UMB MÜH. PRO. MAK. İNŞ. CEV. VE TIB. CIH. İM. SAN. İÇ VE DIŞ. T. LTD. ŞTİ
İstasyon Mah. Talat Paşa Cad. Yeni Sanayi Sitesi, 14C Blok, Nr.4, Mobile: +90 5324938254
Fax: +90 284 9991702, WEB: www.umbmuhendislik.com

Catalogue No. ARI-550.003 January 06, 2020

ARI-550: 300 Liters/Cycle Capacity Medical Waste Sterilization System's Catalogue

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1- ABOUT UMB

1.1. Corporate

UMB Ltd. was established at 2011 in Turkey as a project office, now it is rendering to service engineering and manufacturing facilities to the medical waste management sector. It designs, manufactures, and supplies automated solutions for medical waste management. To reach the best quality in production, international standards of ISO-13485 in quality management system has been adopted recently and manufacturing is made in accordance with 97/23/EEC pressurized equipment directives and EN-285 the sterilization. Now, UMB proudly manufactures not only for Turkey but also for other countries worldwide with a %95 sales of its production to foreign markets.

1.2. Mission

UMB aims to improve the health and quality of life in the society and to develop and manufacture the most practical high-quality engineering solutions within technological advancement that will meet or exceed customer's needs and expectations. To achieve this; supplies medical waste treatment machines that have sterilization performance validation according to EN-285 and with lowest energy consumption to the industry.

1.3. Vision

To follow and create the latest technology in sterilization and shredding, and to utilize it in manufacturing high quality products. No concession from the ethics and principles of the science and conscience, providing reliable and quality service. To be an innovator for the scientific research and development as well as the new applications. To provide the best price for the best quality products.

Attach.1: ARI-550 Sterilization Validation, 8log10 level, Examination of disinfection method (134° C for porous materials based on Robert-Koch-Institute (RKI Germany Guideline), EN 285 and DIN 58949-3, EN 12740 and the STAATT Level IV;

Attach.2: ARI-550 CE Certificate according to EN 97/23/EC pressure equipment directive

Attach.3: ARI-550 CE Certificate according to EN 60204 machine safety

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2- ARI-550: 300 Liters/Cycle MEDICAL WASTE TREATMENT SYTEM

2.1. Design Criteria and Features of ARI Product Description

ARI-550 systems are an integrated; shredder, solid & liquid medical waste sterilizer, drying unit and steam generator designed for treatment of medical waste.

Size reduction and sterilization of the medical waste carried out inside the waste vessel (WV). The WV is fitted with a motor-driven gearbox, with powerful shredding blades which can rotate in two directions to reduce the size and volume of the waste. Saturated steam supply to WV for sterilizing is generated in a steam generator that has capacity of 80 kg/hour.

The WV is designed and certified as a Large Steam Sterilizer in accordance with EN-13445 and EN-285.

Picture.1. ARI-550: 300 Liters/Cycle equipment manufactured for UNDP

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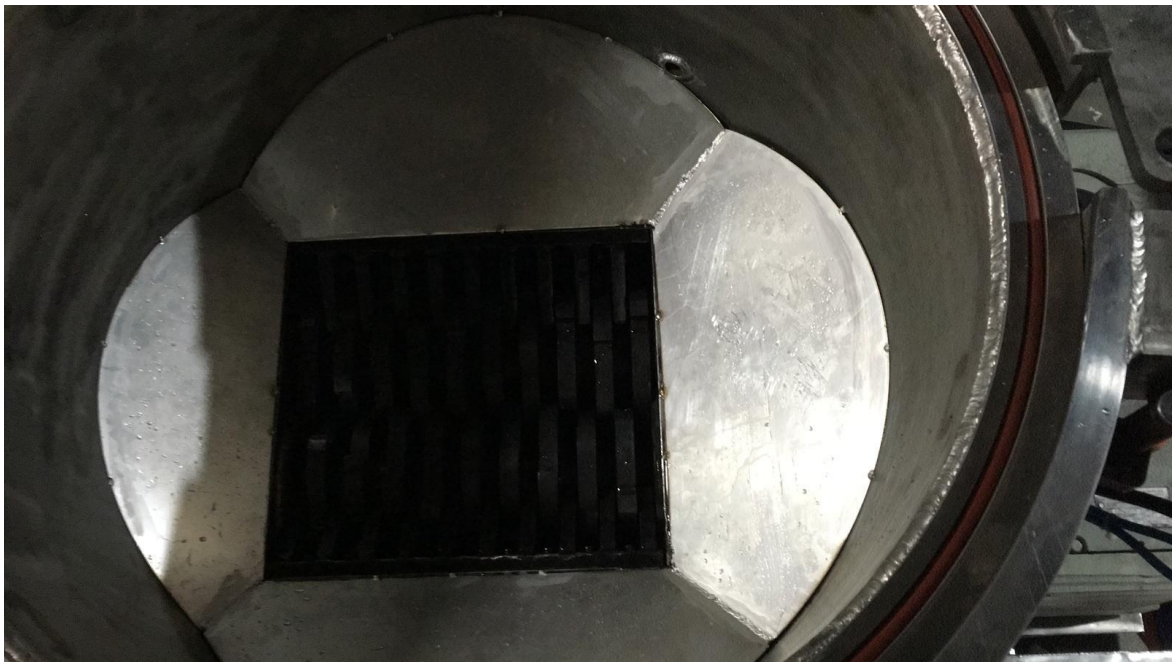

