ETHYLENE OXIDE (ETO) GAS STERILIZER

- Dependable PLC controlled electric device provides accuracy
- Touch Screen HMI
- Built-in Aeration Cycle: Aeration is carried out at the end of the cycle inside the chamber itself
- Operates on 100% ETO cartridges, supplied by us

Safety

- 100% ETO cartridge is punctured only when proper negative pressure and humidity conditions are achieved in the chamber
- On-line printer for continuous monitoring by operator
- Door can not be opened during process and until safe condition is achieved.

AUTOMATIC ETO STERILIZER WITH PLC, MICROPROCESSOR PANEL

Specifications

Sr.	Item	
1	Inner Seal (Chamber)	SS 304 (Thickness:-5 mm)
	Inner Seal (Jacket)	MS (Thickness:-5mm)

	Hot Water Tank	**SS 304(Thickness:-3mm) (20" X 36")**
	Steam. G Tank	**SS 304 (Thickness:-3mm) (12" X 20")**
	Chamber Operating Pressure	**Negative pressure cycle**
	Chamber Testing pressure	**2 Kg/cm^2**
	Single Door	**MS with SS 304 Cladding**
2	**Hinge**	**MS**
3	**Central Locking parts& Rad**	**CI Casting, Wrinkle-black painted& MS**
4	**Shooting Bolts**	**Tempered, Chrome coated**
5	**Outer Insulation**	**Aluminum**
	Gasket	**Silicon Gasket (30/30 mm solid section)**
	Penal	**MS**
	Heating	**Circulation pump (1 HP) will rotate hot water around the chamber**
6	**Temperature Sensor**	**For accurate measuring and controlling of Temp. in the chamber**
7	**Operating Temperature**	**Maximum: 65°C (chamber)**
8	**RH% Sensor**	**For measuring and controlling the humidity of the chamber**
9	**Pressure Transmitter**	**For measuring and controlling the pressure-vacuum that the load is subjected to during removal and charging of Gas.**
10	**All fittings on the machine**	**SS 304**
11	**Safety Valves**	**SS 304**
12	**All Valves for Automation**	**Teflon construction Pneumatic valves, Solenoid valves.**
13	**Humidification**	**Special Humidifier for the purpose of humidification of the load and heating of the gas.**
14	**Vacuum**	**Vacuum pump (3 HP) provided for vacuum and aeration of the load.**
15	**Automation Hardware**	**PLC Make: Schneider** **HMI Make: Schneider,**
16	**Process Reports**	**Reports are generated by the software for each and every cycle in Detailed Report**
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DISPLAY:

Display Specifications

Temp. Range: 0 To 150.0 ºC

Display: Text mate HMI

Display Resolution: 0.1 ºC

General Specifications:

1) Print time interval: 1~ 59 minute
2) Date/Time adjustable
3) : Pt-100
4) Pressure Range : -1~3Bar
5) Channel 2+1+1
   (2temperature, 1pressure, 1 humidity)
6) Relay O/p: 8 no 1co
7) Report print out

Electrical Specifications :

Power supply: 230 V 1 Phase AC, 50 Hz.
MS powder coating panel with all accessories
1) Data integrity
2) Operator friendly control system
3) Accurate reporting
4) Computer connection for remote control and supervision
5) Flexible cycle design
6) Easy operated touch 7’’screen color panel
7) The whole process is controlled from the PLC
8) Password protection allows for secure access control
9) Door Alert — Indicates the door is unlocked
10) Alarm (end cycle)

Control Panel Specification:

Control panel consist two kind of mode
1) Auto mode
2) Manual mode

1) Auto mode: In auto mode Operator has to select recipe and press start command afterward PLC follow the function as described below.

Parameter list to be set in recipe:

1) Stabilizing Temperature (0-99 °C)
2) Stabilizing Time (1-99 min)
3) Pre Vacuum (-1 ~ 0 Bar)

4) Pre Vacuum Hold time(1-99 min)
5) Vacuum tolerance (-1 ~ 0 Bar)
6) Conditioning Load (RH injection)(0~99 RH)
7) Load Conditioning (RH dwell time) (1-99 min)
8) ETO Gas Pressure (-1~3 Bar)
9) Gas pressure drop tolerance (-1~3 Bar)
10) Exposure Time (1-9999 min)
11) Post Vacuum (Gas dilution) (-1 ~ 0 Bar)
12) No of Pulse of Post Vacuum (1-9)
13) Print Interval Time set (1-99 min

Sensor:

1) Temperature: (Pt-100)
2) Humidity:
3) Pressure: -1~3BAR

Relay Output:

1) Heater Control
2) Vacuum pump
3) Vacuum valve
4) Steam inlet(RH injection)
5) ETO inlet
6) Exposure
7) Air break
8) Hooter

Digital Input:

1) Door open/close input
2) Vacuum pump over load
3) Pneumatic pressure line

Manual Mode:

In manual mode PLC will not control the system, but temperature controller will Control the heater automatically. In all other process operator has to switch on or Switch off the valve through switch given on control panel.

But in manual & Auto mode will not continue if (1) Door is not closed (2) Pneumatic Pressure line (for Pneumatic valve) condition is not ok.

Now start cycle by pressing the 'START SWITCH 'step by step cycle run as per following procedure.

Heating Phase: Start automatically Steam Generator heaters and Chamber Heaters, after achieving predefines temperature then stop Chamber Hitter. And after achieving set pressure in steam generator, steam generator heaters shall stop.

Vacuum Phase: Vacuum Pump and Vacuum Valve Start automatically, after achieving predefine vacuum then stop Vacuum Valve and Vacuum Pump.

Vacuum Hold Phase: After achieving predefine vacuum, vacuum shall hold up to predefine vacuum hold period.

RH% Injection Phase: In RH% injection phase, steam inlet valve shall open and steam enters into the ETO chamber up to set pulses and set RH% value.

RH% Injection Dwell Time: after achieving predefine Pulses and RH%, RH% Shall Hold up to predefine RH% Hold Period.

Gas Injection Phase: After completion of humidity RH% dwell time, ETO cartridge punctures

Automatically to pressurize the chamber with ETO gas.

Gas Exposure Phase: Expose the ETO gas in chamber and pressure the chamber till exposure hold period.

Post Vacuum Phase (EO removal Phase): After EO gas exposure phase Vacuum Valve shall open and vacuum pump shall start automatically, after achieving set vacuum pressure, Vacuum Valve and Vacuum Pump shall stop.

Post Vacuum Hold Phase: After achieving predefine vacuum, vacuum shall hold time start as per set time.

Aeration Phase: In aeration phase first vacuum pump start and create vacuum up to set limit. Then air inlet valve shall open automatically and filtered air enter in the ETO chamber up to set limit. replace the filtered air from clean area up atmospheric then displayed the '**CYCLE OVER**' status on HMI.

Sr. No.	Model no.	Chamber				
		Length	Width	Depth	Heating	Capacity
1	PBT/ES/SS-02	300	300	600	2 KW	55 Lit
2	PBT/ES/SS-04	300	300	1200	3 KW	110 Lit
3	PBT/ES/SS-05	345	450	900	3 KW	140 Lit
4	PBT/ES/SS-08	450	450	1050	4 KW	226 Lit
5	PBT/ES/SS-12	600	600	900	4 KW	340 Lit
6	PBT/ES/SS-16	600	600	1200	6KW	450 Lit