eryiğit®
technologies for life

Since 1991

EXCELLENCE
IN R&D
PRODUCTION
SERVICE

LOW-TEMPERATURE

HYDROGEN PEROXIDE GAS PLASMA STERILIZER

GOLDBERG®
S-MAX®

S-MAX®

PROUDLY SERVING 1600 HOSPITALS
WITH OUR STATE-OF-THE-ART EQUIPMENT

WE PRODUCE IN EUROPE AND EXPORT TO
OVER 50 COUNTRIES

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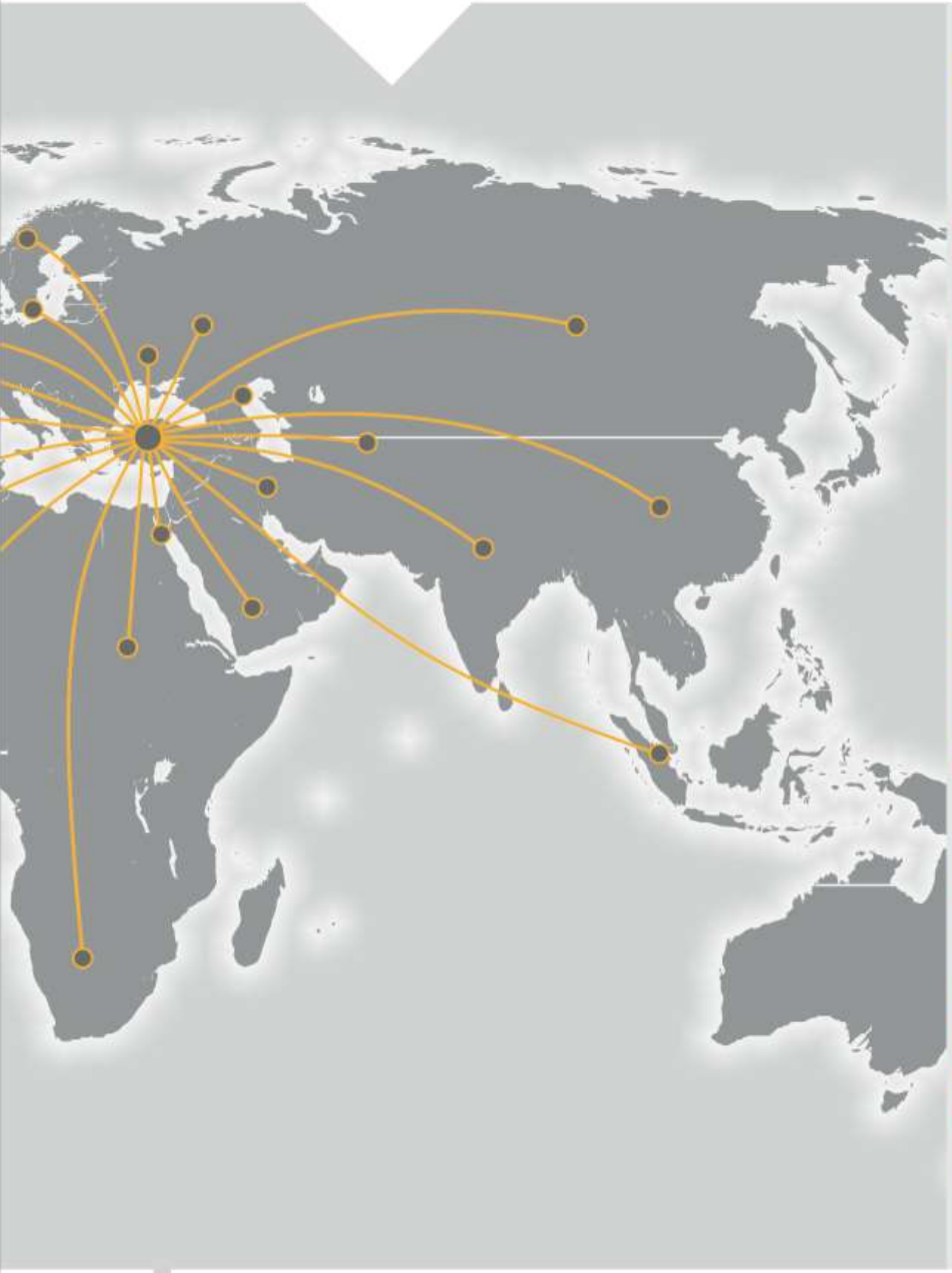


Uganda
Chile
India
Pakistan
Netherlands
Kosovo
Bulgaria
Azerbaijan
Georgia
Ethiopia
Morocco
Nigeria
Turkmenistan
Tunusia
Somalia
Senegal
Kazakhstan
Colombia
Lebanon
Vietnam
Thailand
Poland
Bangladesh
Albania
Ruwanda
Egypt
Slovakia
Indonesia
Kenya
Portugal
Iran
Saudi Arabia
Afghanistan
Algeria
France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

S-MAX®

Why VAPORIZED HYDROGEN PEROXIDE STERILIZER?

