

**MINISTRY OF EXTERNAL AFFAIRS
(GOVT. OF INDIA)**

**DISTRICT GENERAL HOSPITAL, DIKOYA
SRI LANKA**

Tender

for

**Supply Installation Testing & Commissioning of CSSD System at
District General Hospital, Sri Lanka**

VOLUME – IV

TECHNICAL SPECIFICATION

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TECHNICAL SPECIFICATION OF CSSD EQUIPMENTS

Scope of Work : Supply, Installation, Testing and Commissioning of CSSD and Turnkey work and handover to the District hospital premises of Dikoya, Srilanka including services of Defect liability Period as per contract.

1.0 DOUBLE DOOR AUTOCLAVE

(Horizontal Rectangular Steam Sterilizer)

(As per IS-3829)

Size 450mm (W) x 450mm (H) x 900 (Depth)

Power Load 12 k.w.

Chamber Volume **255 Liters**

Working Pressure 15 psi

Working Temperature 121°C

Hydraulic testing Jacket / Chamber 45 / 30 psi

Material of Construction:

Chamber S.S. 316 L quality,

End-ring S.S. 316 quality,

Jacket S.S. 316 quality,

Back Plate S.S. 316 L quality

Door plate S.S. 316 quality

Insulation Glass wool. (50 mm. thick)

Outer cover S.S.304, 20 G. sheet – mirror polished

Pipe lines S.S.316 quality seamless.

Fittings / Connections S.S. 316 quality, B.S.P. threading.

Lock/ radial arm / hinge C.I. & EN-8 quality

Gasket Silicone rubber, joint-less hollow type.

Stand Stainless Steel.

Detailed Control & Fittings:

Control Valve To carry out all functions of sterilization cycle i.e. steam to jacket, steam to chamber fast/slow exhaust & vacuum / drying, fresh air etc. Door Hinge type Double door will be fitted with horizontal type opening & automatic pressure locking device so that the door cannot be opened till the steam is fully exhausted from the chamber. Quick vacuum drying - Apparatus. This allows the filtered and sterile air to break the chamber vacuum & helps in quick drying.

Accidental vacuum -breaker / jacket air valve

A safety device for jacket against accidental vacuum and for automatic air removal to obtain saturated steam.

Safety valve A safety device against excess pressure -in jacket / steam generator, Dial type thermometer Indicates sterilization temperature.

Plug screen A device to prevent large particles from entering chamber drain line.

Compound Gauge Indicates chamber pressure/ vacuum Pressure Gauge Indicates jacket / boiler pressure.

Steam trap FT 14 float type

Solenoid valve Pneumatically operated – “Y” type

Non Return Valve Swing type.

G.M. Ejector For fast drying

Valves S.S. 304 quality ball valve

Chamber condensate line. Is fitted with a thermostatic steam trap and check valve for thorough evacuation of air and condensate from the chamber to achieve optimum temperature.

Drain line S.S. 2" manifold

Loading carriage S.S. 304 quality Transfer trolley S.S. 304 quality

Steam Generator (Boiler)

Will be of SS-316 and attached to underneath the jacket & fitted with Heater Water immersion type industrial, ISI mark Water level magnetic switch to protect heater from low water level.

Glass tube to indicate water level in boiler. Valves For water inlet & outlet.

Panel Board

Panel board equipped with

Pressure switch, Danfoss make.

Air break contactor, Cutler & hammer make

Indicating neon lamps, Captain make

On-Off Toggle switch

Digital temperature indicator & controller with timer & alarm after completion of sterilization cycle

Sterilizers shall have program/function of Bowie and Dick Test

2.0 ETHYLENE OXIDE STERILIZER

• Chamber

MOC SS 316

Thickness 4 mm thick

Size 18" x 18" x 24"

Chamber Volume 120 Litres.

Working Volume **5 Cu.Ft. / 133 Ltr.**

• Jacket

MOC SS 304

Thickness 3 mm thick

• Door

MOC SS 304

Thickness 8 mm thickness

Type Hinged Type Radial Locking

No. of Door One

Mechanical Door Lock 1 Nos.

• Humidification System

MOC SS 304

Glass Gauge 1 Nos.

Nos. of Heater 1 kw

• Vaporiser System

MOC SS 304

• Hot Water Circulator

MOC SS 304

- **Aerator System**

No. of Filter Cartage 1 Nos.

