

LOW-TEMPERATURE
HYDROGEN PEROXIDE GAS PLASMA STERILIZER

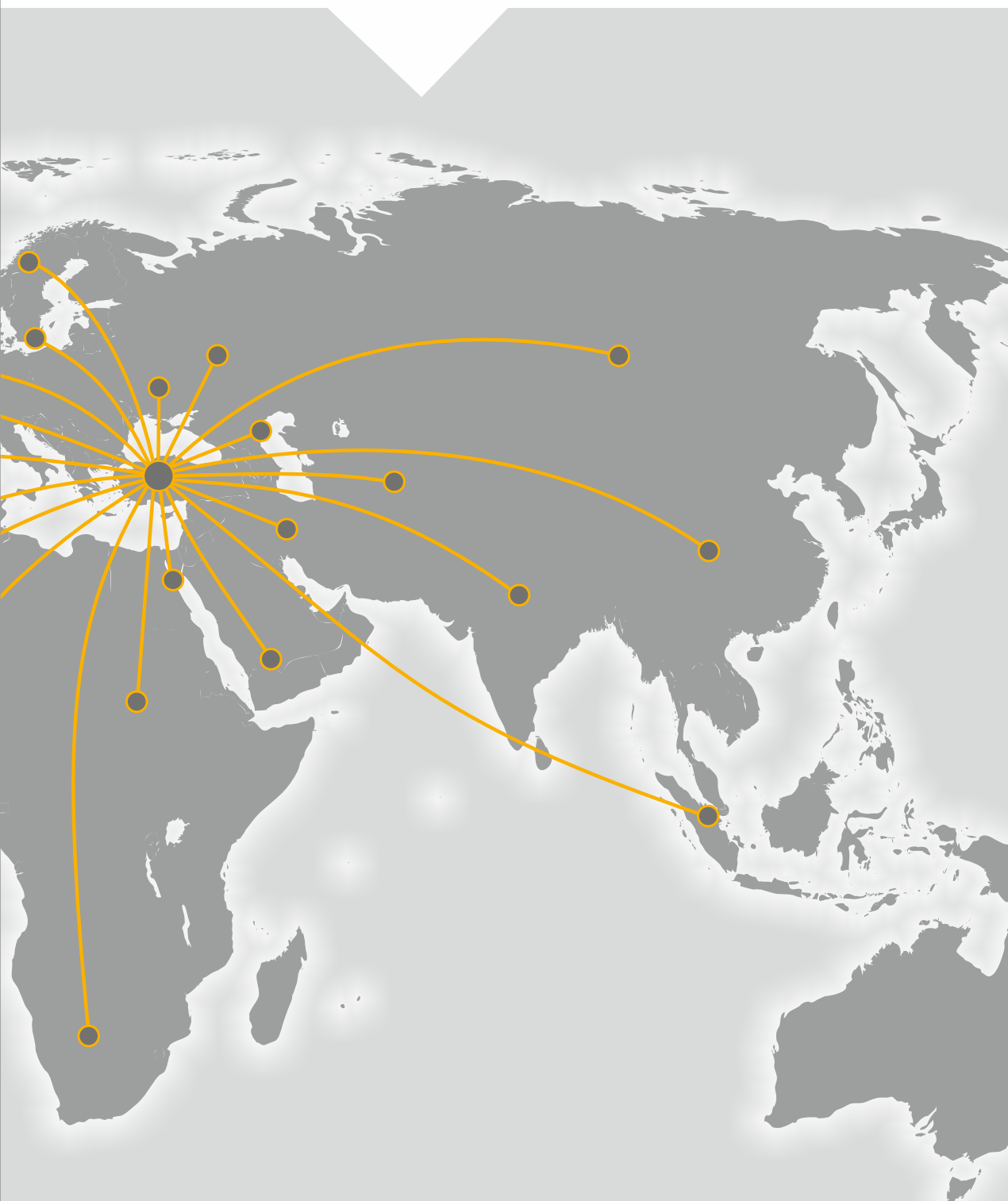




















































S-MAX[®]

