WasteDoctor™
-
WasteChef™
-
WasteClinic™
-
WasteBase™
-
WasteMaster™

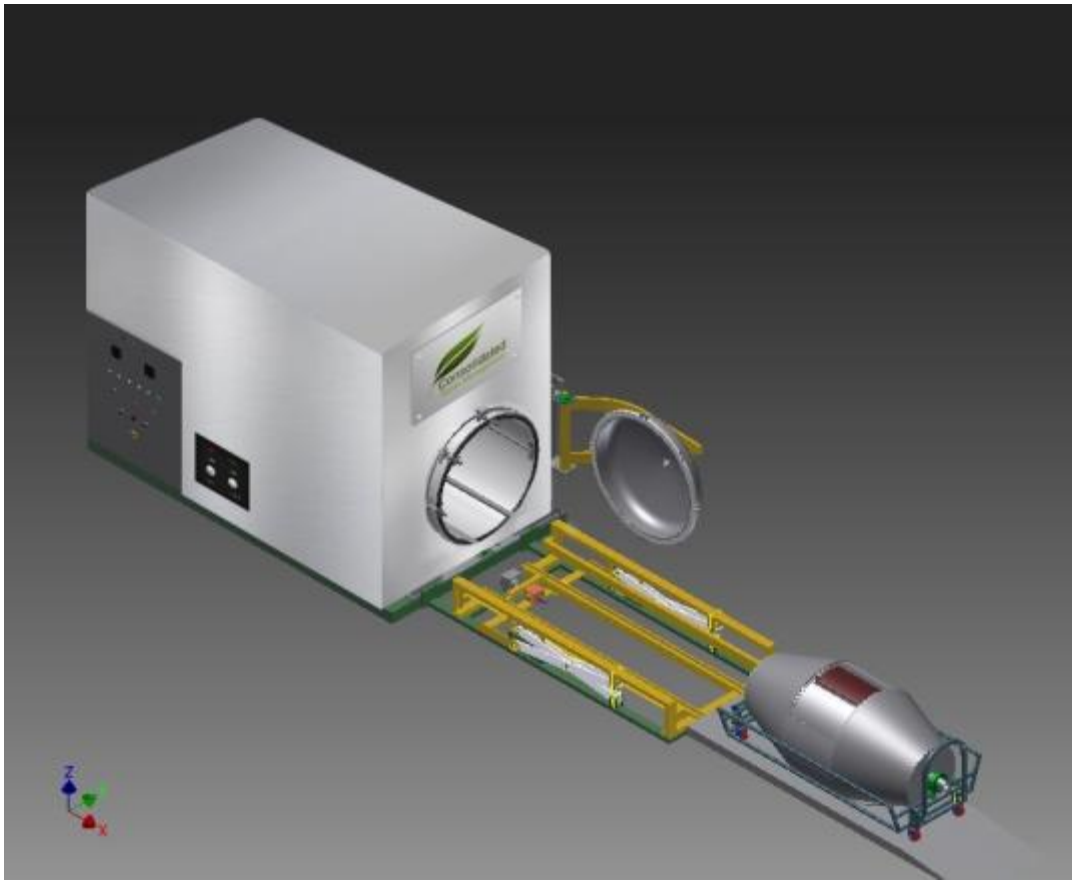
products of:

Waste Treatment Solutions

Consolidated Waste Mgmt. Pvt. Ltd. (CWM)

- India today stands as one of the fastest growing nations in the world.
- From a population of 843 Million in 1990, India's population has ballooned to a staggering 1.19 Billion in 2010.
- A Tier 1 city like Mumbai produces a *reported* 11,600 tonnes of municipal solid waste per day, and even a rapidly developing city like Pune produces a staggering 2,700 *reported* tonnes of municipal solid waste in a day. With waste volumes like these, our cities are left strangled and underfunded when it comes to investing in efficient waste processing, treatment, recycling and disposal technologies.
- The centralised model does not work as it stands today, and most often, waste is simply dumped into landfills untreated, ensuring that diseases, co-mingling & cross contamination of waste occurs continuously, which is hugely detrimental to the health of the population & damaging to our environment.
- This is particularly concerning when dealing with medical/clinical waste which is inherently infectious.