Picture.2. two-shaft shredder is integrated in the pressurized vessel to achieve guaranteed and homogeneous sterilization

Picture.3. ARI-550 Installed in Chisinau

The vacuum pump provides the drying of disinfected waste at the end of the sterilization process. It is liquid ring type with capacity to decrease the pressure until 20 mbar.

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The disinfection method in ARI series equipment's are standard sterilization according to EN-285, and has 8log10 sterilization efficacy level.

Steps in a treatment cycle of ARI:550 series medical waste systems:

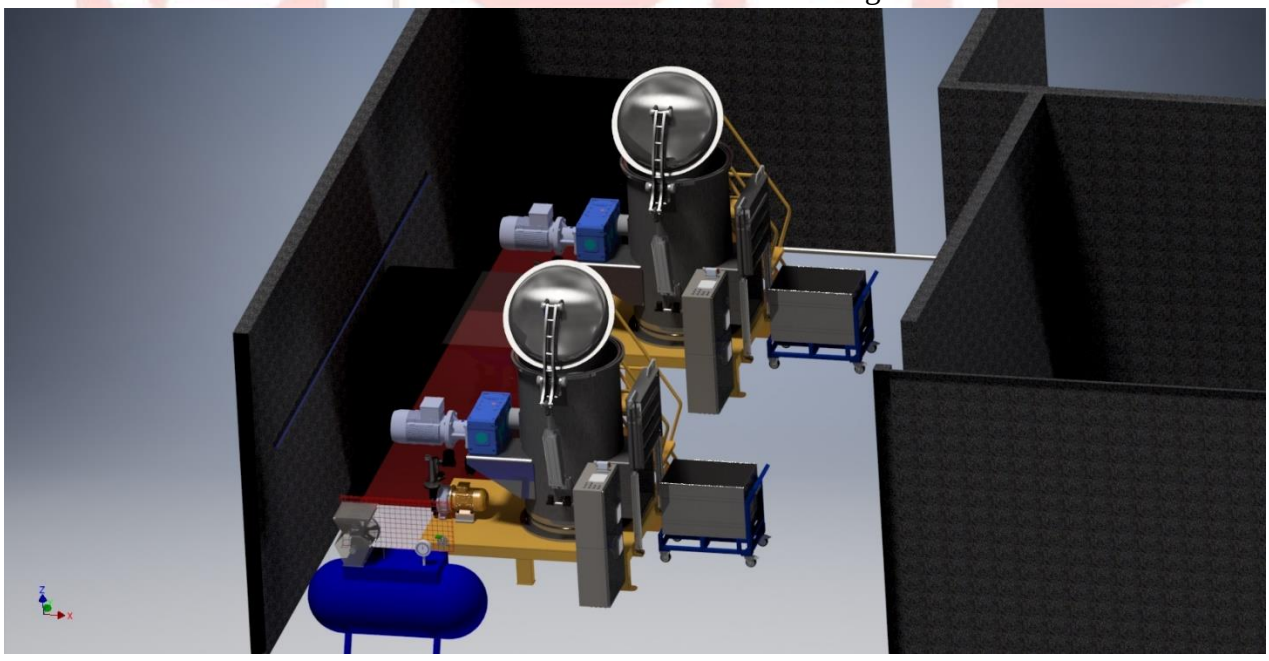
a) First step in the treatment cycle is the transfer of the unsterilized medical waste to the equipment. After this process the doors are closed, namely the contact between the waste and atmosphere prevented.

b) Secondly, shredder starts to operation and a proper vacuum is applied to remove the air bubbles so that steam can penetrate deep in the inner volumes of the waste material before the steam is fed into the vessel.

c) Then hot steam is sent to the sterilization section to achieve the ideal sterilizati on conditions of temperature and pressure. After having reached to the plato stage, sterilization conditions are hold and maintained for sufficient time.

d) After enough time of exposure to steam, sterilization expires, and vacuum is applied to dry and cool down the sterile material and empty the steam inside through the vacuum pump.