WE ARE SERVING IN **1600 HOSPITALS**
WITH OUR STATE-OF-THE-ART EQUIPMENT



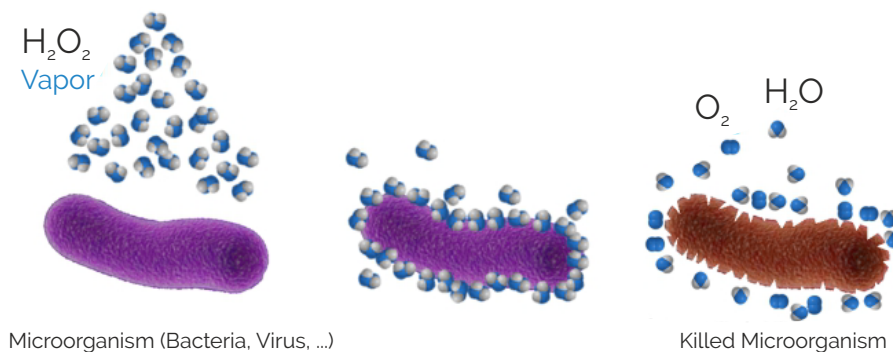
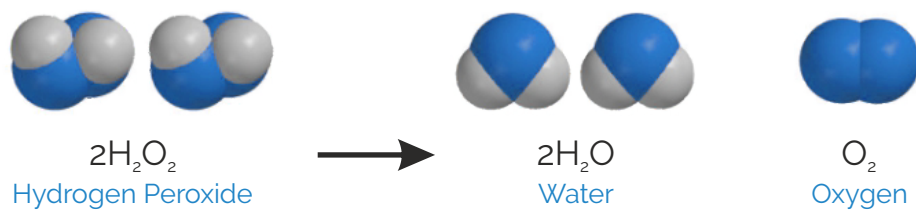
WE PRODUCE IN EUROPE AND EXPORT TO
OVER 50 COUNTRIES



 Uganda	 Chile
 India	 Pakistan
 Netherlands	 Kosovo
 Bulgaria	 Azerbaijan
 Georgia	 Ethiopia
 Morocco	 Nigeria
 Turkmenistan	 Tunisia
 Somalia	 Senegal
 Kazakhstan	 Colombia
 Lebanon	 Vietnam
 Thailand	 Poland
 Bangladesh	 Albania
 Rwanda	 Egypt
 Slovakia	 Indonesia
 Kenya	 Portugal
 Iran	 Saudi Arabia
 Afghanistan	 Algeria
 France	 Romania
 Argentina	 Germany
 Kuwait	 Iraq
 Macedonia	 Russia
 Lithuania	 Ukraine
 Togo	 Mauritius
 United Arab Emirates	 Oman
 Libya	 Turkish Republic of Northern Cyprus

Why HYDROGEN PEROXIDE STERILIZER?

- Hydrogen Peroxide has extremely active free radicals which interact with microorganisms' cell membrane and other cellular organelles which eventually kill the microorganisms.
- Can sterilize devices that are sensitive to heat and humidity, prolongs the lifetime of devices by avoiding corrosion caused by humidity.
- Can sterilize at low temperatures (40-55 °C).
- Can sterilize lumen devices.
- No toxic substance is used or released; the only by-products of the sterilization process are water and oxygen.
- Sterilized loads can be used immediately.
- Complete sterilization in less than 30 mins with a Sterility Assurance Level (SAL) of 10^{-6} .
- No need for any infrastructure other than electricity.
- Having low purchasing, operation and maintenance costs.
- Loads can be sterilized in Tyvek packages.



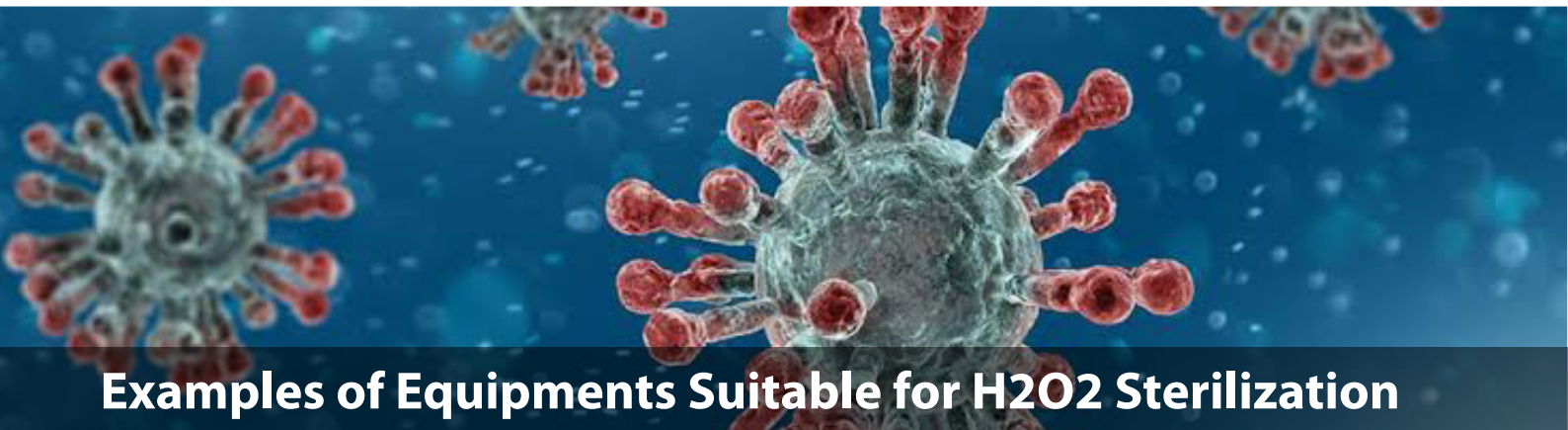
Why TerraBioMed® S-MAX®?

