

**Bharat Heavy Electricals Limited**

(A Government of India Undertaking)

Electronics Division

P B NO 2606, Mysore Road, Bangalore - 560026

Tel 080 26746117 / 26998366 Fax 080 26740137

Tender document for supply of SMT AUTOMATIC SCREEN PRINTER**R F Q Number : TRSM900013**Tender Qty : **One Number**

Tender Due Date and Time : 13.08.2008 13.00 Hrs

Tender Opening Date and Time : 13.08.2008 13.30 Hrs

Place of opening of Tender : SA – MM Conference hall

Scope:

Supply, Installation and Commissioning of the Automatic Screen Printer for SMT Line as per the specifications..

1. Two part Bid - Tender shall be submitted in two parts :

- Part I – Techno commercial bid without prices.
- Part II – Price bid

Tender (quotation) shall be submitted in a sealed envelope super scribed with **RFQ NUMBER / and DUE DATE** on it and the same must reach our office on or before the due date by **13:00 hrs**. Quotation can also be dropped in the tender box with caption "**Sub Assembly - TRS**". Late quotations are liable to be rejected.

Tender shall be addressed to **Sr.DGM / EM - Coml**, Electronics Division, Bharat Heavy Electricals Ltd., Mysore road, Bangalore 560026.

2. Earnest Money Deposit : EMD of Rs 1,00,000/- (rupees one lakh only) shall be submitted in the form of DD along with the Techno-commercial bid in a separate sealed cover in favor of "**Bharat Heavy Electricals Limited**". EMD in the form of DD / Pay order only is acceptable & any other form is not acceptable and the bid is liable for rejection. EMD amount doesn't carry any interest. The same will be converted as Security Deposit for the successful bidders and for unsuccessful bidders the same will be refunded after finalization of the order. For successful bidders EMD will be refunded after submission of PBG.

3. Delivery Period: Equipment shall be delivered, within 4 months from the date of placement of technically & commercially clear purchase order.

4.0 Warrantee period : Equipment shall have a comprehensive warrantee of 12 months from the date of installation / acceptance and accordingly PBG shall be for 12 months from date of acceptance.



5. Terms and conditions:

1. All the Bidders shall meet the **pre-qualification criteria** and Comply with **Technical Specification** mentioned in this specific tender.
2. Indian Bidders are required to comply with the **general terms and conditions** as per **SA – 01 (Annexure –I)**
3. Foreign Bidders are required to comply with the **general terms and conditions** as per **SA – 02. (Annexure –II)**

Pre qualification criteria

1. The vendor shall be an Original Equipment Manufacturer (OEM)
 - a. Based in India
 - b. Foreign OEM with Authorized Indian dealer(s) / representative(s) for sales & service. The authorization letter for the dealer/ representative shall be provided.
 - c. Offer can be submitted by the OEM or their authorized dealers in India along with an authorization letter. However Purchase Order will be placed on the lowest technically acceptable bidder on the OEM only.
 - d. If the offer is from an authorized representative in India , the Indian representative cannot quote for the same equipment from 2 or more different OEM's
2. The offer shall be only for new equipment and not for any refurbished / used equipment. A declaration to the above effect to be furnished.
3. All the parts used in the machine shall also be new and not used / refurbished ones. A declaration to the above effect to be furnished.
4. The vendor should have already supplied and installed 10 nos. of similar machines in India and operating satisfactorily for at least one year during the last three years. The details of the customers with contact details, machines installed, date of installations etc. to be provided.
5. The vendor shall be in a position to provide service and spares support for the installations in India.
6. The vendor or their authorized service representatives should have trained engineers in India for commissioning & service for the offered equipment. A declaration to the above effect to be furnished.
7. The vendor shall be in a position to undertake AMC for the equipment with BHEL after the expiry of the warranty/ guarantee period either directly or through a service representative. The vendor should have successfully completed AMC for similar machines for at least one year in India and necessary proof to be furnished.
8. The vendor shall arrange for a demonstration of the machine or a similar system operating in India, as required by BHEL.
9. The vendor shall furnish a comprehensive warranty for at least 12 months from the date of commissioning or 18 months from the date of delivery, whichever is early.
10. The vendor shall guarantee the performance of the equipment for at least 12 months from the date of commissioning.



