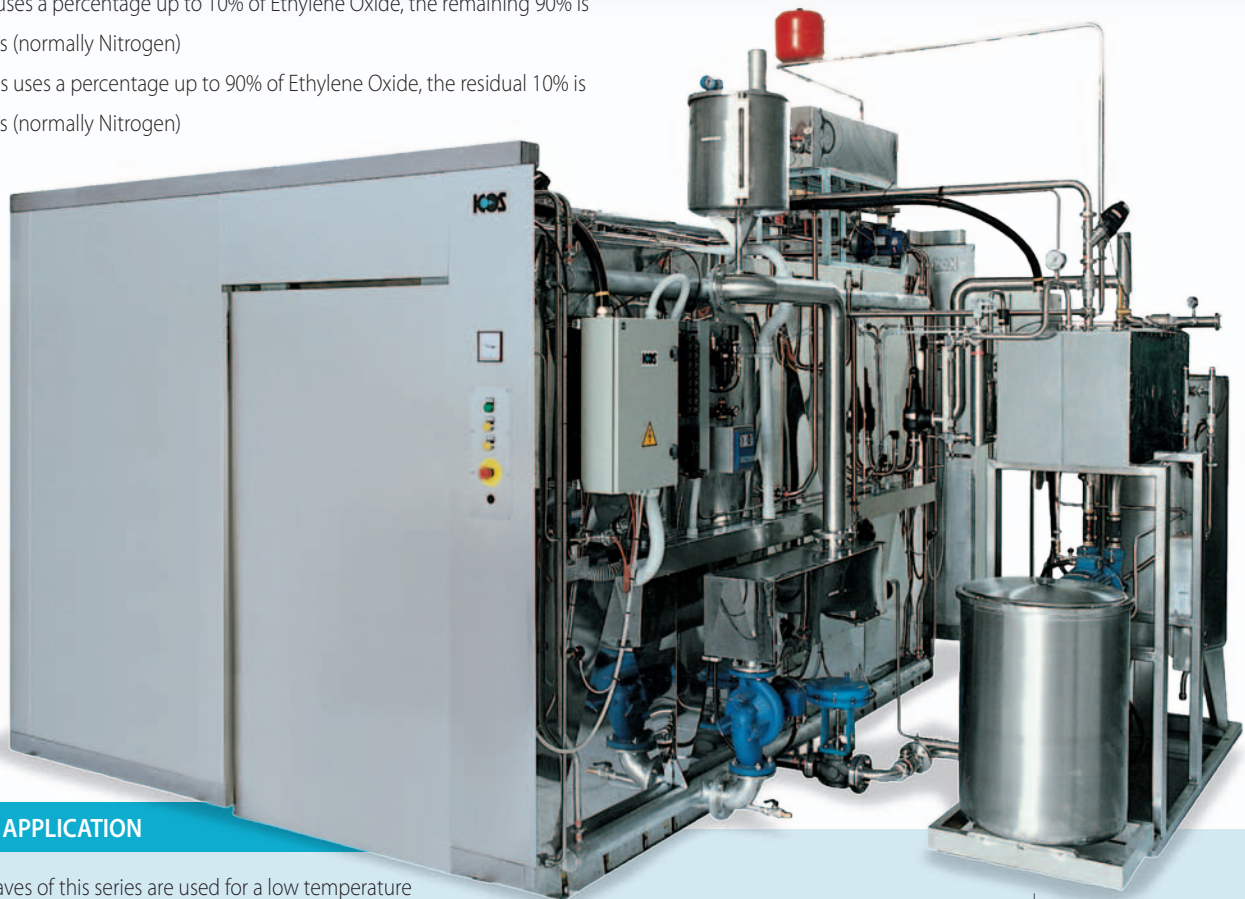


ICOS is present on world markets with a new range of sterilizing autoclaves using Ethylene Oxide. These machines have been manufactured by ICOS for many years but they have recently undergone extensive transformations to align them with recent regulations governing the use of Ethylene Oxide.

There are two types of machines, depending on the percentage of the Ethylene Oxide gas introduced in the chamber:

- The **AGS** series uses a percentage up to 10% of Ethylene Oxide, the remaining 90% is made of inert gas (normally Nitrogen)
- The **AGS-E** series uses a percentage up to 90% of Ethylene Oxide, the residual 10% is made of inert gas (normally Nitrogen)



## FIELD OF APPLICATION

The autoclaves of this series are used for a low temperature sterilization of heat-sensitive products such as: plastic syringes, perfusion sets, dialysis cartridges, heat-sensitive rubber products and special surgical instruments.

