

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



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 4.5m 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 operating at low temperature (37 ° C – 45 ° C), using [Hydrogen Peroxide (H_2O_2) and Ozone (O_3)] heavy molecules and hydronium.

Used under vacuum gas sterilization technical feature in **hdrOzone** sterilization. No lumen, diameter, size disadvantages and limitations 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. 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 effect of heavy molecules, radicals, hydroxyls and ions, with the application of H_2O_2 and O_3 , HYDRONIUM (HO_3 , HO_4 , H_2O_3 , H_2O_4 , HO_5 , OOH , H_3O etc.)

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

It does not require extra ventilation time.

NO RESIDUE IN THE PRODUCT with HRF COLD PLASMA TECHNOLOGY IN **CHAMBER**



No Corrosion & Residue On
Sterilized Products !

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.

**Automatically detects damp load,
dries and continues sterilization process
uninterrupted.**

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

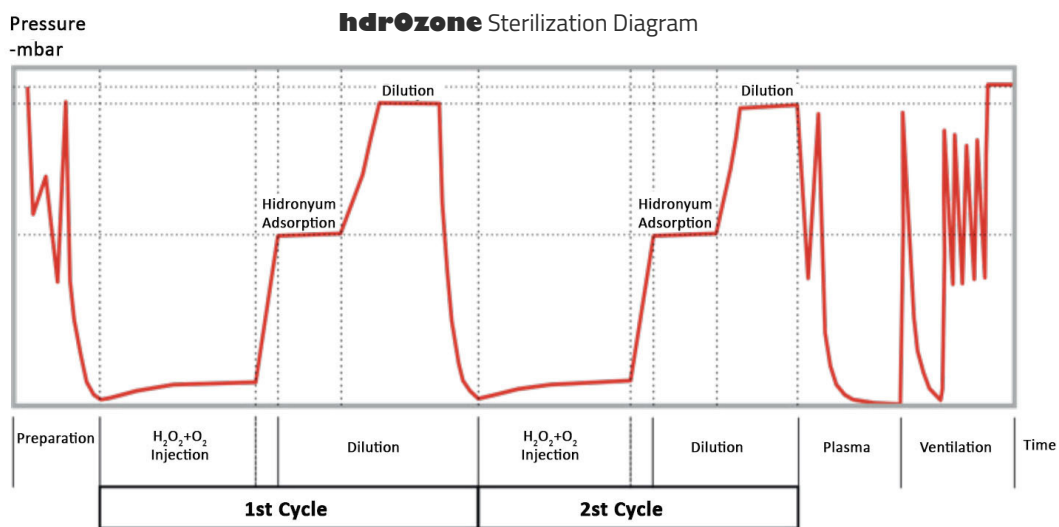


To validate Ozone & Hydrogen Peroxide Sterilization and Plasma Effect of our hdrOzone device, EN ISO 14937 validation tests were made by Accredited Organization HYGCEN GmbH, at full load.

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 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- H_2O_2 Programs and 2 - hdrOzone programs. Has a simple user interface.

HYDROGEN PEROXIDE



27 Minutes
 H_2O_2



45 Minutes
 H_2O_2



60 Minutes
 H_2O_2

HDROZONE



70 Minutes
 H_2O_2
+
 O_3
+
Hydronium



95 Minutes
 H_2O_2
+
 O_3
+
Hydronium

Time may vary according to load.



Advantages of hdrOzone Plasma Sterilization Technique

- 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!
- All kinds of material sterilization with full load,
- Mixed load capability,
- Non-wet moist materials can be sterilized. No need for a product drying operation as with other hydrogen peroxide devices.
- Suitable for sterilization of flexible surgical instruments with very long and thin lumen at full load.
- Fast sterilization process at full load,
- 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 condensed H_2O_2 ,
- Delivers a Sterility Assurance Level (SAL) of 10^{-6} .
- In the sterilization of long and thin (\varnothing 1mm * 100 cm) lumen materials, sterilizes multiple 15 meters (\varnothing 2mm diameter) at full load without the need for manufacturer's declaration.
- Short sterilization cycle duration,
- No auxiliary apparatus such as a booster is required.
- Completes the sterilization process at low temperature and humidity.
- Suitable for temperature and humidity sensitive materials.
- No ventilation time is required.
- Has easy, comfortable and safe use.
- Reduces material selection error to zero. Reduces the need for qualified personnel.
- Sterilization cost per material and low labour.
- A normal H_2O_2 device cartridge is used. Because sterilization is FULL load cartridge consumption is 1/3 compared to normal H_2O_2 devices.
- Not harmful to the environment since it is H_2O_2 and O_2 as the final product. It is a safe method for the environment and human health.



CERTIFICATES & TEST REPORTS



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

- 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
- TEYDEP Project Success Certificate
- LVD Test Report / EN 60601-1
- EMC Test Report / EN 60601-1-2
- EN ISO 14937 Validation Test
- Prion Test
- Lumen Material Sterilization Test
- FTIR Test (Residue Test)
- SEM Test (Corrosion Test)
- ELISA Test (Prion Test)
- Device Type Test

ENDOSCOPES

Mixed loading is done in all sizes, diameters and lengths. No need for product classification. No limit in diameters.

RIGID ENDOSCOPES/LUMEN

Laryngoscope
Arthroscope
Laparoscopes
Trocar Cannula Trocar Case
Resectoscope etc.

FLEXIBLE ENDOSCOPES/LUMEN

Bronchoscope
Ureteroscope
Hysteroscope Cystoscope
Cholescope etc.

DEVICE & TOOL

Implants
Defibrillator Pedals
Electrocautery Products
Oesophagus Dilators
Kri-Probes
Doppler
Head Pressure Transducer Cables
Endoscopic Products etc.

Fiber Optic Cables
Laser Hand Products
Fiber Accessories
Ophthalmic Lenses
Radiation Therapy Instruments
Surgical Power Equipment
Drilling Tools
Ultrasound Probes
Video Camera and Connection Apparatus etc.

Compatible Packaging Materials are Tyvek® Sterilization Roll, Wrap Papers, Various Surgical Container Systems. Fabric, cellulosic materials (paper, cloth) silvery materials, liquid sterilization, powder, copper, natural rubber etc. are not suitable for this sterilization method.



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



TEKNOMAR®
Since 1993 **Group**

📍 Ostim OSB Mh. 1269 Cadde No: 29/-Yenimahalle/ Ankara, TÜRKİYE

☎ +90 312 385 00 40 📠 +90 312 385 67 84

✉ info@teknomar.com.tr 🌐 www.teknomar.com.tr



All rights of specification and design change on the equipments produced due to the technological innovations and changes are reserved.