NOTE:

1. Pre qualification evaluation will be carried out based on the details furnished by the vendor / feedback from their customers / inspection of the company / product if required by BHEL and at its sole discretion.
2. Pre qualification criteria are mandatory requirements and the technical bids will be evaluated only when the Pre Qualification criteria are met.

Specifications for automatic screen printer :

The offer shall be corresponding to the parameters under the specifications below or better.

| Specifications for SMT Automatic Screen Printing Equipment | | |
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| 1 | TYPE | IN-LINE AUTOMATIC |
| 2 | BOARD HANDLING | |
| 2.1 | PCB BOARD SIZE | Maximum 20" X 20" or better |
| 2.2 | PRINT AREA | Max print area 20" X 20" or better |
| 2.3 | FIDUCIALS RECOGNITION | a) Standard 3 Fiducials for recognition of the PCB and stencil. b) Multiple options for type of fiducials |
| 2.4 | THICKNESS | Up to 6mm |
| 2.5 | MAXIMUM BOARD WEIGHT | Upto 4 kgs, |
| 2.6 | FEED DIRECTION | Left to Right |
| 2.7 | TABLE MOVEMENT | Automatic |
| 2.8 | LOADING | Automatic |
| 2.9 | MOVEMENT | Automatic |
| 2.10 | PCB WARPAGE CONTROL | Provision for warpage control of about 1 % of PCB diagonal |
| 3 | CONVEYOR | |
| 3.1 | SPEED | Upto 200 MM /SEC Adjustable or better |
| 3.2 | TRANSPORT | Left to right |
| 3.3 | CONVEYOR CLEARANCE | MIN 2.5 MM |
| 3.4 | WIDTH ADJUSTMENT | AUTOMATIC |
| 3.5 | TRANSPORT HEIGHT | SMEMA COMPATIBLE |

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| 4 TOOLING | | |
| 4.1 | BOARD SUPPORT | 1) Both Magnetic pins and Vacuum. Adjustable Support to handle Underside Component, 2) Minimum of 25 pins should be provided. 3) Minimum of 5 magnetic bars to be provided.. |
| 4.2 | UNDER SIDE COMPONENT CLEARANCE | Minimum 15mm |
| 4.3 | CLAMPING OF BOARD | Automatic Edge Clamping with magnetic and vacuum supports |
| 5 OPTICAL ALIGNMENT | | |
| 5.1 | NUMER OF FIDUCIALS | Minimum 3 |
| 5.2 | ALIGNMENT | Automatic vision alignment System with min. 2 cameras with a FOV more than 8 MM X 8MM for alignment of PCB & stencil. |
| 6 STENCIL | | |
| 6.1 | ALIGNMENT | Automatic |
| 6.2 | CLAMPING | Pneumatic and automatic |
| 6.3 | FRAME SIZE (internal) | Frame size upto 29" x 29" adjustable, Universal Adaptor shall be provided for handling smaller size stencils. |
| 6.4 | UNDER SIDE STENCIL CLEANING | An automatic & programmable cleaning mechanism (wet/dry & vacuum) shall be part of the System |
| 6.5 | CLEANING CONSUMABLES | Cleaning consumables like special wiping paper/cloth roll, special cleaning medium etc. to be provided for 2000 hrs of operation. The details of the cleaning material to be clearly specified with quotation |
| 7 SQUEEGEE | | |
| 7.1 | MATERIAL | Both Polyurethane & Metal. One additional set of squeegees to be included |
| 7.2 | PRINT HEAD | Dual Squeegee |
| 7.3 | BLADE LENGTH | Suitable for PCB size in Clause 2.1 |
| 7.4 | SQUEEGEE PRESSURE | 0-25 Kg (Automatically adjustable) |

