

**MINISTRY OF HEALTH & FAMILY WELFARE
(GOVT. OF INDIA)**

ALL INDIA INSTITUTE OF AYURVEDA (AIIA), NEW DELHI

Tender

for

**Supply, Installation, Testing & Commissioning of Laundry System
at All India Institute of Ayurveda (AIIA), Sarita Vihar, New Delhi**

VOLUME – III

TECHNICAL SPECIFICATION

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(Consultants & Engineers for Mega Hospitals & Laboratories)
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TECHNICAL SPECIFICATION OF MECHANIZED LAUNDRY

SCOPE OF WORK Supply, installation, testing and commissioning and handover of complete CSSD to hospital including all accessories and auxiliary items in accordance with the specifications, bill of quantities including Turnkey work and providing of free spare parts and service during 2 year Defect Liability Period.

1. SLUICING CUM WASHER EXTRACTOR

For removal of blood stains, faecal matter, vomit and other residue

Capacity -15 kg ,

Electrically Heated,

Front loading, Heavy duty, High Spin, Soft Mount, Suspended, Variable frequency drive & Auto reverse & forward, Open pocket & Front display.

- a. Control - Fully programmable Microprocessor/Computer controlled
- b. Dispenser - 4/5 compartment detergent dispensers
- c. Outer Drum - Made of Stainless steel AISI-304 with 2mm thickness
- d. Inner Drum - Made of Stainless steel AISI-304 with 2 mm thickness of basket, CNC Perforated
- e. Outer Cabinet - Made of Mild Steel sheet and channels, Welded structure, Finished with Powder Coating
- f. Door - Made of die pressed Stainless steel AISI 304 quality, 2 mm thickness, Toughened glass window , SS door latch/handle and interlock for safety
- g. Door Opening - 500 mm Ø (Minimum)
- h. Level Sensor - Highly sensitive auto water level sensor with PLC
- i. Seal - High quality seal to be used to prevent contact of water with the Bearings
- j. Bearing Housing- Roller bearings of reputed brand duly packed with grease & Lubricants
- k. Wash RPM - 35 (Minimum)
- l. Final Extract - 870 RPM(Minimum)
- m. G-Force - 340 (Minimum)
- n. Motor - Large capacity motor with variable frequency drive for wash, distribution, low, normal and high spin.
ABB/SIEMENS/CROMPTON/NGEF/KIRLOSKAR MAKE
- o. Electric Load - 9/13.5 Kw
- p. All wet materials and components must be of AISI-304 Stainless steel
- q. All Stainless steel components should be TIG welded and highly polished.
- r. In-built Control Panel and Motor

2. WASHER EXTRACTOR

For washing cleaning and extraction

**Capacity -30 kg , Electrically Heated,
Front loading, Heavy duty, High Spin, Soft Mount, Suspended, Variable frequency drive &
Auto reverse & forward, Open pocket & Front display.**

- a. Control - Fully programmable Microprocessor/Computer controlled
- b. Dispenser - 3/4 compartment detergent dispensers
- c. Outer Drum - Made of Stainless steel AISI-304 with 2mm thickness
- d. Inner Drum - Made of Stainless steel AISI-304 with 2 mm thickness of basket, CNC Perforated
- e. Outer Cabinet - Made of Stainless Steel sheet AISI-304 and channels, Welded structure, Finished with polishing.
- f. Door - Made of die pressed Stainless steel AISI 304 quality, 2 mm thickness, Toughened glass window , SS door latch/handle and interlock for safety
- g. Door Opening - 500 mm Ø (Minimum)
- h. Level Sensor - Highly sensitive auto water level sensor with PLC
- i. Seal - High quality seal to be used to prevent contact of water with the Bearings
- j. Bearing Housing- Roller bearings of reputed brand duly packed with grease & Lubricants
- k. Wash RPM - 35 (Minimum)
- l. Final Extract - 800 RPM(Minimum)
- m. G-Force - 340 (Maximum)
- n. Motor - Large capacity motor with variable frequency drive for wash, distribution, low, normal and high spin.
ABB/SIEMENS/CROMPTON/NGEF/KIRLOSKAR MAKE
- P. Electric Load - 18/24 Kw
- q. All wet materials and components must be of AISI-304 Stainless steel
- r. All Stainless steel components should be TIG welded and highly polished.
- s. In-built Control Panel and Motor

