

AGS & AGS-E

ICOS

**ETHYLENE OXIDE
STERILIZATION
AUTOCLAVES**



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.

THE AUTOCLAVES OF THE "AG" SERIES ARE OF TWO TYPES, DEPENDING ON WHETHER THE ETHYLENE OXIDE GAS (EO) IS USED PURE OR MIXED:

"AGS" MODELS, USING A MIXTURE OF 10% EO TO 90% INERT GAS.

"AGS-E" MODELS, USING MIXTURES WITH AN EO CONTENT HIGHER THAN 10%.

FIELD OF APPLICATION

THE AUTOCLAVES IN THIS SERIES ARE USED IN THE PHARMACEUTICAL INDUSTRY AND IN HOSPITALS. THE PRODUCTS THAT ARE USUALLY TREATED WITH THESE MACHINES ARE HEAT-SENSITIVE PRODUCTS SUCH AS PLASTIC SYRINGES, PERFUSION SETS, DIALYSIS CARTRIDGES, HEAT-SENSITIVE RUBBER PRODUCTS AND SPECIAL SURGICAL INSTRUMENTS.

MAIN CHARACTERISTICS

- STERILIZATION CHAMBER OF RECTANGULAR CROSS SECTION, PROVIDED WITH A TOTAL SURROUND HEATING JACKET ALLOWING A RAPID AND EVEN HEATING OF THE LOAD.
- INSULATION LAYER SHEETED WITH STAINLESS-STEEL.
- DOORS PROVIDED WITH A HEATING JACKET.

MOVEMENT OF DOORS CONTROLLED BY AN ELECTROMECHANICAL DEVICE.

DOOR TIGHTNESS GUARANTEED 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 IMPIANTI. SAFETY DEVICES IN COMPLIANCE WITH INTERNATIONAL STANDARDS.

- LOAD MOISTENED THROUGH INFLOW OF LOW-PRESSURE CLEAN STEAM SUPPLIED BY A STEAM GENERATOR.
- EO 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 316 STAINLESS STEEL, WITH PNEUMATICALLY CONTROLLED VALVES, TRI-CLAMP ICOS CONNECTIONS AND SILICONE-RUBBER GASKETS.
- MACHINE PROVIDED WITH NECESSARY CONNECTIONS FOR THE VALIDATION TESTS.
- OPTIMIZED ENERGY CONSUMPTION.

CONSTRUCTION CHARACTERISTICS

THE MACHINE BODY AND ASSOCIATED SAFETY DEVICES ARE MANUFACTURED AND TESTED IN COMPLIANCE WITH THE STANDARDS REQUIRED IN THE COUNTRY OF DESTINATION. UNLESS THERE IS A SPECIFIC REQUEST, THE MACHINES AND SYSTEMS ARE MANUFACTURED IN COMPLIANCE WITH THE CE STANDARDS.

- MACHINE BODY COMPLETELY OF AISI 304 STAINLESS-STEEL CONSTRUCTION, WITH THE EXCEPTION OF THE JACKET AND THE BODY SUPPORTS.
- INTERIOR OF CHAMBER WALLS WITH SATIN FINISH.
- HYDRAULIC SYSTEM OF AISI 316 STAINLESS STEEL.
- FRONT SHEETING PANELS MADE OF AISI 304 STAINLESS STEEL WITH FINE SATIN FINISH.
- BLOWOUT DISKS PROVIDED ON THE MACHINE MODEL AGS-E.
- STEAM GENERATOR OF AISI 316 STEEL.
- HYDRAULIC SYSTEM DESIGNED FOR BEST ENERGY RECOVERY TO OPTIMIZE CONSUMPTION.



LOADING & UNLOADING SIDE - MOD.: AGS 1019/B

CONTROL SYSTEM

The ICOS ethylene oxide sterilizers are provided with a control system consisting of a programmable controller, computer and printer. The control system manages the machine and its basic parameters, such as temperature, humidity and pressure. The system allows an easy interfacing with the operator and enables the customization of the cycles and the manual operations. In addition, the control system provides a complete process documentation and assists in the machine convalidation process.

N.B.: A full description of the control system is contained in the relative booklet.

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 up-to-date standards.

ELECTRIC SYSTEM

THE AUTOCLAVES USING EXPLOSIVE MIXTURES IN CLOSED AND UNVENTILATED SPACES, THE ELECTRIC SYSTEM ON THE MACHINE AND ALL THE ELECTRIC COMPONENTS ARE OF FLAMEPROOF TYPE.



