



www.hydroclave.com

Hydroclave Systems Corp.

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Manufacturing
Project management

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The PRODUCT / SERVICE

Medical/Infectious waste sterilization/treatment for:

- Hospital/Clinical Waste
- Liquid Waste
- Airline/Ship Waste

What We Offer

- Hydroclave offers a remarkably simple, affordable, **patented**, proven medical/Infectious waste treatment process which achieves the highest waste sterility, at an incredibly low treatment cost.
- Worldwide users, from small, in-house installations to large commercial facilities have discovered the many benefits of the Hydroclave sterilization process. Our low temperature steam sterilizers also provide infectious waste solutions in hard to service areas with small space requirements, site limitations and remote locations.

10 Models to Choose From

- With 10 standard models to choose from, as well as a large catalogue of custom builds, we can accommodate the smallest in-house medical waste treatment rooms to the largest commercial treatment facilities providing centralized processing services including medical, airline and ship waste!

Assistance & Training

- Hydroclave Systems Corp can assist you in every step of your project scope. Our knowledgeable staff can guide you through model selection and site assessment, along with installation and operation requirements. From detailed proposals on design/build projects and CAD drawings to final commissioning.
- Hydroclave also offers a comprehensive training plan which covers all aspects of Infectious Waste Management including handling and packaging, transport, treatment, disposal, worker safety and compliance to local and international standards.

The COMPANY

- founded in 1994

The PROCESS

- We will use your **User Requirement Specification (URS)** or we can assist you in discovering your requirements. Equipment is custom selected to meet your requirements.

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1 About HYDROCLAVE

1.1 Typical HYDROCLAVE Treatment Applications

- In-hospital Medical Waste Treatment
- Centralized Treatment Facility for medical, airline and ship waste
- Landfill Operator
- Mobile Medical Waste Treatment
- Infectious Liquid Sterilization

1.2 Summary of HYDROCLAVE waste treatment:

The HYDROCLAVE is a double-walled cylindrical vessel, horizontally mounted. Larger models are equipped with one or more top loading doors, and a smaller unloading door at the bottom. Smaller models utilize a front/rear door loading and unloading system for ease of use. The vessel is fitted with a motor driven shaft, to which are attached powerful fragmenting/mixing arms that slowly rotate inside the vessel. When steam is introduced in the vessel jacket, it transmits heat rapidly to the fragmented waste, which, in turn, produces steam of its own.

The resultant dynamic interaction will:

- **Sterilize** the waste by high temperature and pressure steam, similar to an autoclave but with faster and more even heat penetration.
- Hydrolyze the organic components of the waste.
- **Remove the water** content (dehydrate) the waste.
- Cut the waste into **small pieces** of fragmented material.
- **Reduce** the waste substantially in **volume**.
- Accomplishes the above in a single cycle within the sealed vessel.
- **Eliminates worker contact** with infectious waste.
- Self-unloads after the treatment cycle.
- **Reduces landfill and transport costs** by weight reduction.
- The treated, reduced waste becomes acceptable for landfilling.
- There is no correlation between type of load and treatment cycle. However, wet and heavy loads will take somewhat longer to reach the temperature and pressure required to initiate the treatment cycle.
- There is no need to pull air out of the vessel, as is the case with autoclaves. Air acts as an insulator in an autoclave, and keeps the bottom part of the vessel cool. Due to the vigorous dynamic activity within the HYDROCLAVE, any entrained air is mixed and heated with the steam and waste material.

1.3 Sales and Model Selection

HYDROCLAVE Systems Corp. manufactures the patented HYDROCLAVE Infectious Waste Treatment Technology, and is represented worldwide. HYDROCLAVE will assist the end-user in selecting the appropriate model required, based on anticipated waste stream and desired operating hours.

1.4 Design/Build (Turn-key) Services

All HYDROCLAVE products can be turn-key installed, in consultation with the end-user, at additional cost. HYDROCLAVE engineers will assess the site, determine installation and operation requirements, and will provide a detailed proposal on design/build projects, from initial CAD drawings to final commissioning.

1.5 Training

As part of the sales contract, HYDROCLAVE will train end-user personnel in equipment operation, safety procedures, preventative maintenance and repair.

2 Equipment

2.1 Solid waste sterilizers

MODEL H-07

The space saving design and all-in-one plug and play version of the larger sterilizers. Includes a built-in 36 kW boiler system and is designed for smaller hospitals and clinics that produce up to 275 kg of medical waste per day.



MODEL H-15

This smaller version of larger capacity models offers an optional external steam boiler. Suited for hospitals and clinics that produce up to 544 kg of medical waste per day. Single load/discharge door.