3. WASHER EXTRACTOR

For washing cleaning and extraction

**Capacity -60 kg , Electrically Heated,
Front loading, Heavy duty, High Spin, Soft Mount, Suspended, Variable frequency drive &
Auto reverse & forward, Open pocket & Front display.**

- a) Control - Fully programmable Microprocessor/Computer controlled
- b) Dispenser - 5 compartment detergent dispensers
- c) Outer Drum - Made of Stainless steel AISI-304 with 2mm thickness
- d) Inner Drum - Made of Stainless steel AISI-304 with 2 mm thickness of basket, CNC Perforated
- e) Outer Cabinet - Made of Stainless Steel sheet AISI-304 and channels, Welded structure, Finished with polishing
- f) Door - Made of die pressed Stainless steel AISI 304 quality, 2 mm

- g) Door Opening - thickness, Toughened glass window , SS door latch/handle and interlock for safety
500 mm Ø (Minimum)
- h) Level Sensor - Highly sensitive auto water level sensor with PLC
- i) Seal - High quality seal to be used to prevent contact of water with the Bearings
- j) Bearing Housing- Roller bearings of reputed brand duly packed with grease & Lubricants
- k) Wash RPM - 35 (Minimum)
- l) Final Extract - More than 700 RPM
- m) G-Force - 320 G or more
- n) Motor - Large capacity motor with variable frequency drive for wash,
 - a. distribution, low, normal and high spin.
 - b. ABB/SIEMENS/CROMPTON/NGEF/KIRLOSKAR MAKE
- o) Electric Load - 24/36 Kw (Maximum)
- p) All wet materials and components must be of AISI-304 Stainless steel
- q) All Stainless steel components should be TIG welded and highly polished.
- r) In-built Control Panel and Motor

4. DRYING TUMBLER

Capacity – 30 kg

Electrically Heated,

Heavy duty, Front Loading, Cool down Feature, Auto-timed, Auto-reversible, Auto digital temperature control, Dual Motor drive, Open Pocket & Front display

- a. Control - Microprocessor/PLC/Computer controlled
- b. Temperature - Auto digital control
Controller
- c. Time - Auto digital control for drying and cooling
Controller
- d. Inner Drum - Made of Stainless steel AISI-304 with 1.5 mm thickness of basket, CNC Perforated
- e. Outer Cabinet - Made of Steel sheet of 1.5 thickness, Welded structure, Finished with Powder Coating
- f. Door - Made of die pressed Stainless steel AISI 304 quality, 1.5 mm thickness, Toughened glass window , SS door latch/handle and interlock for safety
- g. Door Opening - 500 mm Ø (Minimum)
- h. Basket Volume- 295 Ltrs.(Minimum)
- i. Suction Blower- Heavy duty Centrifugal Suction Blower and dynamically balanced
- j. Insulation - Glass wool duly packed on all sides & front of the drier to minimize the heat loss & saves energy
- k. Lint Screen - Self cleaning lint screen of Stainless Steel AISI-304. Facility of cleaning should be through front door
- l. Electric Load - 24 Kw
- m. All wet materials and components must be of AISI-304 Stainless steel
- n. All Stainless steel components should be TIG welded and highly polished.
- o. In-built Control Panel and Motor

5. FLATWORK IRONER CHEST HEATED (Calendaring m/c)

Suitable for rapid ironing of linen like Bed sheets, Pillow cover or flat sheet etc

Roller Size- 380 Ø mm x 3000 mm length, Electrically heated
Front feed and Front Return Type, Variable Speed Control, Powder coated outer body
Auto timed and Auto temperature control