No. of Port 2 x ½”

- **Vacuum System**

Tank MOC Stainless Steel 304

Piping Connection ½”

- **Stand**

MOC Mild Steel Round Pipe

- **Insulation**

MOC of insulation cover SS 304 20 Gauge

MOC of insulation R.B glass wool

Thickness 50 mm thick

- **Gasket**

MOC Neoprene

Size ¾” x ¾”

- **Interconnecting Pipe**

MOC SS 304

Type Seamless

Pipe Thickness 10 gauge

- **Inlet & Outlet Valve**

Chamber inlet ½” BSP

Jacket inlet ½” BSP

Chamber vent ½” BSP

Chamber drain ½” BSP

Jacket drain ½” BSP

Chamber vacuum ½” BSP

- **Temperature Sensor**

Type Head Type

Size ¼” x 6” length

Qty. 1 nos.

- **Pressure Transmitter**

Type Pressure State

Range 4 kg

Qty 1 Nos.

- **Solenoid Steam Valve**

Type Pneumatic Rotary Actuator

Body CF8 SS 304

Design Three Piece Full Bore Ball Valve

No. of Valve 3 Nos.

Supply 220V AC

- **Manual Steam Valve**

Size ½”

- **Vacuum Pump**

Motor Load 1 H.P.

Type Belt Drive

Qty 1 Nos.

3.0 WASHER DISINFECTOR

The Washer Disinfection will be equipped with all accessories suitable for washing, disinfecting and drying of all kinds of surgical instruments, anesthetic and respiratory tubing, suction devices, bottles and other glassware

- Single door.
- Chamber made of stainless steel S.S.304
- Microprocessor control for all services, programming and statistic functions –
- three preset programs.
- Equipped with powerful water circulation pump.
- Equipped with four spray arms for good penetration.
- Dosage of detergent can be preset with dosing pump.
- Sensor to detect level in soap tank and easy refilling system
- Sensor for water in chamber to avoid dry run.
- Double wall with insulation to run with minimum sound and heat emission.
- Air particle filter to ensure the drying air is free from particles.
- Size of chamber : 600mm x 700mm x 700mm. (Approx.)
- Chamber volume: **250 – 275 liters.**
- Overall dimension: 815mm W x 730mm L x 1890mm H.
- Electrical Connected Load: 20 KW on 3 phases, 400 V, AC supply.
- Front loading.
- The warranty of equipment will be five years.

4.0 HEAT SEALING MACHINE

- Sealing Width : up to **10 mm**
- Sealing Speed : 3 -4meter / minute
- Max Conveyor Load : 5 kg
- Conveyor Width : 125 mm
- Temperature Range : 0-300 Degree c
- Power : 220V/5A

5.0 DRYING CABINET

- Chamber Volume: **150 Litres** approx.
- Operation : Automatic
- Construction: The equipment consists of MS frame work supporting the outer cover and inner chamber. The inner chamber is fabricated from stainless Steel the outer chamber from epoxy painted CRCA sheets.
- Door: The drying cabinet is provided with a quick lock door of S.S. 304 from inside along with heat resistant gasket.
- Air Circulating Fan: The chamber design allows uniform air circulation. The air is circulated by a stainless steel impeller powered by a 3 phase motor.
- Exhaust: Exhaust is provided at the top of the unit. The exhaust opens to ensure complete removal of moisture.
- Heating System: S.S. Sheeted “U” Type Heaters are provided.
- Shelf: 2 No’s. Equiv.-spaced S.S. 304 shelves are provided.

- Insulation: The drying cabinet chamber will be insulated with 50mm. thick resin bonded glass wool.
- Control System: The user friendly control panel comprises of: Temperature Indicator Controller for setting the drying Temperature, Timer for setting drying time, “START” Push button & Indication bulb.