MODEL H-25

This smaller version of larger capacity models offers an optional external steam boiler. Suited for hospitals and clinics that produce up to 920 kg of medical waste per day. Single load/discharge door.



MODEL H-40

This smaller version of our larger capacity models offers an optional external steam boiler. Suited for hospitals and clinics that produce up to 1440 kg of medical waste per day. Single load/discharge door.



MODEL H-65

Begins the line-up of our larger capacity two door models. Designed to handle up to 2400 kg of infectious waste per day.



MODEL H-100

The Hydroclave H-100 is a two door vessel which is designed to handle up to 3640 kg of infectious waste per day.



MODEL H-150

The Hydroclave H-150 is a two door vessel which is designed to handle up to 5456 kg of infectious waste per day.



MODEL H-200

The Hydroclave H-200 is a two door vessel which is designed to handle up to 7280 kg of infectious waste per day.



MODEL H-250

The Hydroclave H-250 is a two door vessel which is designed to handle up to 9120 kg of infectious waste per day.



2.2 Liquid sterilizers

LIQUID EFFLUENT STERILIZATION MODEL

- The Liquid Effluent Sterilization version of our patented Hydroclave unit is manufactured for the processing of Liquid Effluent.
- The L-Series automatically runs either as stand-alone, or in banked configuration with little maintenance.
- The L-Series is suited for laboratories where liquid infectious effluent needs to be sterilized and cooled prior to discharge to the sewer



HYDROCLAVE ADVANTAGES

- Very low operating cost - 100% of the steam is recycled.
- Low temperature steam process produces no harmful emissions
- Treats all infectious waste, including pathological and prion waste
- Liquid or air cooling system allows sterilized effluent to discharge safely to drain.
- Tested to exceed 6 Log10 by Defence Research and Development Canada
- Site specific design/build services available Extensive User Training program
- Customer product support worldwide
- Compliant with all North American and EU regulations
- Batch operation up to 160°C with temperature hold for any desired period of time
- Homogeneous temperature provides even sterilization
- Supports all CL3 Laboratory requirements
- Cycle pause feature for sample collection
- Visual display shows real time temperature, pressure and cycle phase
- Fully adjustable operating settings
- Electronic and paper records for entire operation
- Complete Stainless steel constructions maximizes equipment life
- 100% redundancy and isolation capable
- Meets Prion Containment Guidelines
- Failsafe operation and building alarm integration



2.3 Optional accessories



Waste Bins

- Re-usable biohazard containers
- All types, sizes, colors, quantities



Tracking/weighing

- Scales, scanners, software
- Custom designed software and systems to weigh and track waste processing



Steam boilers

- Supply the correct size to suit your processing needs
- All makes and models
- Any fuel/energy source: electric, propane, natural gas, diesel, and more...



Shredders

- Suited for medical waste
- Customized teeth for fine/coarse shredding sizes
- Deems waste "unrecognizable"



Compactors

- Supply the correct size to suit your processing needs
- All makes and models



Hoppers

- Custom designed to suit your processing needs
- For all applications: shredders, compactors, conveyors, sterilizers
- Optimize waste transport



Conveyors

- Custom designed to suit your processing needs
- Suited for medical wastes
- Easily maintained



Tipplers

- Custom designed to suit your equipment and facility
- Aluminum, stainless steel or alloyed construction
- Available with carts and lifts



Tub washers

- Custom designed to suit your waste bins
- Stainless steel construction, any size
- Hot wash, dry options



Waste coolers

- Any capacity, temperature controls
- Custom door sizes – fits pallet trucks or even forklifts
- Built to suit your facility



Spore testers

- 3M Spore testing kits
- simple, 3 hour tests require no skills to perform
- gives accurate proof of your waste sterilization



Supplies

- parts
- consumables
- HYDROCLAVE supplies stock for all of your equipment

3 Certification

Certification: CSA, CE, UL, ASME

4 Model Capacities

Model (Standard)	*Maximum Capacity (Kg/batch)
H-07	34
H-15	70
H-25	116
H-40	142
H-65	347
H-100	459
H-150	714
H-200	857
H-250	1023

(Note: actual operating conditions may vary, due to variations in waste density and material. For average capacities, please submit waste characteristics for analysis.