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| 8 PRINT PARAMETERS | | |
| 8.1 | PRINT SPEED | Upto 200 mm/Sec or better |
| 8.2 | PRINT SPEED CONTROL | Programmable |
| 8.3 | SNAP OFF | -1.5 to 3 mm (programmable) |
| 8.4 | SCREEN SEPERATION | Vertical & Automatic, 0.5 to 20mm/sec |
| 8.5 | PRINT ACCURACY | 0.025mm or better at 6 sigma |
| 8.6 | REPEATABILITY | 0.025 mm or better at 6 sigma |
| 8.7 | PRINT PRESSURE | 0-250 N |
| 8.8 | PRINT DIRECTION | Bi-directional |
| 8.9 | PRINT STROKE | upto 20" programmable |
| 8.10 | TOTAL CYCLE TIME | Below 15 sec for one board including loading, alignment, transport, printing etc. |
| 9 INSPECTION | | Programmable 2d inspection of the printing to be part of the system |
| 10 CONTROL SYSTEM | | |
| 10.1 | OPERATING SYSTEM | Menu driven, Windows based (Win98, NT, 2000,XP etc) |
| 10.2 | PRINT PROGRAM STORAGE | 500 Print Programmes |
| 10.3 | DISPLAY | 17 " LCD monitor or better |
| 10.4 | CONTROL KEYS | On a touch pad or key board |
| 10.5 | PC System | A suitable PC System with about 3 GHz processor, 2 GB RAM, 250 GB HDD,17" LCD display with Serial , parallel, Ethernet, USB ports to be provided for data exchange. |
| 11 POWER | | 230V +/-10%, 50Hz Single Phase (or) 415V +/-10%, 50Hz, Three Phase with in built UPS for the control system. UPS for the machines will be in BHEL's scope and UPS configurations/ requirement for the machine to be spelt out. |
| 12 AIR PRESSURE | | Within 6 bar |
| 13 WORKING ENVIRONMENT | | Air conditioning requirement, if any, to be specified. |
| 13.1 | HUMIDITY | Separate system for maintaining the required humidity within the print area. |
| 13.2 | TEMPERATURE RANGE | The working temperature range of the machine to be clearly specified. Working range of 10-35 Deg C preferred. |



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| 14 | COMPATIBILITY PROTOCOL | SMEMA for both mechanical & electrical |
| 15 | SAFETY | a)Emergency stop function with buttons to be provided at front of the machine b)Safety cover to be provided both at front c) Multi colour signal tower to be provided c) must conform to all relevant safety norms & standards like CE mark specifications |
| 16 | SPARES | Spares for 2 years operation & maintenance to be quoted with the list of spares. |

Note:

- 1.Specify the machine parameters briefly explain features wherever applicable.
- 2.If more than one model is quoted, separate offers shall be submitted.
- 3.Additional Accessories, which will enhance the performance, shall be quoted separately.
- 4.A clause wise deviation, if any, has to be brought out clearly. If there are no deviations, the vendor has to positively certify compliance to the specifications in toto.
- 5.The complete technical information and catalogue shall be given.

GENERAL TERMS :

1. Operation , Maintenance , Service & spare parts manual have to be supplied in hard copy and soft copy along with the equipment. Detailed Hydraulic, Pneumatic , Electrical and Electronic circuit diagram have to be provided as part of the manuals. The lubrication points are to be identified on the machine with respect to O & M manual. The schedules for lubrications are to be provided in the manual.
2. Details of service agents in India to be furnished.
3. All commissioning / service requirements such as power, compressed air, water, lubricants, coolants, any civil requirements like special foundation arrangements etc. have to be listed and intimated well in advance.
4. The equipment shall be installed & commissioned at BHEL / EDN by the vendor.
5. The vendor shall coordinate with other vendors of related equipment of SMT line, which will be installed at BHEL-EDN, during installation & commissioning.
6. Training shall be provided for operation & maintenance for BHEL personnel. The training details to be furnished.
7. Service Engineers are to be deputed during initial pilot run and commissioning period at no extra cost to BHEL.
8. Initial Calibration certificates shall be furnished. The subsequent calibration schedules, process and periodicity shall be furnished along with the authorized calibration agencies, if any.
9. Test certificates of the equipment shall be furnished to BHEL along with the equipment.
10. The software upgrades during the warranty / guarantee period shall be provided free of cost