## 1. GENERAL:

1.1 This document deals with requirements for submitting offers and executing the order on placement of Purchase order / Contract for the subject item. The equipment under this specification are required for Retrofitting of on-line NDT system of seamless steel tubes being manufactured in SSTP/BHEL, having diameter between 19 and 133 mm and thickness between 2 and 12.5 mm and length between 3 and 20 meters. It shall be multi-frequency, multi-channel, multi-parameter comparator for segregation of metallic tubes based on chemical composition in comparison to a standard reference tube of known chemical composition.

1.2 Bidders have to submit the offers as below by filling in the "Vendor's response" column with relevant information against each point in the respective sections below by providing information on model no, parameters etc.

1.3 Note: A just 'CONFIRMED' or 'COMPLIED' or 'YES' or 'NO-DEVIATION' or similar words in the "Vendor's response" column is not acceptable and may lead to disqualification of the Technical Offer.

1.4 Brand and model No. of the items offered must be indicated in the offer

1.5 The offer shall Consist of Sections:

1.5.1 Part A:

a. General Requirements
b. Qualification criteria (Ref. Para 4)
c. Technical offer
d. Commercial terms and conditions
e. Un-priced Price bid as per Part B (i.e. Price bid as per list shown in Part B of this Specification with the price value blanked )

1.5.2 Part B: Price bid for all items with split of major components:

| Sl.No | Particulars | Qty | Rate |
|---|---|---|---|
| 01 | | | |
| 02 | | | |
| 03 | | | |
| 04 | | | |
| 05 | | | |
| 06 | | | |
| 07 | | | |

1.6 Necessary Documents, records, drawings, catalogues as required shall also be referenced in the response column and attached with the offer.

1.7 The supplier may visit SSTP and understand the requirements before bidding.

1.8 The requirements to be met for submitting the offer and the execution of the order are laid out below.

**Technical Requirements:-**

| Sl.No | SSTP/BHEL REQUIREMENTS | Vendor's Response |
|---|---|---|
| 2 | **Job Details** | |
| | Seam less steel tubes manufactured will be NDE tested through on-line NDT machine. The tube travels on integrated test bench having automatic pinches and conveyors for EC, UT testing on which the Grade sorting equipment is to be fitted. Grade sorting is to be done prior to UT. After grade sorting, EC and UT test, the tube will be ejected automatically from the conveyor and rolled down a sloping table to a trough where the tubes will be collected in to bundles and strapped together and moved for shipment. | |
| 2.1 | **Job Parameters** | |
| | Tube sizes : OD 19 to 133 mm.<br>Thickness of tubes: 2 mm to 12.5 mm<br>Length of tubes : 3 to 20 meters.<br>Material Specification:<br>SA 192, SA 210 Gr. A1, SA 210 Gr. C, SA 106 Gr. B, SA 106 Gr. C, SA 209 Gr. T1, SA 213 Gr. T11, SA 213 Gr. T22, SA 335 Gr. P22, A 53 Gr. B, AISI 602 .<br>speed of tube travel : 1 m/s max.<br>Speed for the V- rolls : Input & output conveyor speeds are automatically calculated by the PLC depending on the diameter of the tested tubes.<br>Rate of output: 1000 tubes per shift of 8 Hrs. (operation in 3 shifts) | |
| **3** | **Scope of supply** | |
| 3.1 | scope of supply may essentially consist of: Test head and necessary sets of test and reference coils for testing tubes of size range indicated above, Coil platform, Any fixturing required to mount the coil platform on the existing NDT test bed, Defective tube marking system, Control electronics, Computer and its interface with Software for controlling and testing | |
| 3.2 | In case of Eddy current based systems, the test frequency shall by with a near range of 10 and 150 Hz. System shall have multi frequency selection with facility for testing 8 harmonics simultaneously up to a maximum of 18 kHz.<br>In case of other methods the technology shall be explained in he offer with necessary inputs for evaluation of the offer. | |
| 3.3 | All functions, test setup parameters shall be configurable in the software and accessible through the graphical user interface and shall be connectable to a computer LAN network. Test parameters, including filter, sensitivity and threshold must be selectable in the Program Mode while observing the effects on the display. An unlimited number of test set-ups must be storable in the system for easy recall in the Run Mode. The system must have auto Balancing and built in self-diagnostics | |
| 3.4 | The software shall have necessary features for controlling, evaluating the test conditions and for data analysis and reporting of test result. | |
| 3.5 | Acceptance, Rejection sorting signals etc. with capability for storage of calibration and test data and retrieval for test setup | |

| | | |
|---|---|---|
| | and result analysis shall be available. Net working, Multiple channeling, Multi screen display for linear and polar display, end sensors etc. to enable tube tracking must be available. Multiple threshold analysis with independently configuration to enable identification of different type test data must be available. | |
| 3.6 | Test and reference coils shall be of high and reliable quality. The features of the coils and other subsystems shall be well described in the offer. The coils must be guaranteed against failure or deterioration for a period of 3 years. | |
| | The layout and footprint area shall be described using drawings to identify space requirement and feasibility of incorporating in the existing test set up | |
| 3.7 | Operating instruction / maintenance manual to be supplied along with relevant drawings. | |
| 3.8 | Recommended spares for the smooth running of the system for minimum 2 year period shall be offered. | |
| 3.9 | The integration of the Grade sorter system with our existing system shall be carried out. | |
| 3.10 | Tube feed conveyor and feeding drive are not included in the scope and is available in the existing NDT system. | |
| **4. Qualification Critera:** | | |
| 4.1 | The supplier shall be in the business of carrying out Design, Manufacture supply and installation of Eddy current test systems or Material Grade sorting system at least for 3years. | |
| 4.2 | With respect to point 3 above, proof of performance of the offered system shall be provided in the offer based on similar systems supplied to other customers by way of certification of performance or by spot visit. | |
| **5. General requirements:** | | |
| 5.1 | The schematic drawing and operational features, catalogues etc. shall be provided in the offer | |
| 5.2 | Supplier shall prepare quality plan covering major items indicating critical quality characteristics, method of measurement, reference standard, acceptance norms and submit to BHEL before starting the manufacturing activities. | |
| 5.3 | The system performance shall be checked at BHEL after installation on a set of tubes of 3 different Diameters covering the entire range of tube sizes. Test to be demonstrated for a period of at least 3 shifts continuously. | |
| 5.4 | Service shall be provided by the supplier during guarantee period and also later through AMC. The system supplied must be supported by way of spares, availability and service for a minimum period of 10 years. | |
| 5.5 | List of spares with part identification no. (Tools, Mechanical, Electrical & Electronics) to be maintained for ensuring continuous operation with least delay time shall be provided in the offer with price. | |
| 5.6 | Supply of required commissioning spares for proving the performance of the m/c at SSTP is supplier's scope | |

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