

TEKNOMAR®



4th GENERATION HYBRID TECHNOLOGY
hdrOzone



hdrOzone

HEAVY MOLECULE

STERILIZATION DEVICE

$H_2O_2 + O_3 + \text{Hydronium}$

FIRST IN THE WORLD!

 www.teknomar.com.tr





Acil Stop Butonu
Güç Açık Lambası
USB

Yan Panel Açma Kilidi
Yazıcı
RFID

LCD Ekran

Kartuş Yuvası

Sepet

Sterilizasyon Kazanı

Kapak Aç/Kapa Ayak Pedali

HYDRONIUM HEAVY MOLECULE STERILIZATION TECHNIQUE

MODEL	3S125
TYPE	HRF 3000
SCREEN	Touch Screen 7"
EXTERIOR DIMENSIONS (W-D-H) mm	730x955x1980
INTERIOR DIMENSIONS (W-D-H) mm	440x500x700
CHAMBER VOLUME (Lt)	154
CHAMBER EFFECTIVE VOLUME (Lt)	131
MAXIMUM POWER (Watt)	3200
WORKING VOLTAGE	220/230 VAC, 50-60 Hz
PROTECTION CLASS	IP20
EXTERIOR CHASSIS MATERIALS	STAINLESS STEEL 304
CHAMBER MATERIAL	STAINLESS STEEL 316

hdrOzone sterilization device is used safely to sterilize all kinds of heat and moisture sensitive medical instruments, plastic, lumen materials, electromechanical instruments, surgical instruments, complex and long lumen materials such as single and multi-channel flexible endoscopes. . Used safely for the sterilization of long & complex endoscopes and also multi-channel flexible lumen endoscopes with 4 channels and 4.5 m length. Has a sterilization effect up to diameter Ø2mm and length 15 meters.

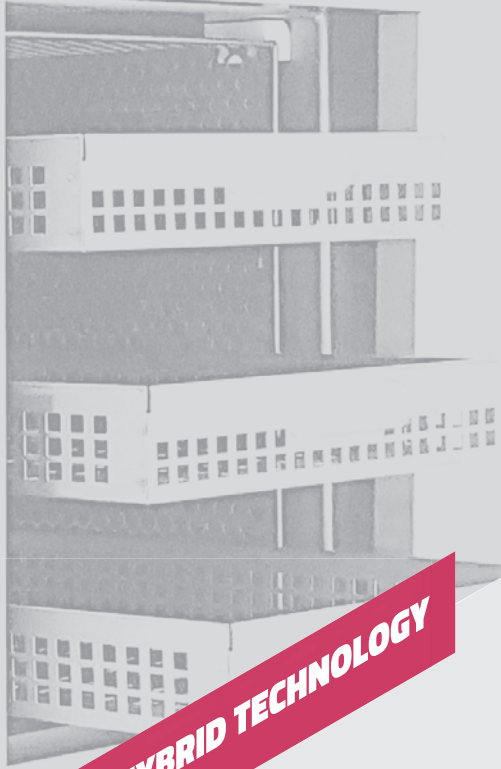
hdrOzone sterilization device is a cold plasma sterilization system with double sterilants [Hydrogen Peroxide (H_2O_2) and Ozone (O_3)] operating at low temperature ($37^\circ C - 45^\circ C$), using heavy molecules and hydronium.

Used under vacuum gas sterilization technical feature in **hdrOzone** sterilization. No lumen, diameter, size disadvantages and limitations which seen in the Hydrogen Peroxide sterilization device. It is much more effective than H_2O_2 plasma sterilization in the sterilization of complex lumen materials. In addition to the chemical reaction sterilization process in the device, the formation of hydroxyl radicals and plasma efficiency is very high. Not cause corrosion or residue on sterilized products.

The materials coming out of the **hdrOzone** plasma sterilization device are presented as ready-to-use without the need for extra ventilation with technological design and applications of the device. No harmful waste, the end products formed consist of water vapour and oxygen. Therefore, offers safe sterilization as well as safe use for personnel and the environment.