LOADING SIDE - TYPE AGS 1322C

clean steam generator + vacuum group



1. CONDITIONING



2. STERILIZATION



3. DEGASSING

## MAIN FEATURES

- Sterilization chamber of rectangular cross section, provided with a total surround heating jacket allowing a rapid and even heating of the load
- Machine body insulated with high density ceramic material and covered by 304 stainless steel sheet
- Doors provided with a heating jacket. Movement of doors controlled by an electromechanical device. Door seal ensured by a pneumatically pressurized gasket. The hermetic closure of the autoclaves using explosive mixtures is guaranteed by an pressure - sealing device with automatic tie - rods designed by ICOS. Safety devices are in compliance with international standards
- Load moistened through inflow of low-pressure clean steam supplied by a steam generator
- E.O. gas heated through evaporator before being fed into the chamber
- Gas filtered through a sintered steel filter
- Vacuum system provided with a water ring pump, which is supplied with water drawn from the separator creating a closed circuit. Temperature maintained at optimum levels by heat exchanger. The pump outflow is directed to the separator, from where it is conveyed to the neutralizing system
- Air supplied into chamber in the degassing phase filtered through absolute filters
- Hydraulic system built completely of AISI 316L stainless steel, with pneumatically controlled valves, tri-clamp and flange connections, and silicone rubber gaskets
- Machine provided with necessary connections for the validation tests
- Optimized energy consumption

## CONSTRUCTION FEATURES

- The machine body and associated safety devices are manufactured and tested in compliance with the standards required by the country of destination. Unless there is a specific request, the machines and systems are manufactured in compliance with the european (PED) or american (ASME) standards
- Machine body completely of AISI 304 stainless-steel steel construction, with the exception of the jacket and the machine frames structure
- Interior of chamber walls with satin finish
- Hydraulic system made of AISI 316L stainless steel
- Front sheeting panels made in AISI 304 stainless steel with fine satin finish
- Blow-out disks provided on the machine bodies that use explosive gas mixtures
- Steam generator of AISI 316L stainless steel
- Hydraulic system designed for best energy recovery to optimize consumption

# ETHYLENE OXIDE STERILIZATION AUTOCLAVES

**AGS**  
**AGS-E**  
Series

## PROCESS DATA

### Pressure sterilization program:

#### PHASES:

- Heating of load with hot water circulating in the heating jacket and alternating vacuum phases followed by inflow of hot air
- Humidification of load, with alternating phases of vacuum and steam inflow at low pressure
- Sterilization of load by pressurization of the chamber with the gas mixture
- Gas discharge
- Load degassing with alternating vacuum and hot-air inflow phases for a preset time

### Vacuum sterilization program:

#### PHASES:

- Heating of load with hot water circulating in the heating jacket and alternating vacuum phases followed by inflow of hot air
- Humidification of load, with alternating phases of vacuum and steam inflow at low pressure
- Sterilization of load by inflow of gas mixture up to the preset steam pressure
- Gas discharge by vacuum pump
- Inflow of inert gas
- Load degassing with alternating vacuum and hot-air inflow phases for a preset time

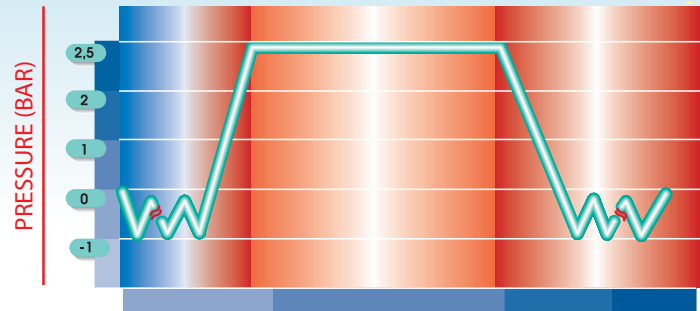
### Abatement of Ethylene Oxide at completion of sterilization process:

Increasingly stringent parameters imposed by recent regulations in the field force the adoption of an accepted abatement system on every Ethylene Oxide sterilizer. After an extensive series of tests and a long research program aimed at achieving the best relationship between quality, price and operating costs, ICOS can propose to its customers a range of E. Oxide sterilizers using thermal combustion for a complete breakdown of the sterilizing gas.