- a. Roller - Made of Stainless steel AISI-304. Machined with perforations through out the length and periphery for moisture suction. Roller should run on self aligning ball bearings.
- b. No. of Rollers- 1 (One). padded with heavy duty heat resistant Numex/Polyester
- c. Ironing Chest- Sliding type. Grinded smoothly Polished Chest should move back and forth through pneumatic cylinders at both sides. Adjustable and uniform ironing pressure should be across the entire roll.
- d. Drive - Heavy duty chain drive with spring loaded adjustable sprockets and equipped with Geared Box Motor
- e. Drive Motor- 1.5 Kw (Approx.)
- f. Suction Motor- 0.37 Kw (Approx.)
- g. Control - Digital control with variable speed of Roller through VFD
- h. Roller Speed - 2-6 m/min
- i. Main body - Made of steel sheet of 1.5 mm thickness with powder coating
- j. Safety - Start and stop of the machine with emergency switch. Automatic stopping of the machine for Finger guard
- k. Padding - Galvanized coil type/leaf type springs should be covered with heat resistant double layer Polyester Padding of minimum 900 GSM
- l. Heating load- 18/24 Kw (By easily replaceable heaters with thermostat)(Heating elements should be oriented in the Roller in a manner for good dissipation of heat)
- m. Top cover - Made of Stainless steel for stacking pressed articles
- n. All wet materials and components must be of AISI-304 Stainless steel
- o. All Stainless steel components should be TIG welded and highly polished.
- p. In-built Control Panel and Motor

6. FLAT BED PRESS

Suitable for linen like uniform, room furnishing , personal garments, Bed sheets & Pillow Covers

Head & Bed Size- 1500X750mm Electrically/Steam heated,
Auto-timed, Auto-temperature controlled, Double Switch operation, Built-in Suction Blower,
Pneumatically controlled,

- a) Head - Polished Stainless steel/High quality steel with Teflon coated/Nickel plated
- b) Main Body- Made of Mild Steel sheets of 1.5 mm thickness, Welded structure and finished with powder coating
- c) Rocker Arms- Should move on ball bearings. Front head weight should be counter balanced by

Springs. A pneumatic cylinder should be attached to rocker arms for raising and lowering of the head.

- d) Bed- Large perforated bed with heat resistant Silicon/Molleton padding
- e) Blower - 0.75Kw Heavy duty Suction Blower with powerful suction
- f) Safety - Emergency Stop of the machine with emergency switch. Automatic stopping of the machine for Finger guard for operator safety
- g) Control - Frontally placed. Automatic digital timed release of the head at preset time. Push Button for raising and lowering of the head pneumatically
- h) Temperature- Digital temperature controller
- i) Electric Load- 12/18 Kw
- j) Electric supply- 415V, 3Ø, AC, 50hz.

7. AUXILIARY STEAM GENERATOR

The Steam Generator of steam capacity 8Kg/hr. must be fully automatic and electrically operated. The Steam Generator shall be equipped with pressure vessel of heavy gauge AISI-316 Stainless Steel fitted with SS heating elements and built-in electric control panel, Pressure Regulator, High Pressure Water Injection Pump of 1hp, Pressure Gauge, Solenoid steam release Safety Valve, Highly sensitive Float Regulator, Blow down Valve, Built-in water storage tank, Inlet and Outlet connections, Solenoid valve with Flow Control Device and Drain lines. Pressure vessel should withstand double of working pressure hydraulically.

8. VACUUM FINISHING TABLE WITH IRON

Adjustable height.

Table Top Size -1200mm X 750mm

- a. Table top - Mild Steel sheet of 2.5 thickness padding with heat resistant material like Silicon etc. Perforated flat top padded with high porosity
- b. Main Body - Made of Mild steel sheets/plates and finished with powder coating
- c. Blower - Heavy duty Powerful suction through Centrifugal blower of 0.5hp Motor activated by spring loaded full length foot pedal working in combination with heavy duty micro switch
- d. Heater - 1 Kw In-built Thermostatically controlled stainless steel heater
- e. Electric Steam - Die cast sole plate, Teflon shoe and thermostatically controlled Heating element with moisture trap, Rubberized handle
- f. Electric supply- 415 V/ 3 Ph / 50 Hz/ AC/4P

9. AIR COMPRESSOR

- a. The air compressor of Elgi/Ingersolrand/ Kirloskar make shall be multistage stage, fully automatic suitable for delivering dry compressed air at pressure compatible to Ironer.
- b. Drive - Belt driven with pulleys, belts and belt guard.
- c. Motor - 3 hp. (Kirloskar/Siemens/NGEF/Crompton Greaves make)
- d. Electric supply- 415 V/ 3 Ph / 50 Hz/ AC/4P

10. MENDING MACHINE

The Mending machine or motorized sewing machine shall be heavy duty type with all metallic shuttle, and moving parts. The machine shall be complete with mounting table with adequate space for placement and movement of garments to be stitched/mended. The machine shall have a table mounted drive motor foot pedal operated for convenience of operation with both hands free.