Picture.5. Teflon coated discharge container for sterilized waste

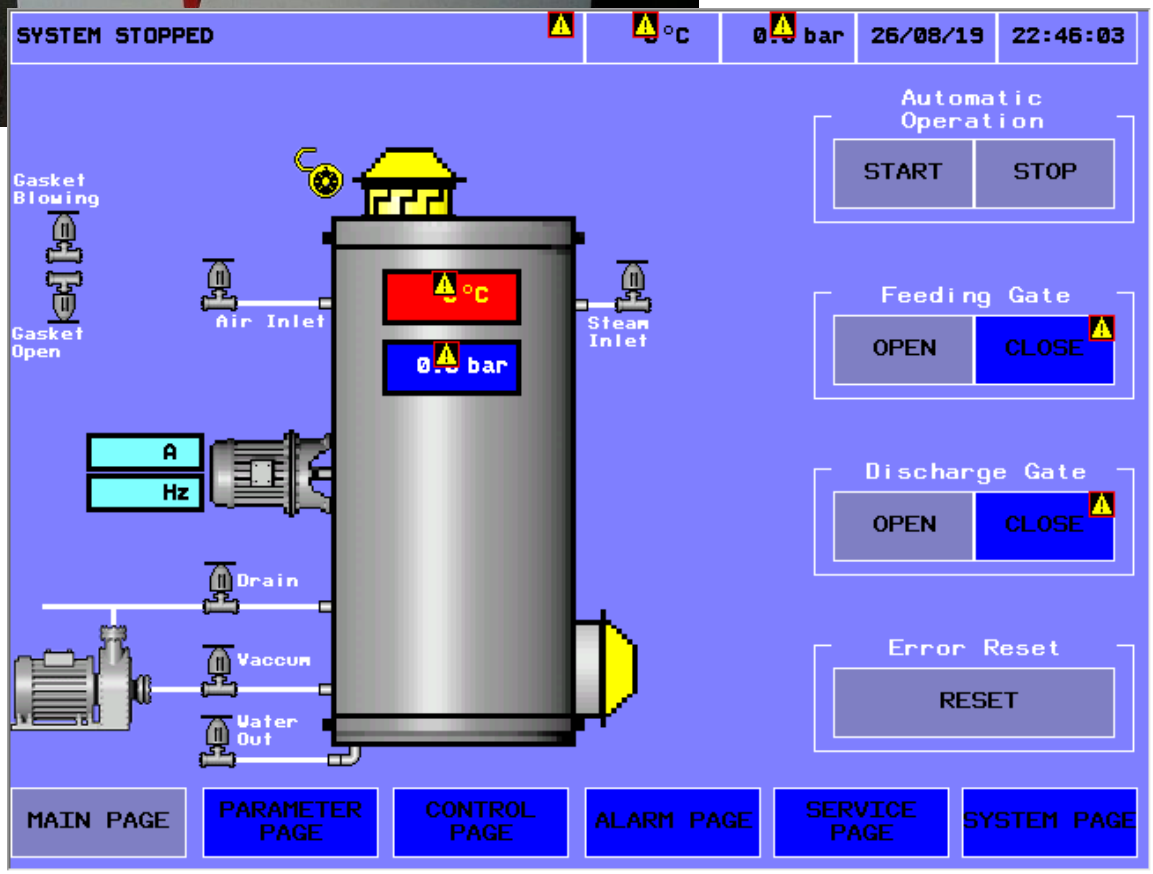


e) Then air is fed into the vessel and atmospheric pressure is ensured after which the lid and the bottom door is opened automatically to empty the sterilize waste inside specially designed sterilization container.