- Designed for maximum sterilization at low temperatures, the TerraBioMed® S-MAX® series - with its scientific and technological innovations - provides excellent results under the most difficult conditions.
- Since all the process parameters are controlled in real time by an advanced microprocessor and all of the tests and preparation steps are handled automatically by the system, all the operator needs to press a single key.
- Highest quality components are used to manufacture this device in order to provide a sustained high performance over many years.
- Eryiğit Medical Devices Corp. has over 20 years of experience in manufacturing medical devices that are exported to 50 countries worldwide.



Tested and approved
by German accreditation
company Hyggen GmbH.





Examples of Equipments Suitable for H₂O₂ Sterilization

Vaporized hydrogen peroxide is an ultra-fast acting sterilizer. Also, it is gentle on most polymers (plastics) [1], non-woven textile [2] products. Protective equipment (safety goggles, gloves, masks and other textile products) are made of materials which cannot withstand the hot steam in steam sterilizers. Ethylene oxide sterilization takes more than 12 hours due to long post-sterilization waiting period. Vaporized hydrogen peroxide (VHP) is fast, safe and non-toxic. There is no required waiting time. Tools and equipment can be used as soon as sterilization is completed. That is 45 minutes with Goldberg S-Max VHP sterilizers. [1] Nylon (Polyamid 6,6) is an exception to this. It is not appropriate to sterilize Polyamid 6,6 for more than few times with hydrogen peroxide vapour. [2] Textile products which include cellulose (cotton, paper) are the only exception.

Materials suitable for VHP Sterilization:

- Aluminium
- Stainless steel
- PTFE (Teflon)
- Silicone base polymers
- PVC (Polycarbonate)
- PMMA (Polymethyl Metacrylate)
- PC (Polycarbonate)
- EVA (Ethyl-Vinyl-Acetate)
- Latex
- Polyolefines
- Polyurethane
- Keratin
- PP (Poly-Proylene)