6.0 ULTRASONIC CLEANER

- Ultrasonic Control Digital Timer upto 1 Hour
- Frequency of operation 40 kHz +/- 3 kHz Transducers
- Tank Clear Size. 30” x 18” x 18” (L x W x H)
- Tank Material S.S.304 / 16 SWG
- Tank Cover S.S.202 / 20 SWG
- Tank Capacity **30 Liters**
- Heater 1.5Kw x 4Nos.
- Temperature Control by Analog Temp. Controller
- Construction Ultrasonic Generator & S.S. Tank Are Separately.
- Drain. S.S.Teflons seated ball valve Is fitted on rear side of S.S. Tank
- Filter Filtrations Pipes provided on rear side of S.S. Tank
- Ultrasonic Power 1500 + 1500Watts
- Electric Supply 220v AC / 50Hz

7.0 GAUZE CUTTING MACHINE

- Useful in cutting thickest of cotton gauze material
- Cutting unit and a knife sharpening unit
- Blade size : 200 mm
- Cutting Capacity: 165 mm
- Work on 230V,50 Hz power supply.

8.0 STORAGE RACKS

- Stainless steel 304 storage Rack with five shelves (Open type)
- Floor mounted
- Frames fabricated out of stainless steel.
- Shelves – made of stainless steel.
- Legs are provided with adjustable nylon bulled feet.
- Overall dimensions: 1800mm L x 600mm W x 1800mm H.

9.0 DISTRIBUTION TROLLEY

- Made of good quality stainless steel-304.
- Internal size – 1100mm x 500mm x 1400mm.
- External size – 1200 x 600 x 1700mm.
- No. of shelves – 2 nos.
- Good quality 4 Nos. castor wheels for easy maneuverability, size of castor: 150mm.

10.0 WORK TABLE WITH SINK

- Stainless steel work table with double sink unit with hot water, cold water and air
- Spray connections – for washing of instruments.
 - Complete stainless steel body construction, with four leg supports made of stainless steel.
 - The Unit Complete with hot water, cold water and air spray for rinse provisions.
 - Drain Outlet Connection
 - Sinks will be designed in a way to minimize splash.
 - All smooth ground corners.
 - One under shelf made of stainless steel SS304.
 - Bench top dimension: 2400mm L x 650mm W x 900mm Ht.
 - Size of sink: 500mm x 400mm x 200mm.

11.0 TRANSFER BASKETS

- Basket made of corrosion resistant SS wire with welded joints.
- Adaptable with disinfectors, transfer carriage sterilizing and storage equipment.
- Compactly stackable when empty.
- Dimensions -385mm length x 395mm width x 95mm height.

12.0 WORK TABLE

- Stainless steel SS 304 quality table with drawer,
- Over all size – 1800mm x 700mm x 1400mm.
- The control and packing table with two shelves is used for separation, control and
- packing of various sets of sterilized goods for wards, clinics, operation theatre etc.,

13.0 GLOVE EXAMINER

- Stainless Steel 304 body complete with nylon gloves holder, air compressor, tank, pressure switches and accessories. Total power- 750 W, Size-1200 L x 640 W x 1000 H

14.0 GLOVE WASHER CUM DRIER

- Construction of SS-304 covered with SS covers.
- Inner drum of SS-304 with a perforated periphery.
- Direct or belt driven stirrer in the chamber.
- Electrical heater, blower and ducting provided within the outer casing.
- Thermostatically controlled fast and efficient drying system
- Automatic control of wash process.
- 4 number swiveling casters are to be provided along with Drain pump and manual drain complete with SS strainer.
- level control system, hot and cold water switches for inlet, indicators for cycle status,

15.0 STORAGE CABINETS

- Suitable for sterilized article storage
- Stainless steel storage Rack with five shelves.
- Floor mounted
- Frames fabricated out of stainless steel 304.
- Shelves – made of stainless steel 304.
- Legs are provided with adjustable nylon bulled feet.
- Two Door Opening
- Overall dimensions: 1800mm L x 600mm W x 1800mm H.

16.0 RAPID STERILIZER (Table Top)

Table Top Sterilizer provides fully automatic sterilization, exhaust of water and steam drying.

- Full stainless steel construction.
- Single lever pronged closure system
- Microprocessor Controller with following parameters programmable by user: Sterilizer Time: up to 99 minutes.
- Sterilizing Temperature: up to 134°C. Drying time: up to 99 minutes.
- Pt100 Sensor for precise monitoring.
- End of cycle buzzer and auto reset.
- Valves for water filing and exhaust.
- Industrial Grade energy efficient heater.
- Drying with door open facility.
- Capacity: 16 Ltr. (230 x 400mm)

17.0 ELECTRIC DISTRIBUTIONAL PANEL FOR CSSD EQUIPMENT

with all switchgears, wiring and controls etc of L&T/ Siemens/ ABB/GE or Schneider make) for distribution of power supply to various load points in the CSSD Room from single point power supply(Provided by the hospital).

