



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai - 400076

4 stage semi-automatic ultrasonic cleaning equipment

Requirement and Specifications :

A. Manufacturing System

1. Process: Ultrasonic cleaning
2. Built-in system to provide cleaning environment (rotary baskets, power generators, ultrasonic transducers, control panel)
3. Suitable for cleaning of Medical implants (for lattice structure having pore size upto 200 μm and impurities present are Ti6Al4V powder particles of size 5 to 50 μm and Zirconium beads trapped in lattice)

B. Part Geometry

1. Internal basket dimensions: near about 300 mm x 300 mm x 300 mm
2. Process Tank Capacity - 30 liters

C. Machine requirements

1. No. of stages : 2
2. 1st stage : Ultrasonic cleaning (frequency 120 KHz) with Isopropyl Alcohol solvent (Temperature 60° C)
3. 2nd stage : Ultrasonic cleaning (frequency 168 KHz) with Deionized water (Temperature 80°C)
4. Basket rotation for all stages
5. Tank material : SS 316
6. Machine size: less than 2000 mm x 2000 mm x 2000 mm
7. Control panel : yes
8. Filtration/drainage system : Drain valve for periodical drain of complete solution
9. Temperature adjustments : Time and temperature controller

10. Indicators for progress/ temp/frequency
11. Ultrasonic generator : Tube resonator, piezo ceramic transducers
12. SS heater for heating the solution
13. Level switch to avoid dry running : Provide water Level Sensor
14. Insulation provision for inner tank
15. Timer for ultrasonic activity

D. Warranty and Maintenance, commissioning, and accessories

1. The supplier should provide the machine calibration certificates for different parameters like accuracy, repeatability, etc.
2. The supplier should provide certificates related to conformity with health, safety and environmental protection standards for machines.
3. The supplier should provide feedback about the machine from other customers from government institutes.
4. The supplier should be able to demonstrate the machine installed at other locations.
5. The supplier should provide purchase orders (including total cost) from at least three central govt. institutes along with financial bid.
6. There should be a service contract between machine manufacturer and supplier for 5 years, if applicable.
7. The supplier should mention all the standard accessories supplied along with machine
8. Foundation kit like vibration mounting pads, bolts, etc. required for foundation to be supplied.
9. Detailed drawing of foundation indication necessary details to be supplied.
10. Special requirements like isolation, vibration criteria, air conditioning, dust free atmosphere, power requirements and flooring to be specified.
11. Calibration of the machine after Installation, if required.
12. Supplier has to provide required training regarding machine operation and maintenance to engineers after installation of the machine.
13. Three sets of the following documents in English are to be supplied with the machine :
 - Operator manual, Programming manual, spare parts list, Maintenance manual, Electrical
 - wiring diagrams, Preventive maintenance checklist, trouble shooting charts and guidelines.

- Machine test charts, Machine assembly drawings, Documents of all the bought out items, etc.

14. Supplier should have installed similar or better configuration machines in at-least 05 locations in India, and should provide their contact details.

15. The OEM should ensure continued supply of spares throughout the useful life of the machine, but not less than 15 years.

16. Comprehensive (hardware and software) warranty for five years after commissioning.

17. If the system remains down (non-functional) for 15 days after filing of complaint the, warranty period to be extended for period between dates of reported problem and fixing.

18. Free upgrades of software for five years after commissioning.

19. Complete set of machining tools needs to be provided along with the machine.

20. Complete installation of the overall system including loading/unloading at the installation site.

21. Kits of spare parts – A kit of spare parts for maintenance of the machine for a period of 5 years' operation should be quoted

E. Evidence to the following parameters should be submitted along with the technical bids-

1. Cleaning accuracy

2. Repeatability

3. Health and electrical safety