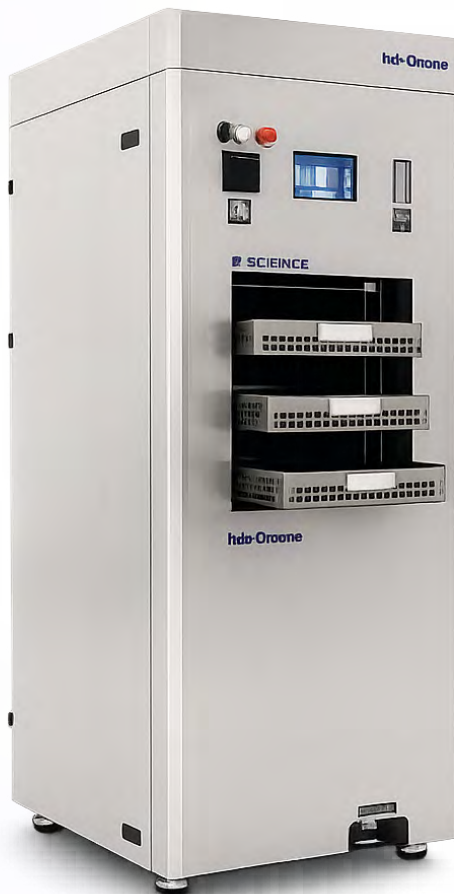




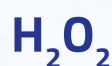
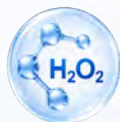
A PARADIGM SHIFT IN STERILIZATION TECHNOLOGY !



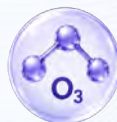
hdrOzone®

hdrOzone® GI

4th GENERATION HYDRONIUM HEAVY MOLECULE STERILIZATION PLATFORM



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HYDRONIUM HEAVY MOLECULE STERILIZATION METHOD

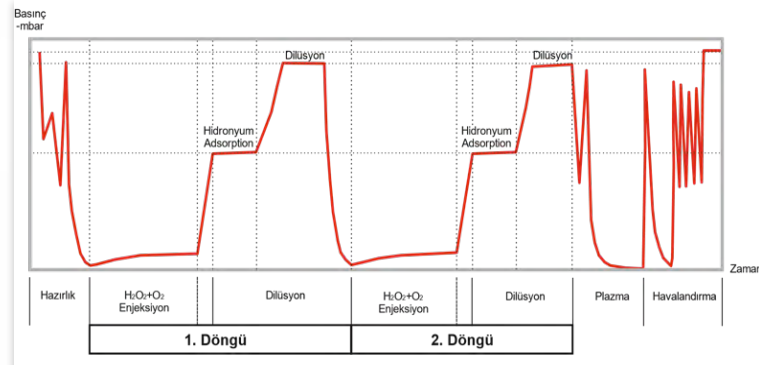
MODEL	B3S125	B3S125 GI
TYPE	BSCIENCE® HdrOzone	BSCIENCE® HdrOzone GI
DISPLAY	7" TOUCHSCREEN	10" TOUCHSCREEN
EXTERNAL DIMENSIONS (W-D-H)	730 x 955 x 1980	730 x 955 x 1980
CHAMBER INTERNAL DIMENSIONS	440 x 500 x 700	440 x 500 x 700
CHAMBER VOLUME (L)	154	154
CHAMBER VOLUME (Usable L)	134	134
H2O2 CARTRIDGE SOLUTION VOLUME	120-150 cc	120-150 cc
MAXIMUM POWER (Watt)	3200 W	3200 W
OPERATING VOLTAGE	220/230 VAC, 50/60 Hz	220/230 VAC, 50/60 Hz
PROTECTION CLASS	IP20	IP20
EXTERNAL FRAME MATERIAL	304/ESC Powder	304/ESC Powder
CHAMBER MATERIAL	STAINLESS STEEL 304/316	STAINLESS STEEL 304/316
WEIGHT	450 kg	450 kg

hdrOzone® sterilization system is designed for the safe sterilization of heat- and moisture-sensitive medical instruments, plastics, lumened devices, electromechanical surgical equipment, as well as complex and long-lumen devices such as single- and multi-channel flexible endoscopes. It can be safely used for the sterilization of long and complex endoscopes, as well as multi-channel flexible lumen endoscopes with up to 4 channels and 4.5 m length. It has verified sterilization capability for lumens down to Ø 2 mm in diameter and up to 15 meters in length. (**10⁻⁶ SAL**)

hdrOzone® sterilization device is a low-temperature (37°C–45°C) **dual-sterilant** sterilization system using [Hydrogen Peroxide (H₂O₂) and Ozone (O₃)] with cold plasma capability.