IN ADDITION TO THE ABOVE, FOLLOWING TURNKEY WORKS FOR INSTALLATION AND COMMISSIONING OF CSSD AT DISTRICT HOSPITAL, DICKOYA, SRILANKA ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR :

- Bidder must take into consideration in its bid, costs to be incurred for any additional work pertaining to Civil, Electrical, Plumbing, Sanitary and any other protections relevant as per State/Central Govt. regulation/local authority of Srilanka, Servo stabilisers, U.P.S. etc. 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 package on a “turn key basis”.

- Laying of **GI water pipe line** with necessary taps, joints, elbows, Unions, Tees and valves of GI made and IS-1239 standard (Latest version) to various supply points in the CSSD Room from single point supply(Provided by the hospital).
- Providing fixing of **Electrical Gadgets** like ELCB, MCB, Light Points, Power points, Cool air Fans, Exhaust fan etc in the CSSD room.
- Installation of MCB, ACB, ELCB & OCB of Havell/Siemens/L&T/Schneider etc for Control Panel for CSSD.
- Installation of all **electrical cabling** must be of IS: 1554 (As per latest amendment) standard and wiring as per IS: 732 standard and proper earthing of all CSSD equipments and other electrical instrument and accessories in the CSSD room as per standard guidelines of BIS.
- Arrangement for requisite **fire fighting** for CSSD Room and its maintenance for the contract period

In addition to the above mentioned equipment/appliances, if the contractor thinks it necessary to include any other equipment/appliances, accessories etc. for the CSSD 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 FOR CSSD

1.	Air Blower	SWAM/ EVEREST/ KAY/Beta
2.	Blower/Pump/ Motor	KIRLOSKAR/ NGEF/ SIEMENS/CROMPTON/ABB
3.	Compressor	EMERSON/ TECHUMSHAH/COPELAND/DANFOSS
4.	Cable	GLOSTER/UNIVERSAL/NATIONAL/ KALINGA
5.	Aeration System	NORTON/ UEM/ V.K.ENVIROTECH/MM AQUA
6.	Butter Fly Valve	AUDCO/ KEYSTONE/ KSB/CRI/Castle
7.	Control Panel	L & T/ SIEMENS/ SCHNEIDER
8.	Valve	LEADER/ ZOLOTO /CRI/Castle
9.	PVC Pipe Class III with Fitting	FINOLEX/ SUPREME/ PRINCE/ ORI-PLAST
10.	G.I. / M.S. Pipe Heavy Class	TATA/ JINDAL/SAIL /SURYA PRAKASH/HSL/ITC
11.	MCCB/Contactor/Relay	L&T/ABB/SIEMENS/SCHNEIDER
12.	Pressure Gauges	H.GURU /FIEBIG
13.	Stainless steel	TATA/SALEM/JINDAL/MUKUND/ BHAYANDER/ AMBICA

14.	GI Sheets	TATA/SAIL/JINDAL/BHUSHAN STEEL
15.	Aluminium Sheet	BALCO/NALCO/HINDALCO
16.	Grilles/Diffusers	RAVISTAR/CARYAIRE/ MAPRO/DYNACRAFT

Note :

- **The bidder should attach Technical Compliance item wise with respect to the above technical specifications and turnkey work along with Printed catalogues and Manufacturer's Authorization in the techno-commercial bid.**
- **The contractor shall be responsible for the complete works including submission of working drawing and walk through view.**
- **Bidder should provide complete parts manual/Service manuals for all systems and subsystems.**
- **Final electrical safety test, system test and calibration should be done by authorized person with test instruments.**
- **All electrical accessories like cable wire, electrical outlets, switches etc, should be fire proof of reputed make, certified for electrical safety.**
- **Wherever makes have not been specified for certain items, the same shall be as per BIS and as per approval of HSCC.**
- **The contractor should provide test certificate for all materials and equipments used for CSSD**
- **Training of personnel of the Institute should be 15 days at least**
- **The contractor should prepare and submit layout plan to HSCC for approval before beginning of supply and installation.**