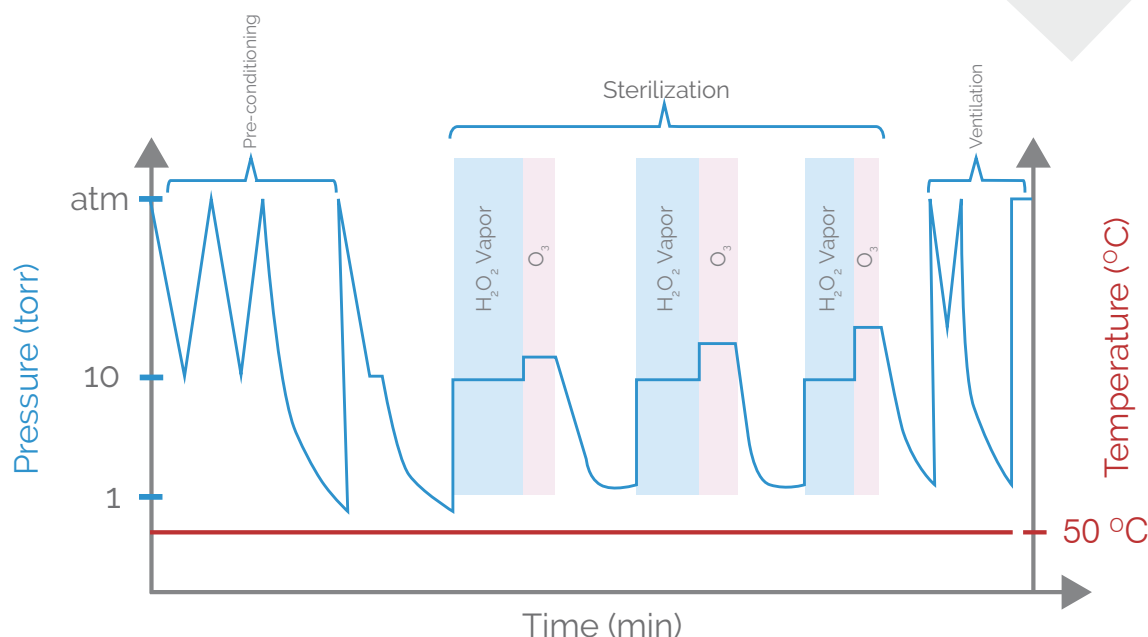


Fastest Sterilization of Reusable Protective Equipments

- Endoscopes (including colonoscopes, duodenoscopes)
- Other lumen-tools
- Coter cables
- All surgical tools including
 - 1 - Laparoscopic tools
 - 2 - Robotic surgery tools ve apparatus
- Surgical tools
- Ophtalmologic tools
- Masks
- Gloves and protective clothes



*(The suitability declared by the manufacturer of the material must be considered prior to sterilization with VHP.)



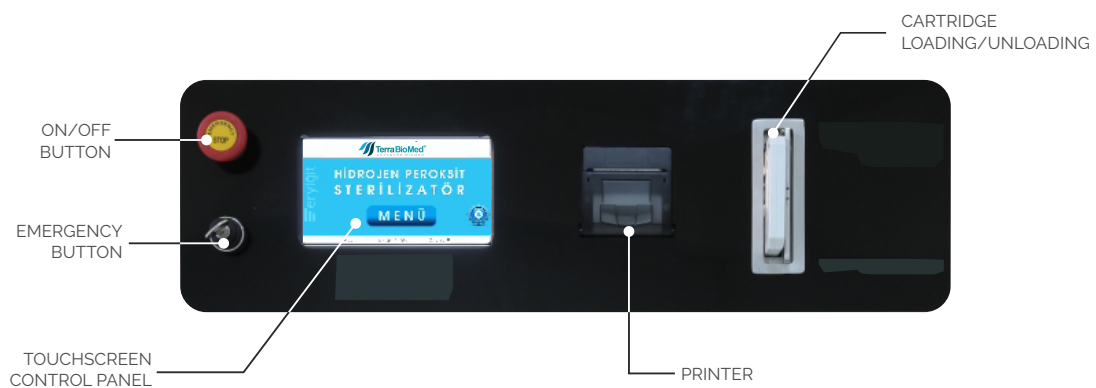
OUR ADVANTAGES

- **Maximum Speed:** Sterilization takes only 18 minutes with "NO LUMEN program".
- **Maximum User-friendliness:** The ability to start programs very quickly with the SingleKey feature.
- **Maximum Control:** Advanced microprocessor control allows fully automated operation.
- **Maximum Sterilization:** Efficient sterilization at low temperatures ($T_{\text{chamber}} < 50\text{ }^{\circ}\text{C}$).
- **Maximum Quality:** Highest quality components from companies such as Leybold, Siemens and Ulvac are utilized in Goldberg S-Max series sterilizers.
- **Maximum Safety:** Cartridge system allows efficient and safe sterilization¹.
- **Maximum User-friendliness:** Logo colorization allows remote monitoring in central sterilization units.
- **Maximum Sterilization:** Definitive results from tests done with bioindicators from 3M, Bionova and other vendors
- **Maximum Safety:** No toxic substance is used or released. The only by-products of sterilization process are water and oxygen².

1 - The cartridge system is more efficient and safer than other systems using high volume hydrogen peroxide agents such as bottles etc. Using hydrogen peroxide from capsules inside cartridges that are independent of each other protects the loads being exposed to too much sterilization agent; and also contact with air is avoided which stabilizes the agent.

2- Hydrogen peroxide (H_2O_2) is converted to water and oxygen ($2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$) after the sterilization cycle.