hdrOzone® sterilization features vacuum-based gas sterilization technology. It eliminates the lumen, diameter, and length restrictions common to standard hydrogen peroxide sterilizers. It delivers significantly higher efficacy for complex lumened instruments compared to conventional H₂O₂ plasma systems. Beyond chemical-reaction sterilization, the system generates highly active hydroxyl radicals, heavy molecules, and plasma activity. It exhibits the gas-phase sterilization characteristics of techniques such as EO. It does not cause **corrosion or leave toxic residues** on sterilized products.

hdrOzone® Thanks to advanced process engineering, items processed in the sterilization device require no post-sterilization aeration and are immediately ready for use. Byproducts consist strictly of water vapor and oxygen, ensuring complete safety for healthcare personnel, patients, and the environment.



hdrOzone® Operating Principle

BSCIENCE **hdrOzone**

sterilization device operating principles;

(After the chamber temperature reaches the desired temperature)

1. Vacuum phase (10⁻³ torr)
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

Operating with a 58%–60% Hydrogen Peroxide (H_2O_2) solution and **Medical-Grade Oxygen**, the intelligent program design synergizes Ozone and H_2O_2 to achieve maximum sterilization efficacy at minimum active dosages.

hdrOzone® Operating Principle: Sterilization is driven by the combined dynamic effect of H_2O_2 , O_3 , and HYDRONIUM (HO_3 , HO_4 , H_2O_3 , H_2O_4 , HO_5 , OOH , H_3O , etc.) heavy molecules, radicals, hydroxyls, and active ions.

hdrOzone® heavy-molecule sterilization device operates using the Hydronium technique. The HdrOzone Device can also be used as a hydrogen peroxide sterilization device via dedicated H_2O_2 sterilizer function programs.

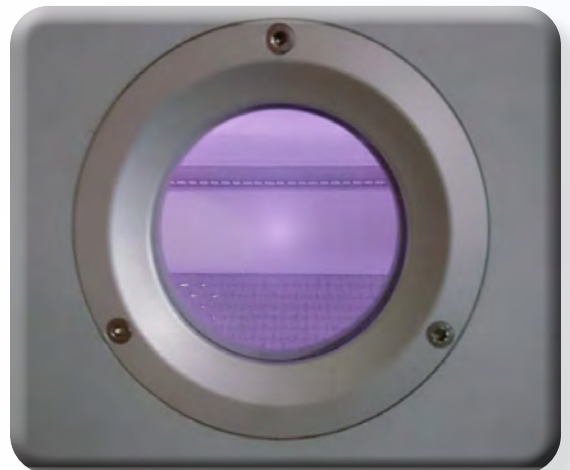
hdrOzone® sterilization system uses pre-programmed, automated sterilization cycles that minimize human error. Unlike standard hydrogen peroxide sterilizers, there is no need to manually sort instruments or select complex specific cycles.

Mixed loading (combining endoscopes with other materials) can be processed together, maximizing throughput while reducing sorting labor and operational costs. **Hdrozone minimize cycle expences, ensuring low operational costs.**