11. WASH ROOM TROLLEY

Capacity -50Kg

The wash room trolley shall be fabricated out of Stainless Steel AISI-304 tubes and flats in all welded construction ground smooth & finished, supported on swiveling wheels.

12. DRY LINEN TROLLEY Capacity-50 Kg

The dry linen trolley shall be designed in Stainless Steel construction with all welded joints ground & smooth finished out of Stainless Steel tubes and bars and foldable front. The base frame shall be supported on 4 Nos. castor wheels min. 75 mm size of swiveling type.

13. MOBILE TABLE

Table top size-1200mm x 750mm x 800mm

The folding table shall be specially designed for carrying rolling and folding of linen in the laundry. The frame of the table shall be fabricated out of MS welded construction with one bottom shelf for storage. Complete with heavy duty ball bearing for swiveling wheels. The table top shall be of polished Stainless steel.

14. SHELF TROLLEY (Finished linen) Capacity -100Kg

The linen trolley shall be designed in Stainless Steel AISI-304 construction with all welded joints ground & smooth finished out of Stainless Steel tubes and bars and foldable front. The trolley shall be fitted with at least 4 Nos. AISI-304 Stainless Steel shelves(2-shelves removable). The base frame shall be supported on swiveling wheels.

15. LAUNDRY SCRUB STATION WITH 2 SINKS.

Stainless Steel Construction. S.S Sinks with taps for wash and rinse using hot and cold water. SS Scrubbing Board in between Sinks. Underneath Shelf. Size-1600x500x900 ht.

16. STORAGE RACK

Size – 1800mm x 1200mm x 460mm

4 shelves; Made of Stainless Steel-AISI-304, Finished with Polishing

17. LINEN FOLDING TABLE

Size- 1500 x 1200 x950mm

The table top shall be fabricated out of S.S. 304 quality and ground and polished to a dull mirror finish. The table top should be duly re-in-forced against bending and treated for sound deadening. The tabletop shall be fixed on a S.S. square tube frame. The frame shall be provided with leveling lugs for suitable adjustment of height up to ± 25 mm.

IN ADDITION TO THE ABOVE, FOLLOWING TURNKEY WORKS FOR INSTALLATION AND COMMISSIONING OF LAUNDRY EQUIPMENT AT ALL INDIA INSTITUTE OF AYURVEDA, SARITA VIHAR, DELHI ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR :

- **Electric distribution panel (EDP)** for the above Laundry equipment complete with all switchgears, wiring and controls etc complete as per specifications and drawings. (Switch gears of L&T/ Siemens/ ABB/GE or Schneider make)
- **Electrical cabling** of IS: 1554 standard and wiring as per IS : 732 standard and of adequate capacity to bear total electrical load required for laundry works from **nearby MDB/Substation in the hospital** to the Electric Distributional Panel(EDP) of Laundry room and from the EDP to the corresponding load points.
- Providing fixing of **Electrical Gadgets** like ELCB, MCB, Light Points, Power points, Fans, Cool air Fans, Exhaust fan etc in the Laundry room. Number of fans, power point, bulbs/tube light. Apart from these supplies to the individual equipments with ELCB & MCB in the Laundry room. Installation of MCB, ACB, ELCB & OCB of Havell/Siemens/L&T/Schneider etc for Control Panel for Laundry.
- Laying of **GI water pipe line** with necessary taps, joints, elbows, Unions and valves of GI made and IS-1239 standard (Latest version) and of adequate sizes to feed total water requirement of the Laundry from the available source point in the hospital to the overhead tank and from the overhead tank to the installed machines'/users' ends at Laundry Room.