5 Data Sheets

The following Data sheets are available on request:

- H-07-specSheet-v3.1-2015-01-07.pdf
- H-15-specSheet-v3-2015-01-07.pdf
- H-25-specSheet-v3-2015-01-07.pdf
- H-40-specSheet-v3-2015-01-07.pdf
- H-65-specSheet-v3-2015-01-07.pdf
- H-100-specSheet-v3-2015-01-07.pdf
- H-150-specSheet-v3-2015-01-07.pdf
- H-200-specSheet-v3-2015-01-07.pdf
- H-250-specSheet-v3-2015-01-07.pdf
- Liquid Vessel Spec Sheet Revised.pdf
- Optional Accessories.pdf

6 Installations to 2014

City	Country	Model	Type of Use
Berkshire	United Kingdom	Two H-250's	Commercial centralized facility
Atessa	Italy	H-250	Commercial centralized facility
Quezon City	Philippines	H-150	Commercial centralized facility
Georgetown	Guyana	H-150	Commercial centralized facility
Kingston, Ontario	Canada	H-100	In-hospital medical waste treatment
Toluca	Mexico	H-100	Commercial centralized facility
Beirut	Lebanon	H-100	Mobile waste treatment serving many hospitals
London, Ontario	Canada	H-100	In-hospital medical waste treatment
Athens	Greece	H-100	Commercial centralized facility
Athens	Greece	H-100	Commercial centralized facility
Aberdeen, Saskatchewan	Canada	H-65	Commercial centralized facility
Halifax, Nova Scotia	Canada	H-65	International Airline & Ship Waste
Beijing	China	H-65	In-hospital medical waste treatment
Sichuan Province	China	H-65	Commercial centralized facility
Henan Province	China	H-65	Commercial centralized facility
Siping	China	H-65	In-hospital medical waste treatment
Noumea	New Caledonia	H-65	International Airline Waste
Toronto	Canada	H-65	In-hospital medical waste treatment
Athens	Greece	H-100 Dual	Commercial centralized facility
Targu Mures	Romania	H-40	In-hospital medical waste treatment
Dhaka	Bangladesh	H-40B	In-hospital medical waste treatment
Sault Ste Marie	Canada	H-25	In-hospital medical waste treatment
Mumbia	India	H-25	In-hospital medical waste treatment
Aswan	Egypt	H-25	In-hospital medical waste treatment
Beijing	China	H-25	In-hospital medical waste treatment
Mexico City	Mexico	H-25	Commercial in-hospital facility
Beirut	Lebanon	H-25	Mobile waste treatment serving many hospitals
Trabzon	Turkey	H-25	Centralized treatment facility
Niamey	Niger	H-25	In-hospital medical waste treatment
Lamorde	Niger	H-25	In-hospital medical waste treatment
Zinder	Niger	H-25	In-hospital medical waste treatment
	Niger	H-25	In-hospital medical waste treatment
Zinder	Niger	H-25	In-hospital medical waste treatment
	Niger	H-25	In-hospital medical waste treatment
Johannesburg	S Africa	H-25	In-hospital medical waste treatment
Abbotsford	Canada	2 H-25's	Level 3 Laboratory - liquid sterilization
Edmonton	Canada	2 H-35's	Liquid sterilization - Laboratory
Tehran	Iran	H-25	In-hospital medical waste treatment
Beijing	China	H-25	In-hospital medical waste treatment
Columbo	Sri Lanka	H-25	In-hospital medical waste treatment
Indiana	USA	H-25	In-hospital medical waste treatment
	Iraq	H-25	In-hospital medical waste treatment
Montevideo	Uruguay	2 X H-25	In-hospital medical waste treatment
Dubai	UAE	H-25	In-hospital medical waste treatment
Quebec	Canada	H-15	In-hospital medical waste treatment
Suffield	Canada	H-15	Level 3 Liquid Laboratory
Mexico City	Mexico	H-15	Commercial in-house facility
Tucuman	Argentina	H-15	Landfill Operator
	Egypt	H-15	In-hospital medical waste treatment
Sonebhadra District	India	H-15	In-hospital medical waste treatment
Agadez	Niger	H-15	In-hospital medical waste treatment
Diffa	Niger	H-15	In-hospital medical waste treatment
Dosso	Niger	H-15	In-hospital medical waste treatment

