidder should make his own arrangements for all types of hand tools including pneumatic/electrical drill machines, grinders, scraping tools along with the general purpose measuring instruments, straight edges etc.                                                                                                                                                 |  |  |  | Bidder to comply |
| 13.  | <b>INTELLECTUAL PROPERTY RIGHTS:</b>                                                                                                                                                                                                                                                                                                                                  |  |  |  |                  |
| 13.1 | Each Party shall retain its unrestricted rights, title, ownership and interest in its Intellectual Property. Nothing in this work shall be construed to grant to the other Party any right or license in the Intellectual Property rights of the other Party.                                                                                                         |  |  |  | Bidder to comply |
| 14.  | <b>NON-DISCLOSURE AGREEMENT:</b>                                                                                                                                                                                                                                                                                                                                      |  |  |  |                  |

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|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|-------------------------|
| 14.1 | <p>All Drawing and Technical Documents relating to the product or it's manufacture submitted by one party to the other, prior or subsequent to the formation of contract, shall remain property of the submitting party. Drawing, technical documents or other technical information received by one party, shall not without the consent of the other party, be used for any other purpose than that, for which they were provided. Such technical information shall not without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to a third party. Patterns supplied by BHEL will remain BHEL's property which shall be returned by the bidder on demand to BHEL. Bidder shall in no way share or use such intellectual property of BHEL to promote his own business with others. BHEL reserves the right to claim damages from the bidder, or take appropriate penal action as deemed fit against the bidder, for any infringement of the provisions contained herein.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  | <u>Bidder to comply</u> |
| 14.2 | <p>BHEL Haridwar has implemented Information Security Management System (ISMS) and has taken certificate for the same based on ISO 27001 standard. BHEL Information Security Policy is as follows: "BHEL is committed to ensure Integrity, Confidentiality, Availability and Security of its information at all times for serving the needs of the organization in line with its Vision, Mission &amp; Values while meeting all regulatory requirements." In line with the ISMS requirements, vendor and its staff shall ensure the protection of BHEL information assets / information processing facilities at all times with respect to confidentiality, integrity and availability." The vendor / personnel deputed by vendor shall comply with following requirements:</p> <ul style="list-style-type: none"> <li>a) Personnel deputed by vendor shall follow the ISMS system requirements.</li> <li>b) Personnel deputed by vendor shall present his / her identity proof to BHEL for getting proper authorization from BHEL. He/she shall not enter into BHEL premises without proper authorization.</li> <li>c) Vendor and personnel deputed by vendor shall sign Non-Disclosure Agreement (NDA) in the specified format of BHEL Haridwar.</li> <li>d) When allowed by proper authority, he / she shall work in secure area only in the presence of BHEL staff.</li> <li>e) If he /she has to work on any server / network device in secure area, the work shall only be allowed in presence of system administrator or any other person authorized by DTX.</li> <li>f) He / she shall maintain and service only that equipment which comes under his /her scope of contract.</li> <li>g) Vendor / personnel deputed by vendor shall ensure the return or destruction of information / data at the end of lease agreement and as and when required.</li> <li>h) Access to information assets, which is not explicitly authorized, shall be treated as forbidden.</li> <li>i) Any information security incident and / or security breaches shall be</li> </ul> |  |  |  | <u>Bidder to comply</u> |

Rnit

Def. 10/11

Suresh Kumar  
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Fin. Sec.  
Umay

Yashwanth

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|      | <p>immediately reported to BHEL.</p> <p>j) In case of any violation of the above, it will amount to non-fulfillment of terms &amp; conditions of the contract.</p> <p>All Drawing and Technical Documents relating to the product or its manufacture submitted by one party to the other, prior or subsequent to the formation of contract shall remain property of the submitting party.</p> <p>Drawing, technical documents or other technical information received by one party, shall not without the consent of the other party, be used for any other purpose than that, for which they were provided.</p>   |  |  |  |                         |
| 14.3 | <p>Such technical information shall not without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to a third party.</p> <p>Patterns supplied by BHEL will remain BHEL's property which shall be returned by the bidder on demand to BHEL. Bidder shall in no way share or use such Intellectual property of BHEL to promote his own business with others.</p> <p>BHEL reserves the right to claim damages from the bidder, or take appropriate penal action as deemed fit against the bidder, for any infringement of the provisions contained herein.</p> |  |  |  | <u>Bidder to comply</u> |

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Atygl Phyl

Sankar Chakraborty

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