PLC Touchscreen Panel

Real-time printer for sterilization

Picture.6. Control screen of ARI



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TECHNICAL SPECIFICATIONS OF ARI-550: 300 LİTERS/CYCLE

Model	**ARI-550: 300 Liters/Cycle**
1. Treatment method	Pre-shredder Type, Pressurized Steam Sterilization
2. Average Treatment Capacity	60 kg / hour
3. Feed Hopper Volume	300 liters
4. Shredded Waste Part of Sterilization Vessel Volume	230 liters
5. Waste Feed System	From the top door
6. Shredder Type and Power	2 shafts, 15 Kw
7. Feed & Discharge Lid Systems	Fully Automatic, With 3 Kw Vacuum Motor
8. Supporting Lock System for Feed & Discharge Lids	Pneumatic, totally 5-pistons, Fully Automatic
9. Duration of One Cycle of ARI-550	28-33 minutes
10. Sterilization Temperature	134-137 ºC
11. Sterilization Method	Pre-Vacuum and Pre-heating
12. Steam Generator Capacity (electrical)	80 kg / h
13. Water Supply Connection	1”
14. Water Consumption (average)	70 Liters/h
15. Power Connection	380 V, 50 Hz, 3-phase
16. Connected Power (including steam generator)	39 kW
17. Dimensions of complete system, cm (length x width x height) except elevator	295x220x250 including steam generator
18. Weight	2400 kg
19. Drying of Sterilized Waste	Vacuum mechanism with 3 kw vacuum motor
20. Sterile Waste Discharge	From the bottom door, with a specially designed container
21. PLC, Automation System & Software	Schneider, Siemens, Fulmatic, UMB
22. PLC Touchscreen Languages	Spanish, English, Turkish

2.3. Main Components of ARI Medical Waste Treatment System

a) Stainless steel sterilization chamber with 300 liters of waste capacity per cycle; The material is AISI-304L with a thickness of 8-10 mm. It is tested and certified by TUV for CE certificate according to pressurized equipment directive (97/23/EC).

b) 80 kg/hour capacity steam generator; it also includes condense tank and pumping unit,

c) High and low-pressure management devices; Pressure sensors, safety switches, electromechanical pressure switches, and temperature sensors for sterilization chamber, and steam generator,

d) Vacuum mechanism,

e) PLC control unit, PLC program (UMB), 10-inch LCD touch screen display,

f) Pneumatic pistons (5 for doors actuation), Top door has a clamp system, which 3 pistons used for actuation. On the other hand, bottom door has a sliding system actuated by 2 pistons.

g) Shredder mechanism; motor with gearbox frequency converter, heat treated, and surface hardened AISI-4140 shredder knifes, gears and shafts,

h) and subcomponents of these.

COMPRESSOR
- 3 hp connected power
- CE certificated, oil injection, air drying system,
- Dryer, filter and air tank (200 liters) are included
- Piping is included between autoclave and compressor

DOCUMENTATION TO BE PROVIDED
UMB is responsible to provide the following documents:
- Basic user manual and maintenance technical document in English
- Quality documents and
- Sterilization Validation test report (sterilization performance) which proves 8log10 level in 30 minutes.
- CE Certification

Warranty: Two years warranty against manufacturing and material failures. The warranty period starts after the installation.

As autoclaves being critical equipment in terms of safety concerns and manufacturing based on standards, UMB's medical waste systems safety is guaranteed by the following:
- Advanced PLC control system allowing to limit maximum and minimum pressure values through PLC
- Manufacturing based on 97/23/EC Pressure Equipment Directives (PED)
- **Sterilization chamber has 10-year safety guarantee as part of CE**

2.4. QUALITY CERTIFICATES

8. Conclusion

According to the results of the testings performed it can be confirmed, that the Medical waste sterilization system container, SRN:ARI-550.004 manufactured by UMB Mühendislik passed all microbiological and thermo-electrical tests with biological indicators (10^9) and is in conformity to the German standard DIN 58949-3 as well as the requirements of German RKI Guideline for Waste and also of STAATT Level IV (Inactivation of vegetative bacteria, fungi and lipophilic/hydrophilic viruses, parasites, mycobacteria and of *B. stearothermophilus* spores at 6 $\log_{10}$ reduction or greater).

Archiving: A copy of this report is kept together with the raw data in the archive of HygCen Austria GmbH.

Reference: The test results refer exclusively to the mentioned test piece. Extractions of this report only with a written permission of the HygCen Austria GmbH.

Prof. Dr. med. H.-P. Werner
Technical Manager
Inspector

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ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ CEPTNΦNKAT ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Türkiye

ZERTIFIKAT
Certificate

EG-Baumusterprüfung (Modul B) nach Richtlinie 97/23/EG
EC Type-examination (Module B) according to Directive 97/23/EC

Zertifikat-Nr.: Z-IS-TGK-IST-14-11-5010281905-002-14-B-01236
Certificate No.:

Name und Anschrift
Name and postal address of manufacturer:
UMB MÜHENDİSLİK PROJE MAKİNA İNŞ. ÇEVRE VE TIBBİ CİHAZLAR İMALAT SAN. İÇ VE DIŞ TİC. LTD. ŞTİ.
İvogsan 1472. Sok. No:72 OSTİM
ANKARA/TURKEY

Hiermit wird bescheinigt, dass der unten genannte Entwurf die Anforderungen der Richtlinie 97/23/EG erfüllt.
We herewith certify that the type mentioned below meets the requirements of the Directive 97/23.