CWM's Product Range
&
Strategic Innovations (Externals)



CWM's Product Range

- CWM offers five product ranges whose design & operation is best suited to a number of end users:

1. WasteDoctor™ - is designed to suit the requirements of hospitals in order to treat their waste internally prior to dispatching the treated waste to municipal waste facilities.

2. WasteChef™ - is designed to suit the hospitality industry, such as large hotels & food production & processing facilities. The canister design & operation has been tweaked to best suit the high moisture content of food waste.

3. WasteClinic™ - is designed to be mounted onto a standard road truck, which allows the machine to be transported around city streets or from one village to another in rural areas of our country, in order to sterilise & treat smaller waste quantities dispersed across a larger footprint.

4. WasteBase™ - is exclusively for municipalities with centralised waste treatment facilities & although similar to the above products, is designed to a scale that can efficiently handle large quantities of commingled waste & additionally has higher levels of automation in order to reduce worker strains & improve operational efficiencies.

5. WasteMaster™ - designed to take advantage of the steam, electricity & water generated on large marine vessels, the technology is adapted to treat food and other waste on a ship before it even makes port, greatly reducing port fees for waste removal.

Strategic Innovations

- CWM's new range of products are a textbook example of Strategic Innovation. CWM is a company moving towards a unique product design & industry solution, in order to clearly define itself as a leader in Best Practices for waste management solutions.

- CWM's waste management products feature four key aspects to their design that set them apart from competitors & alternative technologies:

1. The Patented "Removable Rotating Canister"
2. The Thermic Fluid Heat System
3. The Patented "Integrated Dehydration System"
4. The Radiator Fan Cooling System

Strategic Innovations...

A brief description of the key benefits to our innovations

1. **Patented removable & semi-removable rotating canister** – This technology ensures safe & quick loading, unloading & handling of waste. It further ensures that the waste sterility effectively 100% of the time & furthermore protects the main chamber from any corrosion or erosion, which in turn guarantees a long life with minimal maintenance.

2. **Thermic fluid heat system** – This optional system can replace our already efficient steam boiler, yielding 20% greater heat generation efficiency & no boiler maintenance as it is a completely closed loop system.

3. **Patented integrated dehydration system** – This technology uses residual heat generated by the sterilisation cycle to blow hot air into the canister, ensuring bone-dry waste output (5%-10% moisture), which makes the treated waste far easier to unload, segregate & shred for final disposal.

4. **Radiator cooling system** – much like the radiator system in an automobile, this heat exchange system recycles water when cooling down the chamber for waste discharge. Our machines use as little as 10% of the typical water consumed by cooling down the water & re-circulating it instead of using fresh water.

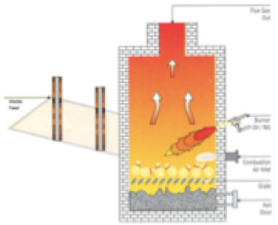
INTERNAL MECHANISM

Environmentally Better

- Larger waste management facilities can reasonably expect to see significant cost advantages to using our unique products.
- One of our key goals is to ensure a swift return on investment to our customers, and furthermore, even provide our customers with the potential of transforming their waste management systems from cost centres into profit centres.

Plastics
Can be separated out and recycled or sold on, which greatly reduces the unnecessary pollutants being exposed to the environment.

Non-Combustible Solid Waste
Can be shredded and then sent to a landfill (Much smaller quantities would require landfilling than non-segregated waste)



Combustible Solid Waste
Can be be reused with any existing incinerator in order to burn the waste and create energy to power CWM's thermic fluid system, thereby further reducing energy requirements/ consumption of the facilities

Bottom Line Benefits

- CWM prides itself on having created innovative technologies that significantly improve the operational & financial efficiency & viability of our end user's waste management solution:

1. Significant reduction in transportation costs, as the overall volume of waste reduces by upto 80% for every batch of waste treated.

2. Substantial energy efficiency with our Thermic Fluid heat exchange system, whose wasted heat energy is re-circulated through the dehydration blower system.

3. Innovative radiator cooling system that significantly reduces the use of water by re-circulating water through the cooling system.

4. Highest safety standards by significantly minimising human contact with the waste thanks to the innovation of our rotating canister design.

