E CATALOG

PLASMA STERILIZATION DEVICE FOR GENERAL PURPOSE

HRF 3000

Hydrogen Peroxide (H_2O_2) Plasma Sterilization Device

PRODUCER: TEKNOMAR MAKİNA İMALAT İTHALAT İHRACAT SANAYİ ve TİCARET LTD. ŞTİ.
Notified Body No: CE-1984

THE MOST EFFECTIVE AND SAFE SOLUTION IN STERILIZATION

4th generation HRF COLD PLASMA Technology

"Sterilization will never be interrupted"

HRF 3000 H2O2 Plasma Device Automatically Detects Damp Load, Dries and Sterilization Process Continues.

High Technological Feature:

RELIABLE AND ECOLOGICAL PERIOD IN STERILIZATION WITH HRF 3000

HRF 3000 Hydrogen Peroxide Sterilization Device; All kinds of plastic, polymer, inorganic, electromechanical instruments and surgical instruments, etc .. re-used, all kinds of heat and moisture sensitive medical equipment that sterilizes the new generation of ecological hydrogen peroxide plasma sterilization device.

HRF 3000 (H_2O_2) Hydrogen Peroxide Plasma Sterilization Device is a low temperature, moisture free, non-toxic sterilization device.

Used for sterilization of all kinds of medical equipment and medical instruments such as metal and non-metal, inorganic, polymer, medical grade, etc.

It has ***HRF Cold Plasma*** system which converts hydrogen peroxide used during sterilization into water and oxygen.

It does not require any installation and only electrical connection. Sterilization temperature can be set at 35 - 55 and optionally at intermediate values. Works with 60% H2O2 cartridge.

After sterilization, the materials are presented ready to use without the need for extra ventilation with device's technological design and applications.

No harmful waste, the final products are water vapor and oxygen. Therefore, it provides safe sterilization as well as safe use for personnel and the environment.

HRF 3000 Hydrogen Peroxide Gas Plasma Technology Advantages and Disadvantages

- Extends the life of medical devices and instruments.
- Cost effective
- Shortens the processing time in the sterilization center (CSSD)
- Ecological.
- 37 - 55 C Operating Temperature
- Plasma in chamber
- Tyvek® package compatible.
- No toxic waste.
- Does not need any ventilation line
- User and environment friendly
- 10^{-6} (Sterility Assurance Level)
- Sterilization is not addicted to packaging consumables.

Disadvantages

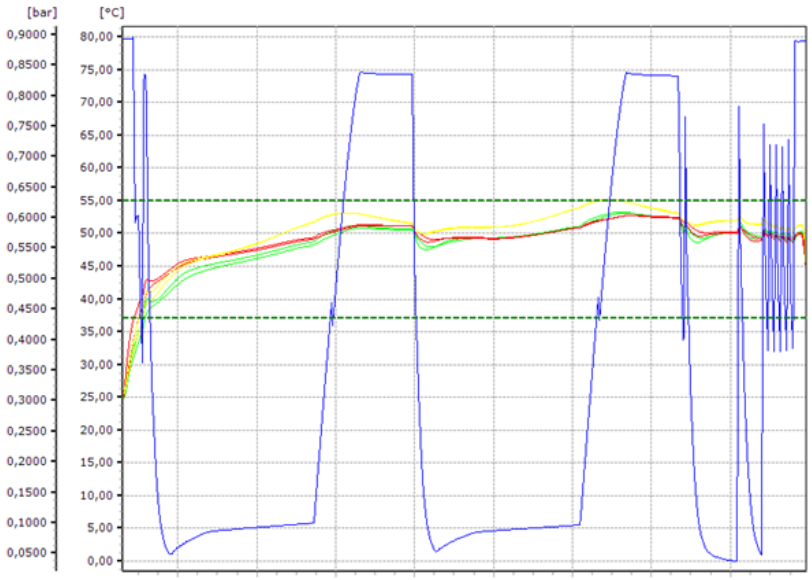
- Materials that absorb hydrogen peroxide, cause catalytic degradation of hydrogen peroxide, react with hydrogen peroxide materials such as organic sulfides, silver are not suitable for sterilization.
- No suitable sterilization method for cellulose, fabrics and liquids,
- Use of cellulose-free polypropylene, synthetic material such as Tyvec for packaging
- **Controlled use is recommended for sterilization of lumen materials.**

Packaging Specifications:

Cellulose-free, synthetic materials such as polypropylene or Tyvec

HRF 3000 STERILIZATION PROCESS

- **Preconditioning** (Vacuum Test, conditioning, ... etc.),
- **Sterilization** (H_2O_2 injection, sterilization, diffusion, plasma, ... etc.),
- **Aeration** (Air Washing),
- All stages start and end automatically without user intervention.
- If there is H_2O_2 in the chamber, the doors will not be opened for safety reasons without air washing.



HRF 3000 Lumen Full Cycle Sterilization Diagram

HRF 3000

In sterilization safety, the sterilization device uses a fixed programmed sterilization cycle that eliminates potential user error.

Provides simple and fast operation with predetermined program options for language selection and sterilization on the large touch screen.

Complies with ISO 14937 Sterilization validation standards.