The device uses 60% Hydrogen Peroxide (H_2O_2) solution and min. 90% Medical Oxygen for safe and no-limit sterilization. In this way, thanks to the intelligent program design, Ozone and Hydrogen Peroxide are used together for the most effective sterilization at the lowest dose.

hdrOzone Sterilization technique: With the application of H_2O_2 and O_3 it is a sterilization effect of HYDRONIUM (HO_3 , HO_4 , H_2O_3 , H_2O_4 , HO_5 , OOH , H_3O etc.) heavy molecules, radicals, hydroxyls and ions.



4th GENERATION HYBRID TECHNOLOGY

HRF 3000 **hdrOzone**

sterilization device operating principles;
(After the chamber temperature reaches the desired temperature)

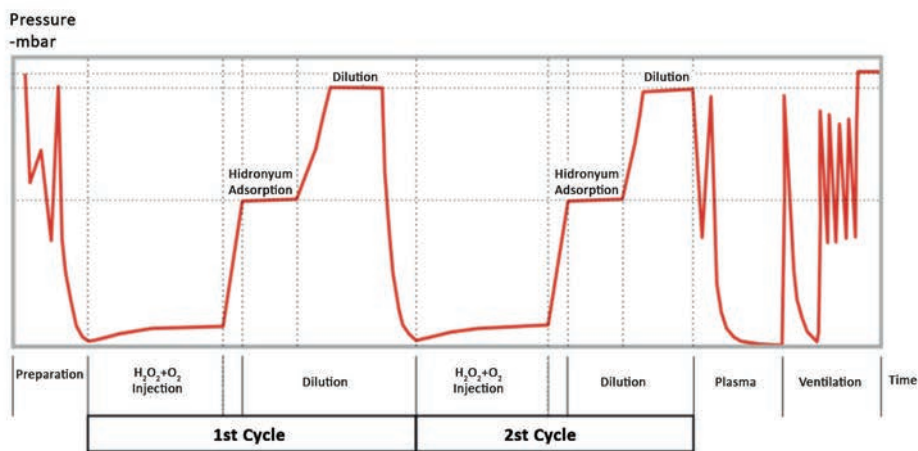
1. Vacuum phase
2. Injection phase
3. Diffusion phase
4. Ozonation phase
5. Hydronium phase
6. ADSORPTION of hydronium and heavy molecules
7. Dilution phase
8. Plasma phase
9. Ventilation phase

PCD & Lumen Sterilization

Hydrogen Peroxide H_2O_2 + O_3 Ozone Plasma Sterilization Device perform the sterilization of medical products and other materials with similar properties, except for conventional type disposable materials.


No apparatus is needed for the sterilization of complex lumen materials (like a booster).

hdrOzone Sterilization Diagram

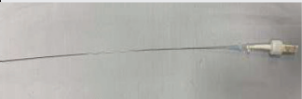


NO CORROSION & RESIDUE ON STERILIZED PRODUCTS !

HygCen - White PTFE PCD	
Material	PTFE
Length	850 mm
Ø inner	1 mm




Teknomar - Steel Lumen PCD	
Material	Steel
Length	500 mm
Ø inner	0,7 mm



Teknomar - White PTFE PCD	
Material	PTFE
Length	50000 mm
Ø inner	2 mm



Teknomar - White PTFE PCD	
Material	PTFE
Length	900 mm
Ø inner	0,4 mm



To validate Ozone & Hydrogen Peroxide Sterilization and Plasma Effect of our hdrOzone device, EN ISO 14937 validation tests were made by Accredited Organization HYGCEN GmbH, at full load.

HRF 3000 **hdrOzone** sterilization device uses a fixed-programmed sterilization cycle, which eliminates user error in sterilization safety.

No need to classify the materials to be sterilized and to choose the appropriate cycle and program as in old technology devices. Mixed loading can be done.

The ability of the device to operate mixed loads maximizes device efficiency, safe sterilization returns while minimizing the amount of material classification to be sterilized, reducing labour cost.



hdrOzone Sterilization Device, besides its superior specifications, can also be used as a stand-alone Hydrogen Peroxide Sterilization Plasma Device.

Programs

Offers simple and fast use with pre-determined program options for language selection and sterilization on the large touch screen. The device is in compliance with ISO 14937.



hdrOzone Sterilization Device, besides its superior specifications, can also be used as a stand-alone Hydrogen Peroxide Sterilization Plasma Device. There are 5 programs in total, including 3- H₂O₂ Programs and 2 - hdrOzone programs. Has a simple user interface.