5. Fully automated touch screen interface (Lan network connectivity) to ensure precise, recorded results every time which can be integrated into existing computer systems.

For Our Customers

- Guarantee of Sterility
- Technology of International standards – Global Patent Pending
- Consultation for establishing centralised & in-hospital facilities
- Wide product range – from 25L to 3,000 L approx. capacity
- Other related products are also available (based on hospital requirements) – e.g. shredders, waste carts / trolleys & puncture proof containers, etc
- Installation & operator training included
- Annual Maintenance Contracts (AMC) are offered

Tata Memorial Cancer Centre Case Study

- 650 bedded Premier Cancer Institute of India
- Yearly Waste Generation – Over 90,000 Kgs
- Replaced inadequate onsite incinerator with the eco-friendly Autoclave supplied by CWM
- Selection panel comprised of: Hospital Administrators & Head of Microbiology, Executive & Assistant Health Officers of the BMC, Members of the W.H.O. & Duke Medical University, USA

Tata Memorial – Proven Success Story

Upon installation Sept. 1999

Over a decade on 2013

- Total waste treatment cost works out to Rs. 8 per kg of waste treated
- The TMCC machine has a 100% track record with respect to spores testing in over 10 years of operation
- As impressive as the cost savings at TMCC have been, it is worth noting that our newer WasteDoctor™ presents far greater operational & cost efficiency to this now outdated model.

Tata Memorial Hospital – Data 2012

- January – December 2012
- Total waste treated = 92,766 Kg.
- Average daily waste treated = 311 Kg.

Total cost per kg. = Rs. 8

Item Description	***Amount***
No. of loads performed	981
Total quantity of waste treated (Kg.)	92,766
Weight of blood bags treated (Kg.)	3,899
Weight of tissue treated (Kg.)	3,767
Yellow bags weight (Kg.)	86,583
Sharp containers weight (Kg.)	6,183
Weight of empty vials (Kg.)	12,788
Cytotoxic Drugs (Kg.)	592

*Utility Cost Assumption: Rs. 11 per unit of electricity & Rs.16 per 1,000 Litres of water

Tata Memorial Hospital – Data 2013

- January – December 2013
- Total waste treated = 116587 Kg.
- Loads per day = 4
- Average medical waste treated per day = 385 Kg.
- Total no. of loads performed = 1212

Total cost per kg. = Rs. 8

***Utility Cost Assumption: Rs. 11 per unit of electricity & Rs.16 per 1,000 Litres of water**

Consolidated Waste Management® (CWM) was established in 1997 and its Founder was part of the Citizens' Panel deliberating the formulation of the Government of India's Ministry of Environment & Forest's *Biomedical Waste Management & Disposal Rules, 1998*. CWM's installation at the Tata Memorial Cancer Centre (TMCC) in Mumbai as far back as 1999 is a clear instance in which the collection, treatment and disposal of infectious biomedical waste was revolutionised. Due to the steam steriliser's ability to reduce the volume and weight of the waste by 80-85% the results allowed for TMCC to go from filling two x 2-tonne waste dumpsters **per day**, to requiring a *single* 1-tonne dumpster **per week.** It is critical in this modern day for waste solutions to be able to impact a business or organisation in the way it views waste management and in the way waste management impacts its bottom line.

Fish & Bonemeal Waste-to-Feeds

INFORMATION MEMORANDUM

Waste Management Rethink

It is clear that the solution for waste management is not merely a matter of collecting the waste, but it is also essential for new technology to be integrated into the treatment systems in order to appropriately deal with India's diverse categories of waste. It is also essential for entities to take a firm grip of their own generation of waste, as well as the treatment of that waste, prior to it being collected and/or disposed of by the local municipalities. Medium and long-term cost savings for the establishments that generate the waste is the most positive fall-out as is the impact on environmental pollution and degradation.

CWM's eco-conscious steam sterilisers which guarantee waste sterility to the highest possible Log 6, also ensure worker-safety and have been custom-designed in order to uniquely be used within the framework of a varying number of industries, thereby creating true change and impact in waste management.