- Installation and commissioning of **Water Softener** for softening of available ground/supply water continuously at the hardness necessary for washing and other application required for Laundry is at least “< 50 ppm” or as per suitability of the Steam Generators/equipment. The Water Softening System shall be installed in the capacity compatible to the requirement of Laundry equipments and system running for the assigned duration at fully loaded condition. The specimen of ground/supply water is available at the site of installation at AIIA, NewDelhi for design and selection of Water Softening System.
- Construction/laying of **Draining/Sewer system** from all the equipments/Sinks to the main drain line with grating, proper trap and flow system and tapping.
- Necessary Ducting of GI sheet with grills at the suitable places for **Air washing** for fresh air at the working place inside the laundry. Exhaustion of hot air and **Ventilation** for creating comfortable working zone within the Laundry. Motors shall be of continuous duty S1 type of IS: 325 standard (Latest version) and of Kirloskar/NGEF/Siemens/ABB/GEC/ Crompton Greaves make.
- Arrangement for requisite **Fire Fighting** for the entire effective zones in the Laundry Room
- Additional work pertaining to Civil, Electrical, Office, Store & Laundry Furniture, Plumbing, Overhead Water Tank, Sanitary, Servo stabilizers/U.P.S etc. and any other protections relevant as per State/Central Govt. regulation/local authority/NDMC, required for successful installation testing and commissioning of the system and the offered price should include all such costs, each Schedule is to be considered a package in itself and contractor to execute the order in package on a “turnkey basis”.

In addition to the above mentioned equipment/appliances, if the contractor thinks it necessary to include any other equipment/appliances, accessories etc. for the Laundry then that may be provided after approval from Engineer in-charge.

The sizes are approximate. Minor variations in sizes shall be acceptable subject to prior approval of the Engineer.

APPROVED MAKES

1.	Air Blower	SWAM/ EVEREST/ KAY/Beta
2.	Blower/Suction Motor	KIRLOSKAR/ NGEF/ SIEMENS/CROMPTON/ABB
4.	Cable	SKYTONE/KEI/UNIVERSAL/NATIONAL/RR CABLE
6..	Control Panel	L & T/ SIEMENS/ SCHNEIDER
10.	Valve	LEADER/ ZOLOTO /CRI
11.	PVC Pipe Class III with Fitting	FINOLEX/ SUPREME/ PRINCE/ ORI-PLAST
12.	G.I. / M.S. Pipe Heavy Class	TATA/ JINDAL(HISSAR)/SAIL /SURYA PRAKASH
19.	MCCB/Contactor/Relay	L&T/ABB/SIEMENS/SCHNEIDER

20.	Pressure Gauges	H.GURU /FIEBIG
21.	StainlessSteel	TATA/SALEM/JINDAL/MUKUND/BHAYANDER/AMBICA

Note :

- **The bidder should attach Technical Compliance item wise with respect to the above technical specifications and turnkey work along with Printed catalogues**
- **The contractor shall be responsible for the complete works including submission of working drawing and walk through view.**
- **The contractor should provide complete List of Commonly used Spares, Operation manual, Equipment manual, Service manual and manuals for all systems and subsystems.**
- **Final electrical and pressure and other safety test, system test and calibration should be done by authorized person with test instruments.**
- **The contractor should provide all electrical accessories like cable wire, electrical outlets, switches etc, and they should be fire proof of reputed make, certified for electrical safety.**
- **Wherever makes have not been specified for certain items, the contractor should provide the same as per BIS and as per approval of HSCC.**
- **Training of personnel of the Institute should be 30 days at least by the contractor.**
- **The contractor should prepare and submit layout plan for Steam Pipeline, Electrical Wiring, Electrical Distributional Panel, Plumbing, Fire Fighting System, Air Washing and Ventilation and Drain line to HSCC for approval before beginning of supply and installation and As built drawing after installation.**
- **The contractor should provide test certificate for all materials along with manufacturer's test certificate and equipments used for Laundry.**
- **The contractor should provide Third party quality certificate of the laundry equipment from SGS/TUV/Lloyds saying as “ Certifies that the laundry equipment meets the technical specification and BOQ of the Contract”.**