

## Annexure-1

# Technical Specification for bench type Precision Cutting Machine

### 1. Cut-off-wheel

- (a) Rotational speed: 300-5000 rpm
- (b) Size: It should be possible to use cut-off wheel of diameter 75-200mm or greater
- (c) Arbor size: 12.7mm
- (d) Cutting Capacity: 55mm dia. (minimum) or 165mm x 50 mm (minimum)
- (e) Height Adjustment: Automatic
- (f) Type of cut-off-wheel: Resin bonded and metal bonded

### 2. Cutting

- (a) Movement X, Y, Z Axis: 40, 200, 40 mm (minimum)
- (b) Cutting Length: 0-190mm in 0.1 mm steps
- (c) X-Axis Movement: Automatic positioning & serial sectioning
- (d) Feed rate: 0.01(or lower)-3mm/s
- (e) Cutting Table Movement: Motorized X & Y axis movement
- (f) Cutting Table: Designed for accommodating variable size & shapes, made of exchangeable stainless steel plates

### 3. Control

- (a) Automatic Electronic Control, Touchpad, joystick, turn/push knob
- (b) Display: colour touch screen with security options
- (c) Feed speed controllable in the range 0.01-3mm/s

4. Motor Power : 1kW minimum

5. Noise Level : Not more than 66 dB(A)

6. Power Supply : 200-240 V, 50-60 Hz,  $I_{max}$ -15A

### 7. Cutting Chamber

- (a) Fully transparent safety cover
- (b) LED Light inside the chamber for better visibility during cutting process
- (c) **Line laser for precise positioning of cutting wheel**

### 8. General Requirement

- (a) Joy stick for fast manual positioning of work piece

- (b) Control panel should display load on the cutting motor along with feed speed, Cut-off wheel rotation speed, cut length & estimated remaining time during operation
- (c) Feed rate should be automatically controlled to a suitable value in case of overload on motor
- (d) Built-in coolant recirculation tank with magnetic collector & drain basket for filtering of coolant
- (e) It should be possible to induce up and down movement of cutting wheel as the cutting table moves forward to ensure a small contact area between the cut-off wheel and the work piece in order to give better access of coolant and no thermal damage to the work piece.

## **9. Safety**

- (a) Necessary port should be provided to connect cutting chamber to exhaust for preventing exposure from harmful and unpleasant fumes.
- (b) Emergency stop button should be provided
- (c) Safety interlock switch should be provided to prevent the cut-off wheel from starting whilst the cover is open.
- (d) Standby Mode should be provided when machine is not in use for more than 10 min to save cost & power.
- (e) The safety cover should get locked mechanically with the start of the cutting process and must not get open until the cut-off wheel has stopped.

## **10. Cut-Off wheels**

- (a) One number of Ø 200 mm, metallic bond, diamond cut-off wheel for cutting hard materials such as ceramics, alumina, tungsten carbide, sintered carbides, composites
- (b) 10 numbers of Ø 200 mm, resin bonded, Alumina cut-off wheel for cutting steel in the hardness range 100-350 Hv
- (c) 10 numbers of Ø 200 mm, resin bonded, Alumina cut-off wheel for cutting stainless steel, refractory metals in the hardness range 300-500 Hv
- (d) 10 numbers of Ø 200 mm, resin bonded, SiC cut-off wheel for cutting non ferrous metal and alloys, Titanium and alloys in the hardness range 30-350 Hv
- (e) 10 numbers of Ø 200 mm, resin bonded, SiC cut-off wheel for cutting steel in the hardness range 450-700 Hv
- (f) One number of Ø 100 mm, metallic bond, high density diamond cut-off wheel of 0.3mm thickness or less for cutting hard materials such as ceramics, hard facing plasma deposit, tungsten carbide, silicon carbide, sintered carbides, mounted samples

## **11. Flanges**

One set of stainless steel flanges suitable for each of the cut-off wheels of sizes Ø 75 mm, Ø 150 mm, and Ø 200 mm

## **12. Reduction Ring**

Five number of reduction ring 25.4/12.7 mm

## **13. Optional items (to be quoted separately)**

- (a) Quick coupling vices, Sample holders/chucks for different shapes and sizes, adapting stand for sample holders
- (b) Anti rust and anti-septic liquid

#### **14. Documents to be supplied**

Hard copy consisting of Functional description, Hardware and Software Operation Instructions, Maintenance and cleaning descriptions should be supplied in English language.

#### **15. Training**

Vendor should provide extensive training to user's engineers in operation, service & maintenance of the equipment as well as application of analysis software for at least two days after completion of installation and commissioning of the instrument at user's department without any additional charges.

#### **16. Warranty**

The Bidder must provide full comprehensive warranty against manufacturing defect for a period of **12** months from the date of installation at user's site. During this period they should provide all spare parts required for repair and maintenance free of cost. Supplier should complete the repair work within 15 days post communication of complaint. Warranty should be provided by the original Manufacturer.

#### **17. Extended Warranty**

**Extended Warranty:** The Bidder should simultaneously quote extended warranty or comprehensive AMC for 02 years commencing just after the completion of regular warranty period of 01 year from the date of commissioning of the equipment. Cost of comprehensive AMC for 02 years will **not be** added to the equipment cost for determining the lowest bidder. It will be the sole discretion of the user department to award extended warranty along with the purchase order.

#### **18. ESSENTIAL REQUIREMENTS**

- (a) Vendor must have supplied similar instrument in India and should provide names, correspondence address, Email-ID, Phone Number of Indian R &D laboratories/Industries where such instrument have been supplied in the last ten years.
- (b) Technical and applications support should be available in India, preferably from manufacturer. Indian agent should have trained technical and applications engineer to provide support to equipment.

(c) Assurance of supply of spare parts and accessories required for normal operation and maintenance of the system over a period of 5 years after installation (Please quote for these spare part). **These should be quoted separately and the cost will not be added to the equipment cost for determining the lowest bidder.**

**Note:** The offers must be strictly as per our specifications and a compliance statement should be provided by the bidder. Mere repetition of tender specifications in the quotation shall not make the parties eligible for consideration. A quotation has to be invariably supported with the printed technical leaflet/literature or the same available on the website of the original manufacturer and the specifications mentioned in the quotation must be reflected/supported by the printed technical leaflet/literature. The bidder should highlight the quoted model in the leaflet/literature enclosed with the quotation. Non-compliance of the above shall be treated as incomplete/ambiguous offer and liable for rejection of offer without further intimation.