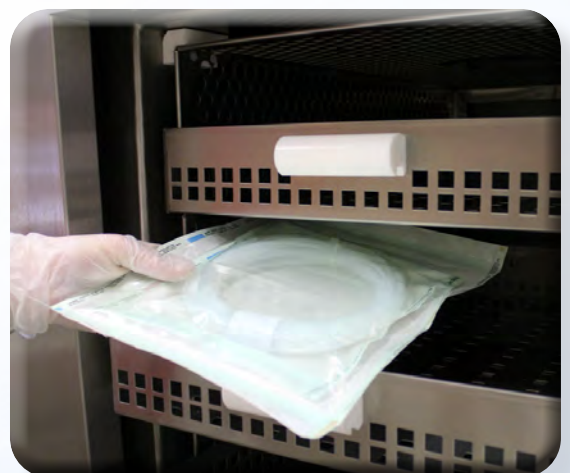
HDROZONE® IS EFFECTIVE AGAINST **BIOFILMS**, **MICROCRACKS**, **ENCLOSED SPACES**, **OPTICS**, AND **ORGANIC RESIDUES** IN LUMENED INSTRUMENTS.



HRF 3000 Cold Plasma Operation



HdrOzone® HRF 3000 Cold Plasma



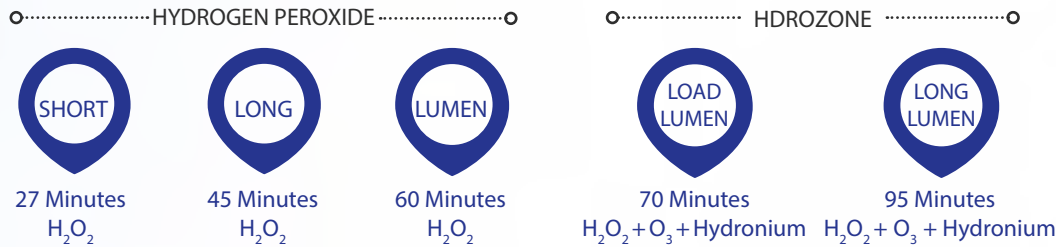
Loading Long Lumen



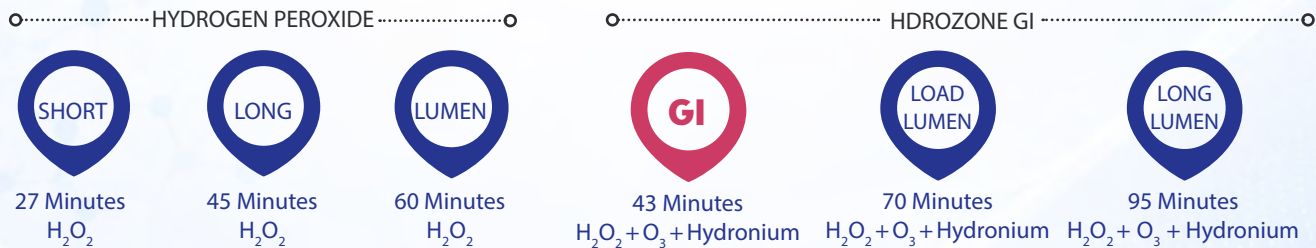
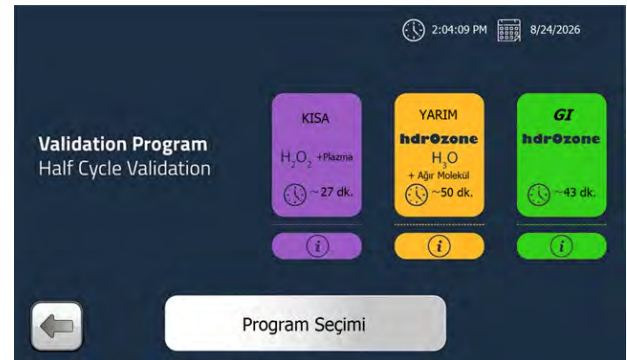
HDROZONE® PROGRAMS

The wide touchscreen display provides simple and fast operation with language selection and pre-defined program options for sterilization. Complies with **ISO 14937** standards.

hdrozone® In addition to its superior features, the HdrOzone Sterilization Device can also operate independently as a **Hydrogen Peroxide Sterilization Plasma Device**. There are **5 programs** in total: 2 HdrOzone Heavy-Lumen Programs and 3 H_2O_2 Programs. In addition, a **Half Cycle Validation Program** is available on the validation page. The user interface is simple.



hdrozone® GI In addition to its superior features, the HdrOzone GI Sterilization Device can also operate independently as a **Hydrogen Peroxide Sterilization Plasma Device**. There are **6 programs** in total: 3 H_2O_2 Programs, 2 HdrOzone Programs, and 1 HdrOzone GI Program. In addition, an O_3 Sterilization Program and a **Half Cycle Validation Program** are available on the validation page. The user interface is simple.