HYDROGEN PEROXIDE



27 Minutes
H₂O₂



45 Minutes
H₂O₂



60 Minutes
H₂O₂

HDROZONE



70 Minutes
H₂O₂
+
O₃
+
Hydronium



95 Minutes
H₂O₂
+
O₃
+
Hydronium

Time may vary according to load.

Advantages of hdrOzone Plasma Sterilization Technique

- ▶ The use of heavy molecules instead of the only hydroxyl in the new **hdrOzone** technique and technology,
- ▶ Using $H_2O_2 + O_3$ and gaseous hydronium instead of condensing H_2O_2 ,
- ▶ All kinds of sterilization safety,
- ▶ Short sterilization cycle duration,
- ▶ Fast sterilization process at full load,
- ▶ All kinds of material sterilization with full load,
- ▶ Mixed load capability,
- ▶ **No need for separation and one by one sterilization when placing materials in the sterilization chamber such as long lumen, short lumen, load and other materials !**
- ▶ **No length limit in lumen material!**
- ▶ Non-wet moist materials can be sterilized. No need for "product drying operation" as in other hydrogen peroxide devices.
- ▶ Completes the sterilization process at low temperature and humidity.
- ▶ In the sterilization of long and thin (1mm * 100 cm) lumen materials, sterilizes multiple 15 meters (2mm diameter) at full load without the need for manufacturer's declaration.

ENDOSCOPES	
Mixed loading is done in all sizes, diameters and lengths. No need for product classification. No limit in diameters.	
RIGID ENDOSCOPES/LUMEN	FLEXIBLE ENDOSCOPES / LUMEN
Laryngoscope	Bronchoscope
Arthroscope	Ureteroscope
Laparoscopes	Hysteroscope Cystoscope
Trocar Cannula Trocar Case	Choledoscope etc.
Resectoscope etc.	
DEVICE & TOOL	
Implants	Fiber Optic Cables
Defibrillator Pedals	Laser Hand Products
Electrocautery Products	Fiber Accessories
Oesophagus Dilators	Ophthalmic Lenses
Kri-Probes	Radiation Therapy Instruments
Doppler	Surgical Power Equipment
Head Pressure Transducer Cables	Drilling Tools
Endoscopic Products etc.	Ultrasound Probes
	Video Camera and Connection Apparatus etc.

*Packing Specifications: cellulose-free, synthetic materials such as polypropylene or Tyvek;
Sterilization of fabric, cellulose and liquid is not suitable for this sterilization method.*

- ▶ Suitable for temperature and humidity sensitive materials.
- ▶ Not harmful to the environment since it is H₂O and O₂ as the final product. It is a safe method for the environment and human health.
- ▶ Suitable for sterilization of flexible surgical instruments with very long and thin lumen at full load.
- ▶ It is a sterilization method that does not leave toxic residues.
- ▶ Has easy, comfortable and safe use.
- ▶ No auxiliary apparatus such as a booster is required..
- ▶ No ventilation time is required.
- ▶ Reduces material selection error to zero. Reduces the need for qualified personnel.
- ▶ Reduces sterilization and labour cost per material. Because sterilization is done at the FULL load cartridge consumption is 1/3 compared to normal H₂O₂ devices. (H₂O₂ device cartridge is used in hdrOzone.)



Application to set the record on GWR'S been submitted.



hdrOzone CERTIFICATES / TEST REPORTS

MDD 93/42/EEC, CE Certificate	✓
EN ISO 13485:2016	✓
EN ISO 9001:2015	✓
TUR Technological Product Experience Certificate	✓
Domestic Goods Certificate	✓
Certificate of Free Sale	✓
Turkish Republic Ministry of Health Product Tracking System Registration	✓
TEYDEP Project Success Certificate	✓
LVD / EMC Tests and Certificate	✓ / EN 60601-1 and EN 60601-1-2
EN ISO 14937 Certificate	✓
Prion Test Report	✓
Lumen Material Sterilization Test Report	✓
Residue Test Report	✓
Corrosion Test Report	✓
Device Type Test Report	✓

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The most effective and safe solution in
lumen material sterilization at full load.

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