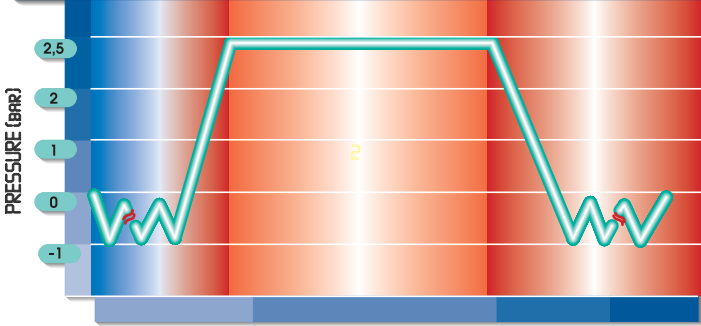
CONTROL BOARD



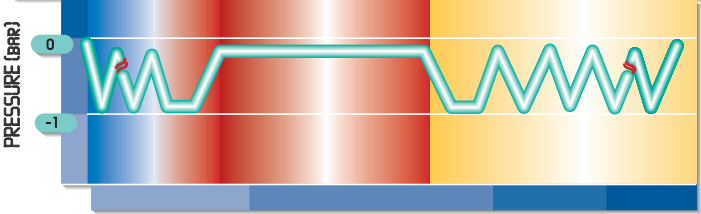
LOADING SIDE - Mod.: AGS 1322/C

CLEAN STEAM GENERATOR + VACUUM GROUP

PRESSURE STERILIZATION (MIXTURES 10% eo 90% co₂)



VACUUM STERILIZATION (MIXTURES 90% eo 10% co₂)



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 EO STERILIZERS USING THERMAL COMBUSTION FOR A COMPLETE BREAKDOWN OF THE STERILIZING GAS.

N.B.: ICOS SUPPLIES ON REQUEST:

- CONDITIONING CHAMBERS.
- DEGASSING CHAMBERS.
- AUTOMATIC LOAD HANDLING SYSTEM.



1) CONDITIONING



2) STERILIZATION



3) DEGASSING



Mod. Serie AGS / AGS-E

RANGE OF ETHYLENE OXIDE STERILIZATION AUTOCLAVES

| | CAPACITY | CHAMBER DIMENSIONS (mm) | | | | OVERALL DIMENSIONS (mm) | | |
|------------------|----------|-------------------------|-------|--------|-------|-------------------------|--------|-------|
| | Lt. | Diameter | Width | Height | Depth | Width | Height | Depth |
| AGS/AGS-E 601 | 450 | 660 | | | 1050 | 1400 | 1500 | 1630 |
| AGS/AGS-E 602 | 490 | | 660 | 710 | 1050 | 1900 | 1600 | 1630 |
| AGS/AGS-E 801 | 800 | 800 | | | 1250 | 1800 | 1800 | 1830 |
| AGS/AGS-E 811/A | 1100 | | 800 | 1100 | 1250 | 2300 | 2050 | 1830 |
| AGS/AGS-E 811/B | 1300 | | 800 | 1100 | 1550 | 2300 | 2050 | 2130 |
| AGS/AGS-E 913/A | 1800 | | 900 | 1310 | 1550 | 2500 | 2300 | 2130 |
| AGS/AGS-E 913/B | 2400 | | 900 | 1310 | 2050 | 2500 | 2300 | 2630 |
| AGS/AGS-E 1016 | 3300 | | 1000 | 1610 | 2050 | 2600 | 2600 | 2630 |
| AGS/AGS-E 1019/A | 7800 | | 1000 | 1900 | 3800 | 2600 | 2600 | 4350 |
| AGS/AGS-E 1019/B | 9600 | | 1000 | 1900 | 5100 | 2600 | 2600 | 5650 |
| AGS/AGS-E 1019/C | 12000 | | 1000 | 1900 | 6300 | 2600 | 2600 | 6850 |
| AGS/AGS-E 1322/A | 15450 | | 1350 | 2250 | 5100 | 3300 | 2950 | 5650 |
| AGS/AGS-E 1322/B | 20200 | | 1350 | 2250 | 6600 | 3300 | 2950 | 7150 |
| AGS/AGS-E 1322/C | 25750 | | 1350 | 2250 | 8500 | 3300 | 2950 | 9050 |
| AGS/AGS-E 1322/D | 31000 | | 1350 | 2250 | 10300 | 3300 | 2950 | 10850 |
| AGS/AGS-E 1822 | 40500 | | 1800 | 2250 | 10000 | 4200 | 2950 | 10550 |
| AGS/AGS-E 2622 | 30400 | | 2650 | 2250 | 5100 | 5450 | 2950 | 5650 |





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