Time may vary according to load.

HDROZONE® STERILIZATION DEVICE, BESIDES ITS SUPERIOR SPECIFICATIONS, CAN ALSO BE USED AS A STAND-ALONE **HYDROGEN PEROXIDE STERILIZATION PLASMA DEVICE**.

PCD, LUMEN & ENDOSCOPE STERILIZATION

The **hdrOzone®** Sterilization Device sterilizes medical products and similar items, excluding conventional disposable materials.

No **boosters** or auxiliary accessories are required for complex lumened devices.

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

ENDOSCOPES	
RIGID ENDOSCOPES Laryngoscopes Arthroscopes Laparoscopes Trocar Cannulas Trocar Sheaths Resectoscopes etc.	FLEXIBLE ENDOSCOPES Bronchoscopes Ureteroscopes Hysteroscopes Cystoscopes Choledochoscopes etc.
DEVICES & INSTRUMENTS	
Implants Defibrillator Paddles Electrocautery Tools Esophageal Dilators Cryo-Probes Doppler Probes ICP Transducer Cables Endoscopic Accessories etc.	Fiber Optic Cables Laser Handpieces Fiber Accessories Ophthalmic Lenses Radiotherapy Instruments Surgical Power Tools Drills & Cutters Ultrasound Probes Video Cameras & Adapters etc.



Loading 2-3 Endoscopes in a Single Sterilization Cycle.

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.

ADVANTAGES OF THE HDROZONE® STERILIZATION TECHNIQUE IN STERILIZATION

- The use of **heavy molecules** instead of hydroxyls alone in the new HdrOzone technology and technique.
- $H_2O_2 + O_3$ and gaseous **hydronium (H_3O)** are used instead of condensed H_2O_2 .
- Comprehensive sterilization safety. **10^{-6} SAL**
- **High biofilm efficacy.**
- Short sterilization cycle time.
- Fast sterilization process under full load capacity.
- Sterilization of all types of materials under full load.
- **Up to 3 endoscope containers can be sterilized simultaneously.**
- **Mixed-load capability.**
- There is no need to separate materials or sterilize them individually when loading long lumens, short lumens, loads, and other materials into the sterilization chamber!
- **There is no length limit for lumened materials!**
- Damp, non-wet materials can be sterilized. No product drying operation is required as with other hydrogen peroxide devices.
- Completes the sterilization process at low temperature and humidity.
- For sterilization of long and thin (1 mm * 100 cm) lumened devices, it sterilizes multiple items up to **15 meters** (2 mm diameter) at full load without requiring a manufacturer declaration.
- Suitable for temperature- and moisture-sensitive materials.
- Since the final products are H_2O and O_2 , there is no harm to the environment. It is a safe method for the environment and human health.
- Suitable for sterilizing very long and thin-lumened flexible surgical instruments at full load.
- A sterilization method that leaves no toxic residue.
- Easy, convenient, and safe to use.
- No auxiliary accessories such as **boosters** are required.
- No aeration time is required.
- Reduces material-selection errors to zero. Reduces the need for qualified personnel.
- The unit sterilization cost per material and labor costs are low.
- The HdrOzone device uses a standard H_2O_2 device **cartridge**.
- Because sterilization in HdrOzone is performed at **FULL load**, **cartridge consumption is one-third compared** to standard H_2O_2 devices.

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 ISO 14937 Certificate
Prion Test
Lumen Material Sterilization Test
Residue Test
Corrosion Test
Device Type Test
Endoscope Integrity Test

Advanced Reactive Sterilization System Engineering

**// THE MOST EFFECTIVE AND SAFE SOLUTION IN
LUMEN MATERIAL STERILIZATION AT FULL LOAD. //**

For more technical
information about hdrOzone;



B SCIENCE® A.Ş.

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