Maradi	Niger	H-15	In-hospital medical waste treatment
Niamey	Niger	H-15	In-hospital medical waste treatment
Tahoua	Niger	H-15	In-hospital medical waste treatment
	Niger	H-15	In-hospital medical waste treatment
	Niger	H-15	In-hospital medical waste treatment
Syros	Greece	H-15	In-hospital medical waste treatment
Bucharest	Romania	H-15	In-hospital medical waste treatment
Columbo	Sri Lanka	2 X H-15	In-hospital medical waste treatment
Columbo	Sri Lanka	H-15	In-hospital medical waste treatment
Tirana	Albania	H-15	In-hospital medical waste treatment
Yukon	Canada	H-15	In-hospital medical waste treatment
Saskatchewan	Canada	H-15	Transgenic waste treatment process - plant biotechnology
Cairo	Egypt	H-15	In-hospital medical waste treatment
St. Petersburg	Russia	H-07	In-hospital medical waste treatment
Lipetsk	Russia	H-07	In-hospital medical waste treatment
Astana, Kazakhstan	Russia	H-07	In-hospital medical waste treatment
Taraz, Kazakhstan	Russia	H-07	In-hospital medical waste treatment
Kostanay, Kazakhstan	Russia	H-07	In-hospital medical waste treatment
Moscow	Russia	H-07	In-hospital medical waste treatment
St. Petersburg	Russia	H-07	In-hospital medical waste treatment
St. Petersburg	Russia	H-07	In-hospital medical waste treatment
Bucharest	Romania	H-07	In-hospital medical waste treatment
Galle	Sri Lanka	H-07	In-hospital medical waste treatment
Cairo	Egypt	H-07	In-hospital medical waste treatment
Cairo	Egypt	H-07	In-hospital medical waste treatment
Cairo	Egypt	H-07	In-hospital medical waste treatment
Cairo	Egypt	H-07	In-hospital medical waste treatment
	Albania	H-07	In-hospital medical waste treatment
	Albania	H-07	In-hospital medical waste treatment
	Albania	H-07	In-hospital medical waste treatment
Korca	Albania	H-07	In-hospital medical waste treatment
Shkodra	Albania	H-07	In-hospital medical waste treatment
	Albania	H-07	In-hospital medical waste treatment
Karachi	Pakistan	H-07	In-hospital medical waste treatment
Karachi	Pakistan	H-07	In-hospital medical waste treatment
Moscow	Russia	H-07	In-hospital medical waste treatment
Moscow	Russia	H-07	In-hospital medical waste treatment
Grozny (Chechen Rep)	Russia	H-07	In-hospital medical waste treatment
Moscow	Russia	H-07	In-hospital medical waste treatment
St Petersburg (Kronshtadt)	Russia	H-07	In-hospital medical waste treatment
Moscow	Russia	H-07	In-hospital medical waste treatment
Nizhny, Novgorod	Russia	H-07	In-hospital medical waste treatment
Saint-Petersburg	Russia	H-07	In-hospital medical waste treatment
Moscow, Zelenograd	Russia	H-07	In-hospital medical waste treatment
Nizhny, Novgorod	Russia	H-07	In-hospital medical waste treatment
St Petersburg	Russia	H-07	In-hospital medical waste treatment
Moscow	Russia	H-07	In-hospital medical waste treatment
St Petersburg	Russia	H-07	In-hospital medical waste treatment
Moscow	Russia	H-07	In-hospital medical waste treatment
Moscow	Russia	H-07	In-hospital medical waste treatment
St. Petersburg	Russia	13 X H-07	In-hospital medical waste treatment

7 The Company - A brief history

In 1994, the founders of Hydroclave Systems Corp, set out to design a process to sterilize infectious waste in a safe, non-polluting, and cost-effective manner.

The need was evident: Increasingly, infectious waste producers, such as hospitals, clinics and laboratories, were coming under pressure to shut down their incinerators, and find alternative ways to treat such waste.

Twenty years experience in the industrial heat transfer/steam engineering field was applied to ensure that all waste particles would be subjected thoroughly and evenly to the heat that kills micro organisms, from the smallest pieces such as needles, to bulk liquid infectious waste.

Firstly, such uniform heat penetration is only possible with dynamic action, that is, continual mixing and fragmenting in a hot vessel.

Secondly, indirect steam heat was selected to accompany the dynamic action, to supply uniform heat, and to allow the waste to generate it's own steam from its moisture content.

On those principles the Hydroclave medical waste treatment system was developed, and in 1995 the first unit was tested by the University of Ottawa in an actual Hospital environment, at the Kingston General Hospital, Ontario, Canada.

Excellent test results confirmed the engineering principles on which the Hydroclave is based:

6log10 spore reduction of the bacillus stearothermophilus was achieved in only 30 minutes, at 121 Deg. C. and 15 Psi.

The results were valid for treating waste with widely varying characteristics, such as dry or liquid, packaged or loose waste.

Such desirable results by the Hydroclave process was recognized as unique and the Hydroclave process was patented in Oct., 2000

Today, the Hydroclave is recognized worldwide as a leader in this field, and Hydroclave units are now operating around the globe, in North America, South America, Asia, Europe and Africa.