Prüfbericht Nr.: *Test report No.:* **P-IS-TGK-IST-14-11-5010281905-002-14-B-01236**

Geltungsbereich: *Scope of examination:*
550 Lt Sterilization chamber with 2,2 Bar PS and 4 Bar PT
Drawing No: Sterilization Chamber Rev.1
Approved by TÜV SÜD Designer at date 21.11.2014

Fertigungsstätte: *Manufacturing plant*
İvogsan 1472. Sok. No:72 OSTİM
ANKARA/ TURKEY

Istanbul, 21.11.2014
(Ort, Datum)

TÜV SÜD Industrie Service GmbH
TÜV SÜD Gruppe
TÜV-CERT Zertifizierungsstelle
für Druckgeräte
Notified Body 0036

(Hakim ÖZLÜK)
Benannte Stelle, Kennummer 0036

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ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ CEPTNΦNKAT ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Türkiye

ZERTIFIKAT
Certificate

Konformität mit der Bauart (Modul C1)
nach Richtlinie 97/23/EG
Conformity to Type (Module C1) according to Directive 97/23/EC

Zertifikat-Nr.: Z-IS-TGK-IST-14-11-5010281905-004-14-B-01236
Certificate No.:

Name und Anschrift des Herstellers: : **UMB MÜHENDİSLİK PROJE MAKİNA İNŞ. ÇEVRE VE TIBBİ CİHAZLAR İMALAT SAN. İÇ VE DIŞ TİC. LTD. ŞTİ.**
Name and postal adress of manufacturer: **İvogsan 1472.Sok. No:72 OSTIM ANKARA/TURKEY**

Der Hersteller ist nach Prüfung der Voraussetzungen berechtigt, für die von ihm im Rahmen des Geltungsbereichs hergestellten Druckgeräte die CE-Kennzeichnung mit unserer Kennummer wie abgebildet zu verwenden:
The manufacturer is - after examination of the prerequisites - authorized to provide his pressure equipment manufactured within the scope of the examination with the CE-Mark and our identification number as illustrated:

CE 0036

Prüfbericht Nr.: **P-IS-TGK-IST-14-11-5010281905-004-14-B-01236**
Test report No.:

Geltungsbereich: **550 Lt Sterilization chamber with 2,2 Bar PS and 4 Bar PT**
Scope of examination: **Seri No: ARI-550. 001A**

Fertigungsstätte: **OSTIM ANKARA / TURKEY**
Manufacturing plant:

Istanbul 21.11.2014
(Ort, Datum)
(Place, Date)

TÜV SÜD Industrie Service GmbH
TÜV SÜD Gruppe
TÜV-CERT Zertifizierungsstelle
für Druckgeräte
HAKIM OZLUK
Benannte Stelle, Kennummer 0036
Notified body No. 0036

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Türkiye

TEST REPORT

IEC/EN 60204-1

Safety of machinery - Electrical equipment of machines
Part 1: GENERAL REQUIREMENTS

Project No.	14-B-01236-01
Date of issue	15/12/2012
Testing laboratory	UMB MÜHENDİSLİK PROJE MAKİNA İNŞ. ÇEVRE VE TIBBİ CİHAZLAR İMALAT SAN. İÇ VE DIŞ TİC. LTD.ŞTİ.
Address	İVOGSAN 1472. Sok. No: 72 OSTİM ANKARA TURKEY
Testing location	as above
Applicant	UMB MÜHENDİSLİK PROJE MAKİNA İNŞ. ÇEVRE VE TIBBİ CİHAZLAR İMALAT SAN. İÇ VE DIŞ TİC. LTD.ŞTİ.
Address	İVOGSAN 1472. Sok. No: 72 OSTİM ANKARA TURKEY
Standard	IEC 60024-1. Ed. 5 : 2005 / EN 60204-1:2006 /AC:2010
Test Report Form No.	IEC/EN 60204-1_K03-E03-CL006 Rev.00
Test procedure	Same as above
Procedure deviation	---
Non-standard test method	---
National deviations	---
Number of pages (Report)	15
Number of pages (Attachments)	---
Compiled by.....	Mutlu DEMİR
(+ signature)	
Approved by.....	M.Koray EFE
(+ signature)	