• Hydrogen Peroxide vapor is a very effective sterilant for heat or moisture sensitive medical equipment.

• Can sterilize at low temperatures (40-55 oC).

• Can sterilize devices with long lumens.

• No toxic substance is used or released; the only by-products of the sterilization process are water and oxygen.

• Leaves no toxic resuide: Sterilized loads can be used immediately.

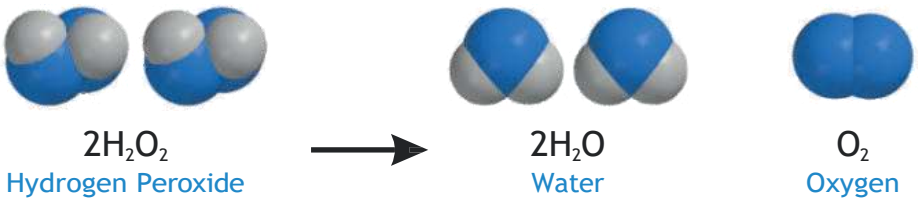
• Complete sterilization in less than 30 mins with a Sterility Assurance Level (SAL) of 10-6.

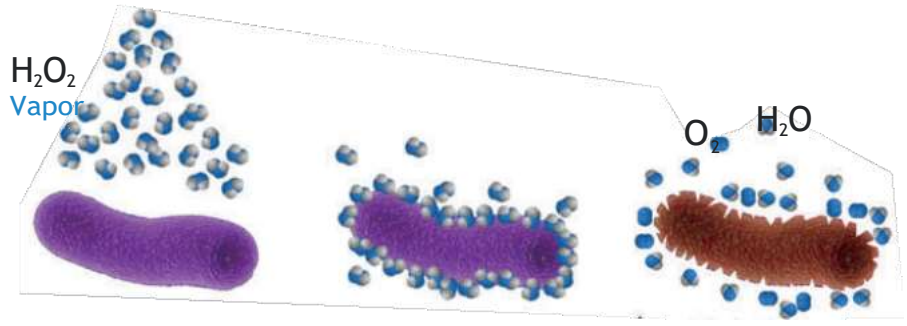
•No need for any infrastructure other than electricity.

• Low cost of operation

• Low cost of ownership.

• Loads can be sterilized in ordinary sterilization packages.





Microorganism (Bacteria, Virus, ...)

Killed Microorganism

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Why GOLDBERG® S-MAX®?

• Designed for maximum sterilization at low temperatures, the GOLDBERG® S-MAX® series - with its scientific and technological innovations - provides excellent results under the most difficult conditions.

• 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 in line with ISO9001, ISO 13485 and ISO14001 standards.

HYGCEN
Tested and approved
by German accreditation
company Hygcen GmbH.

Examples of Equipments Suitable for H_2O_2 Sterilization

Vaporized hydrogen peroxide is an ultra-fast acting sterilizer. Also, it is gentle on most polymers (plastics) and non-woven textile 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-ster- ilization waiting period. Vaporized hydrogen peroxide (VHP) –on the other hand- can safely sterilize most protective equip- ment and clothes. Since it doesn't leave any toxic residue, 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.

Materials suitable for VHPSterilization:

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

Fastest Sterilization of Reusable Protective Equipment

- 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.)

S-MAX®

OUR ADVANTAGES

Maximum Sterilization:

• Pulsed introduction of sterilant into the chamber enables the vapor to penetrate even the narrowest channels (lumens) without clogging them by condensation.

• Injection of hydrogen peroxide vapor from 6 different points to provide fast&homogeneous diffusion inside the chamber. This design also helps prevent the vapor inlet from being blocked by improperly placed sterilization load.

Maximum Safety:

• Repeated deep vacuuming after every sterilization cycle provides residue-free sterilization load.