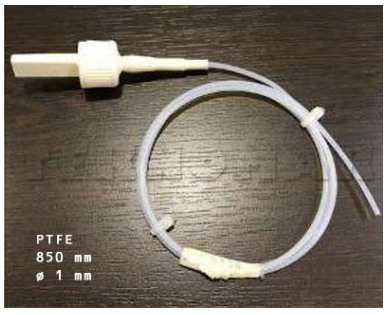
There are 3 H2O2 Sterilization Programs including Short, Long and Lumen.

Lumen Sterilization / (PCD)

HRF 3000 (H_2O_2) Hydrogen Peroxide Plasma Sterilization Device performs the sterilization process of the following types of endoscope, device, instruments, disposable materials, medical products and other similar materials.

Does not damage plastic and electronic equipment due to low temperature sterilization, instruments such as camera head, fiber optic cable, rigid and flexible endoscopes are safely sterilized.

ENDOSCOPES **Controlled use is recommended for sterilization of Multi-Complex lumen materials.**	
Rigid Endoscopes / lumens	**Flexible Endoscopes / lumens**
Laryngoscope Arthroscopy Laparoscopes Trocar Cannula Trocar Case Resectoscope And such	Bronchoscopy Ureteroscopy Hysteroscopy Cystoscopy Koledoskop And such
Device / Instrument	
implants Defiblator Pedals Electrocautery Products Esophageal Dilators Kri-Probe Doppler Head Pressure Transducer Cables Endoscopic Products and etc	Fiber Optic Cables Laser Hand Products Fiber Accessories Ophthalmic Lenses Radiation Therapy Equipment Surgical Power Equipment Drilling Tools Ultrasound Probes Video Camera and connection apparatus and etc



FTPE 850mm ø1mm

FTPE 1000mm ø2mm

FTPE 1200mm ø2mm

Teknik Özellikler / Kısa Datasheet

MODEL	S75	S125	S175
TYPE	HRF 3000	HRF 3000	HRF 3000
SCREEN	Touch screen 7”	Touch screen 7”	Touch screen 7”
OUTER DIMENSIONS (W-D-H) (mm)	730x955x1860	730x955x1860	820x955x1860
INNER DIMENSIONS (W-D-H) (mm)	440x370x700	440x500x700	550x500x700
CHAMBER VOLUME (lt)	113	154	192
EFECTIVE VOLUME OF CHAMBER (lt)	92	131	171
CARTRIDGE H_2O_2 SOLUTION QUANTITY	120 cc	120 cc	120 cc
*POWER (WATT)(Max.)	3200W	3200W	3200W
WORKING VOLTAGE	230 VAC, 50/60 Hz	230 VAC, 50/60 Hz	230 VAC, 50/60 Hz
EXTERNAL CHASSIS MATERIAL	STAINLESS STEEL 304	STAINLESS STEEL 304	STAINLESS STEEL 304
CHAMBER MATERIAL	STAINLESS STEEL 316	STAINLESS STEEL 316	STAINLESS STEEL 316

All models have double door selection (D75,D125,D175)
For more information check the Datasheet.

HRF 3000	CERTIFICATES
CE Certificate- 93/42/EEC	YES
EN ISO 13485	YES
EN ISO 9001	YES
TUR (Technological Product Experience Certificate)	YES
Domestic Goods Certificate	YES
Free Sales Certificate	YES
UTS Registered	YES
TEYDEP Project Success Certificate	YES
LVD / EMC Tests and Certificates	YES / EN 60601-1-1:2009
EN ISO 14937 Certificates	YES
Prion Tests	YES
Lumen Material Sterilization Test	YES
Residue Test	YES
Corrosion Test	YES
Device Type Test	YES

Ethylene Oxide And Hydrogen Peroxide Sterilization Comparison Table

Sterilization Method	Ethylene Oxide	Hydrogen Peroxide
Teknomar	EO - C_2H_4O	H_2O_2
Sterilization Time	~ 4-12 Hours	~ 70 Minutes
Sterilization Cost	~ 12,^{00}* €	~9,^{00}* €
Cartridge Storage Condition	Compelling	Appropriate
Danger Level	High	Ecofriendly
Level of Preparation for Sterilization	Medium	Long
Capacity	High Capacity	Limited Capacity
Material Compatibility	Mixed Material	Different Programs for Different Products
Air and Environment Pollution	Risky	Ecological
External Connection	Necessary	Unnecessary
Operating temperature	37-55 ℃	37-55 ℃
Sterility Assurance (SAL)	10^{-6}	10^{-6}
Maintenance	Expensive	Reosanable
Installation	Hard	Easy
Working Principle	Only EO	H2O2 Gas Vapor or Plasma Only
Diameter and Length	Unlimited	1 mm Ø - 850 mm / 2 mm Ø 1200 mm
Residue on Product	Risky	No residue on product / partial lumen
Approximate Cost of Device	~ 20.000,00 €*	~ 40.000,00 €*
Total Score	6/17	8/17

The table shows the comparison of sterilizers in terms of different parameters and properties. Although sterilization is precise in each of the methods, there are variables that must be considered from the end-user point of view. The ranking shows that the most suitable sterilizer is the 8/17 rated Low Temperature & Hydrogen Peroxide (H2O2) Gas Plasma Sterilization Device

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