Technology Fundamentals

The foundation of CWM's technology is an autoclave, which is a base technology by which heat in the form of steam and pressure is applied to waste over a prescribed amount of time, which is what ensures sterility of the highest level. **Flash-burning in incinerators at temperatures as high as 1000 degrees C does not ensure total bacterial kill as does slow steam sterilization at low temperatures (121-133 degrees C) and pressures.**

CWM's versatile sterilisers have varied applications:

- The WasteDoctor: at hospitals, clinics and nursing homes
- The WasteChef: in the food and horticulture industry
- The Waste Clinic: as a truck-mounted door-to-door collection & treatment system
- The Waste Base: for use at large waste treatment or transfer stations
- The Waste Master: for use on board large ships or at ports

Contd….

FISH WASTE TO FISHMEAL AT SASSOON DOCK, COLABA, MUMBAI

The WasteBase can be utilized also at fishing docks, at poultry-culling stations or at abattoirs to sterilise and breakdown fish, chicken, meat and bone – to produce valuable poultry feed or dog food pellets.

Fishmeal is the most expensive and valuable nutrient not only in the plant and horticulture industry due to its high phosphorous content, but more as a part of a carefully-calculated formula in the production of chicken-feed and dog-food pellets.

It is estimated that on the buying cost of Rs. 7 per kg fishwaste, the same could be sterilized, ground, bagged and sold for more than Rs. 28 per kilogram….and rising! The net profit would be approximately Rs. 5 per kilogram.

CWM has a prototype sterilizer ready to be installed for the entire process-chain-from collection to bagging to sale-and is ready to go

CWM's patent-pending waste technology is several steps ahead

CWM has endeavored to create a solution that is not only ecological but also economical. Please view below a short fact section of commonly asked questions for an added overview of CWM and its steam-sterilisers:

1. CWM is a technology provider, but also has experience in how centralised waste facilities can be set up; as well as the ability to advise in the case of hospitals and food processing factories, how to best utilise all the elements of the technology (such as the rotating canister that is mobile) in order to ensure smooth operational efficiencies.

2. CWM is a privately-owned, Indian Company, and the technology is Patent-Pending and trademarked. The technology has been developed in-house.

3. CWM has sold waste technology machines to:

- DysaTratamientos, New Mexico
- The Tata Memorial Cancer Hospital (Mumbai, India)
- Hindalco Hospital (Uttar Pradesh, India)
- Dr. B Borooah Cancer Institute (Guwahati, Assam, India)
- Bangladesh Riffles (BDR) Hospital (Dhaka, Bangladesh)

TATA MEMORIAL CENTRE

TATA MEMORIAL HOSPITAL
AND
ADVANCED CENTRE FOR TREATMENT, RESEARCH & EDUCATION IN CANCER

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Director, Tata Memorial Centre
and
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E-Mail : dinshaw.tmc@vsnl.com
Website : www.tatamemorialcentre.com

January 3, 2005

TO WHOM IT MAY CONCERN

This is to certify that the Hydroclave was commissioned at the Tata Memorial Hospital in September 1999 – as an integral part of a total Hospital Infectious Waste Management System.

The total quantity of infectious waste treated annually has progressively increased as follows:

- 2000 - 46,317 Kg.
- 2001 - 65,695 Kg.
- 2002 - 63,743 Kg.
- 2003 - 69,778 Kg
- 2004 - 67,882 Kg.

The waste generated and treated include sharp containers, infectious plastic wastes from patient care, operating theatres, body fluids and laboratories. Anatomic body parts and cytotoxic drug vials are not treated in the Hydroclave.

The sterility testing and cycle validation is done using spore strips of the biological indicators Bacillus Stearothermophilus once monthly as per guidelines. 155 cycles have been validated with spore strips of Bacillus stearothermophilus. This testing has been certified by our CSSD. Todate all the cycles tested have been validated by a log 6 reduction in bacterial counts and bioburden.

It has been estimated that the costing works out to Rs.14.86 per Kg. taking into account-

- Depreciation over 5 years
- Annual Maintenance Charges
- Process cost of electricity steam & water
- Manpower cost i.e technical and labour
- Consumables i.e bags and sharp containers

There is a considerable advantage of sterilization and shredding with a volume and weight reduction of the total waste mass by 75-80% - initially filling two tonne dumpsters per day to presently a single one tonne dumpster per week.