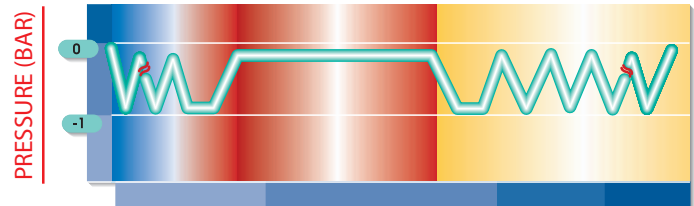
Note: ICOS supplies on request:

- Conditioning chambers
- Degassing chambers
- Automatic load handling system

### PRESSURE STERILIZATION (non explosive mixtures 10% EO 90% CO<sub>2</sub>)



### VACUUMSTERILIZATION (explosive mixtures 90% EO 10% CO<sub>2</sub>)



Thermic Combustor



CONTROL BOARD

## CONTROL SYSTEM

The Ethylene Oxide sterilizers of "AGS" ed "AGS-E" series are provided with a control system made up of a programmable controller (PLC), operating panel (OP) or industrial computer (PC) and printer. The control system manages the machine and its basic parameters, such as temperature, humidity values, times and pressures. The system allows an easy interfacing with the operator and enables the customization of the working cycles and maintenance operations. In addition, the control system provides a complete process documentation and assists in the process of machine validation.

Note: A full description of the control system is contained in the brochure.

In the quality of the materials used, and in their accurate finish, construction and process characteristics, all the ICOS machines are in compliance with the most updated standards.

## NORMS AND STANDARDS

The new Ethylene Oxide autoclaves are in compliance with the following Norms and Directives:

Governing directive/standard for pressure vessels:

- CE NE 97/23/EEC (PED)
- ASME code Sec. VIII Div. 1, 2001 Ed. + Add. 2003

Technical norms/standards:

- EN ISO 11135-1 (ex. EN 550:1996)
- EN BS 1422:1998
- 2004/108/EC
- 2006/42/EC
- CE EN 61010-1
- CE EN 61010-2-040
- HTM 2010
- UL, NEMA 4X, OSHA



ICOS RESERVES THE RIGHT TO MAKE PRODUCT CHANGES WITHOUT PRIOR NOTIFICATION

## AGS & AGS-E SERIES: ETHYLENE OXIDE STERILIZATION AUTOCLAVES

Type	Capacity (litres / cu. ft.)	Chamber dimensions (mm / inches)			Overall dimensions (mm / inches)		
		Width	Height	Length	Width	Height	Length
AGS or AGS-E 811A	1000 / 35	800 / 31.5	1100 / 43	1050 / 41	1900 / 75	2160 / 85	1630 / 64
AGS or AGS-E 811B	1650 / 58	800 / 31.5	1100 / 43	1890 / 74.5	1900 / 75	2160 / 85	2470 / 97
AGS or AGS-E 914A	2000 / 70.5	900 / 35.5	1450 / 57	1630 / 64	2100 / 82.5	2400 / 94.5	2210 / 87
AGS or AGS-E 914B	2800 / 99	900 / 35.5	1450 / 57	2160 / 85	2100 / 82.5	2400 / 94.5	2740 / 108
AGS or AGS-E 914C	4300 / 152	900 / 35.5	1450 / 57	3300 / 130	2100 / 82.5	2400 / 94.5	3880 / 152.5
AGS or AGS-E 1019A	8170 / 288.5	1000 / 39.5	1900 / 74.5	4300 / 169	2600 / 102	2600 / 102	4880 / 192
AGS or AGS-E 1019B	10070 / 355.5	1000 / 39.5	1900 / 74.5	5300 / 208.5	2600 / 102	2600 / 102	5880 / 231.5
AGS or AGS-E 1019C	11970 / 422.5	1000 / 39.5	1900 / 74.5	6300 / 248	2600 / 102	2600 / 102	6880 / 270.5
AGS or AGS-E 1322A	17920 / 632.5	1350 / 53	2250 / 88.5	5900 / 232	3300 / 130	2950 / 116	6480 / 255
AGS or AGS-E 1322B	20350 / 718.5	1350 / 53	2250 / 88.5	6700 / 263.5	3300 / 130	2950 / 116	7280 / 286.5
AGS or AGS-E 1322C	22780 / 804.5	1350 / 53	2250 / 88.5	7500 / 295	3300 / 130	2950 / 116	8080 / 318
AGS or AGS-E 1322D	25210 / 890	1350 / 53	2250 / 88.5	8300 / 326.5	3300 / 130	2950 / 116	8880 / 349.5
AGS or AGS-E 1322E	30070 / 1062	1350 / 53	2250 / 88.5	9900 / 389.5	3300 / 130	2950 / 116	10480 / 412.5
AGS or AGS-E 2622	30400 / 1073.5	2650 / 104	2250 / 88.5	5100 / 200.5	5450 / 214.5	2950 / 116	5680 / 223.5



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