• Two activated-carbon filters ensures no release of hydrogen peroxide vapor into the ambient environment.

• RF-ID system to prevent use of unauthorized sterilant cartridges.

Maximum Long-tem Reliability:

• Highest quality components from World-renown manufacturers.

• Cartridge system for injection of hydrogen peroxide ensures the highest possible repeatability in the amount of sterilant delivered onto the load[1].

• Corrosion-resistant H_2O_2 evaporator is never clogged.

• Sustained high performance operation over many years[2].

Efficient use of space:

• Increased useable volume by generating the plasma in a separate module outside the chamber[3]. The plasma module is situated on the air path to the chamber. This enables ionizing the air taken during ventilations as well as ionizing the H_2O_2 vapor during sterilization.

• Anodized aluminum chamber[4] of rectangular shape for efficient use of space. Useable volume close to the whole volume of the chamber.

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

3- Contrary to common belief, application of plasma adds nothing on the sterilization power of H_2O_2 vapor. Plasma is created to speed up residual H_2O_2 '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.Anodized aluminum chamber preserves its shiny luster for many years.

Ultra-long Lifetime of Vacuum Pump:

• Goldberg S-Max excels particularly in the lifetime of its vacuum pumps. Our proprietery "Hygroscopic catalytic converter" is behind this success.

• S-Max is equipped with a proprietary catalytic converter which is also highly hygroscopic. The converter adsorbs H2O2 vapor and converts it to water vapor. It achieves ultra-fast conversion of residual H2O2 into water and oxygen before the vacuum pump[5].

• Owing to its hygroscopic nature, it sustains very slow release of water vapor to the vacuum pump. As a result, our vacuum pumps last for years without any failures..

Maximum User-friendliness:

• Color-illuminated logo: Enables checking the status of the device/sterilization cycle visually from distant locations.

• Fully automated operation covers vacuum leak check and humidity check. They are all automatic! The operator simply choses the program and presses its button on the touchpad screen.

• Foot pedal to open the door while hands are busy.

• Proprietary pre-conditioning algorithm minimises process cancellations due to unsufficiently dried load.

5- Hydrogen peroxide (H_2O_2) is converted to water and oxygen ($2H_2O \rightarrow 2H_2O + O_2$) after the sterilization cycle.

S-MAX®

TECHNICAL SPECIFICATIONS

	GP 80	GP 120	GP 135	GP 160	GP 200
Device / Chamber Width (mm)	740/450	740/450	740/450	740/450	740/450
Device / Chamber Height (mm)	1850/400	1850/400	1850/400	1850/400	1850/400
Device / Chamber Depth (mm)	1000/560	1000/700	1000/800	1350/930	1350/1150
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_2O_2 Concentration	%59 (%40 Optional)				
Touchscreen	7" (10" Optional)				
Foot-Operated Door Opening	Yes				
RF Plasma	500 W (Optional)				
Electricity Connection	3-Phase, 380 V, 50/60 Hz				
Sterilization Temperature	40-55 ℃				
Sterilization Duration	28-58 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), Ulvac (Japan), MVP 36 (Korean)				

PROGRAMS

PROGRAM	DURATION (MIN)*	NUMBER OF CAPSULES	EXPLANATION
No Lumen	28-32	2	No Lumen Tools, Devices with simple geometry (Load < 5 kg)
Standard	45-49	2	All No Lumen tools and devices Endoscopes and other lumen tools (Lumen diameter > 1.5 mm)
Intensive	55-58	2	All standard program tools and devices Endoscopes and tools with a long lumen and narrow channel (Lumen diameter > 0.7 mm)
No Lumen E	22	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.

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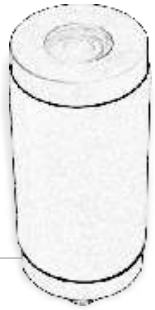
CONSUMABLES

H_2O_2 Cartridge

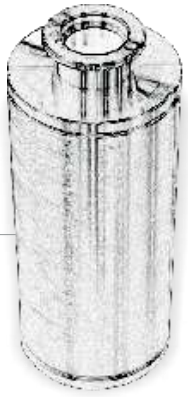
Process Validation Device



Ventilation Filter (HEPA)

Vacuum Pump Foreline Filter

Vacuum Pump Oil Filter



Active Carbon Exhaust Filter

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Since 1991 | EXCELLENCE IN R&D PRODUCTION SERVICE

WE DEVELOP NEW TECHNOLOGIES FOR LIFE

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