The overall performance of the Hydroclave System has been satisfactory in the last 5 years with a downtime of 5.2% calculated over 5 years.

K.A. Dinshaw.

Department of Microbiology
Tata Memorial Hospital
Tata Memorial Centre

27th October, 2009.

To Whomsoever It May Concern

We have validated the test cycle of the new machine called Waste Doctor on the 7th September, 2009. This was carried out with a biological indicator that is routinely used to validate the process of steam sterilization in the department.
The cycle was validated, that is the spores of the test organism, *Geobacillus stearothermophilus* were killed with a log 6 reduction in the number of spores on the test strip.

Dr Rohini Kelkar MD, DPB.
Professor and Head
27 October, 2009.

GEO CHEM

International Independent Inspection & Testing Company

GEO-CHEM LABORATORIES PVT. LTD.
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Tel: +91 22 67974999 Fax: +91 22 67974616
Email: laboratory@geochemgroup.com

TEST CERTIFICATE

Analysis No. : MISC/09/10/007289
Date : 22/10/2009

Party's Name & Address	:	CONSOLIDATED WASTE MANAGEMENT INDIA (P) LTD. MUMBAI.
Letter Ref.No. / Date	:	GEO-CHEM/2009 DATED 12/10/2009
Sample Received on	:	14/10/2009
Date of Analysis	:	16/10/2009 — 21/10/2009
Sample described as	:	DRIED FOOD WASTE
Tested to Specification	:	NIL
Stamped / Seal By	:	NIL
Marks	:	NIL

Test	Method/Technique	Results	Unit of Measure
Total Proteins / Crude Proteins	GAFTA 4 : 0 - 2003	16.03	%
Calcium	GCLPL/QS/CM/5.4/53-ICP1	2230.06	mg/kg
Phosphorous	GCLPL/QS/CM/5.4/53-ICP1	1463.68	mg/kg
Total Carbohydrates	By Calculation	14.97	%
Fats	GAFTA 3.0 - 2003	10.62	%
Moisture	GAFTA 2 : 1 - 2003	42.82	%
Aflatoxin (B1, B2, G1, G2)	GAFTA 24 - 2003	ND	—

Note :- ND= Not Detected, Detection Limit= 0.5 µg/kg

Note: Our analytical findings reflect the quality of the same at the time of testing. No responsibility can be expected for the possible consequences of further development of Aflatoxin which may depend upon storage, handling & weather condition which may influence the results at a later date/time

Sample Not Drawn By GEO-CHEM LABS

For Geo-Chem Laboratories (P) Ltd.

Roop Pushpan
Manager - Organic(Agri.)/Petroleum Division

RG

Proforma No :GCLPL/QF/5.10/02 Analysis No. : MISC/09/10/007289 Page No. 1 Of 1

2. Test certificate in full or part shall not be reproduced unless written permission is obtained from M/s. Geo-Chem Laboratories (P) Ltd.

This inspection / testing has been performed to the best of our ability and our responsibility is limited to proven negligence. This certificate, which is issued on conditions stipulated overleaf, reflects our findings at the time and place of inspection / testing and does not relieve parties from their contractual obligations. Samples will be retained by us for a period of thirty days only, unless specific instructions to the contrary are received.

A MEMBER OF THE GEO-CHEM GROUP
www.geochemgroup.com

Food waste from Taj Hotel, Chemical analysis report and conclusions.

Analysis as reported	
proteins	16.03 %
calcium	0.22 %
phosphorous	0.15 %
carbohydrates	14.97 %
fats	10.62 %
moisture	42.82 %
aflatoxin	0 %
silica	13.04 %

Without silica addition, it will read as

No silica analysis	
proteins	18.43 %
calcium	0.26 %
phosphorous	0.17 %
carbohydrates	17.22 %
fats	12.21 %
moisture	49.24 %
aflatoxin	0.00 %

On further drying to 10% moisture, the saleable product will have

Saleable dry product analysis	
proteins	30.34 %
calcium	0.42 %
phosphorous	0.28 %
carbohydrates	28.34 %
fats	20.10 %
moisture	10.00 %
aflatoxin	0.00 %

Client: Consolidated Waste Management Pvt Ltd.

Contact Us

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