- Accredited by HygCen GmbH (Germany).
- Increased chamber volume (20%) by means of plasma³ generated outside of the chamber.
- Catalytic converter to protect the vacuum pump.
- Optimized chamber volumes ranging from 50 liters to 200 liters for several applications.
- No need for any infrastructure other than electricity.
- Rectangular aluminum⁴ chamber for efficient use of space.
- Foot pedal to open the device door.
- Timely and effective technical service.
- Minimal cost for maintenance, repair and consumables.
- RFID system that does not allow using expired or unauthorized cartridges.
- External memory unit that stores process parameters for up to 10 years.
- Deep vacuum to eliminate residual hydrogen peroxide after the proces.
- Sustained high performance operation for many years⁵.
- Our production is inline with ISO 9001, ISO 13485 and ISO 14001 standards.
- Shelves that have a carrying capacity of 30 kg with minimized surface area.
- Injection of hydrogen peroxide from 6 different points to provide homogenous diffusion.
- Corrosion-resistant H₂O₂ vaporizer.
- HEPA filter that blocks particles over 10 nanometers in size from entering chamber.
- Patented H₂O₂ vapor pre-conditioner.
- More efficient sterilization by OH radicals released from interactions of H₂O₂ and O₃.
- Preconditioning minimizes process cancellations.



3- Contrary to common belief, application of plasma adds nothing on the sterilization power of H₂O₂ vapor. Plasma is created to speed up residual H₂O₂'s decomposition to water and oxygen. On the other hand, applying plasma inside the sterilization chamber is proven to cause secondary reactions that change the chemistry of top layers of some sensitive devices.

4- Aluminum is the most resistant metal against the corrosive effect of hydrogen peroxide. Aluminum chamber preserves its shiny luster for many years.

5- As long as proper and timely maintenance is assured, this device has been designed to operate efficiently in mint condition for many years.

TECHNICAL SPECIFICATIONS

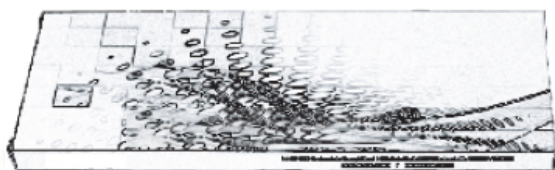
	GP 80	GP 120	GP 135	GP 160	GP 200
Device / Chamber Width (mm)	735/453	735/453	735/453	735/453	735/453
Device / Chamber Height (mm)	1885/402	1885/402	1885/402	1885/402	1885/402
Device / Chamber Depth (mm)	1000/450	1000/700	1000/750	1250/890	1300/1120
Weight (kg)	330	350	380	400	440
Effective Volume (L)	81	126	135	160	200
Double Door	No	Yes (Optional)			
Chamber Shape	Rectangular Prism				
Chamber Material	Aluminum				
Trays	2 (each with 30 kg loading capacity)				
Printer	Yes (USB Optional)				
H ₂ O ₂ Concentration	%5g (%40 Optional)				
Touchscreen	7" (10.4" Optional)				
Foot-Operated Door Opening	Yes				
RF Plasma	500 W (Optional)				
Electricity Connection	3-Phase, 380 V, 50/60 Hz				
Sterilization Temperature	45 °C				
Sterilization Duration	18-57 minutes				
Ventilation	HEPA filter (0.01 m)				
Plasma Position	On the top of the Chamber				
Excess Moisture Alarm	Yes				
Warming Time	< 15 minutes				
Electronic Control	Microprocessor				
Vacuum Pumps / Gauges	Leybold (Germany) or Ulvac (Japan)				

PROGRAMS

PROGRAM	DURATION (MIN)*	NUMBER OF CAPSULES	EXPLANATION
No Lumen	27	2	No Lumen Tools, Devices with simple geometry (Load < 5 kg)
Standard	45	3	All No Lumen tools and devices Endoscopes and other lumen tools (Lumen diameter > 1.5 mm)
Intensive	57	4	All standard program tools and devices Endoscopes and tools with a long lumen and narrow channel (Lumen diameter > 0.7 mm)
No Lumen E	18	2	OPTIONAL. Only the top shelf, surface characterization (Load amount < 3 kg)

* The actual duration can be longer depending on the size and humidity of the load.

CONSUMABLES



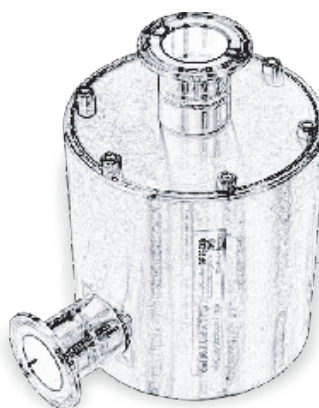
H₂O₂ Cartridge



Process Validation
Device



Ventilation Filter (HEPA)



Vacuum Pump
Foreline Filter



Vacuum Pump
Oil Filter



Active Carbon
Exhaust Filter

*Since
1991*

**EXCELLENCE
IN R&D
PRODUCTION
SERVICE**



**WE DEVELOP
NEW TECHNOLOGIES
FOR LIFE**

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