ELASTEC

MediBurn

Mobile Waste Incinerator
Technical Description

ELASTEC™
100% Employee Owned

Oil Spill Equipment | Floating Barriers | Incinerators

Product Introduction

MediBurn is a batch load, direct fire, mobile incinerator for a variety of applications including medical waste. The unit is one of the lightest in its class , facilitating deployment for virus outbreaks and disaster relief operations. It does not use cast concrete, rather a layer of fire bricks, that can be easily replaced in the field as needed. Primarily running on diesel, the MediBurn can also be fueled by heating oil or JP8. It is available in two sizes depending on the volume of waste to be handled. The modulating under air burners ensure consistent high temperatures needed to destroy infectious waste, whilst retaining the flue gas for sterilization. Simply load waste into the chamber, close the door and turn on the unit. Minimal training is required and MediBurn is ready to use upon delivery.

Features

- Easy to operate controls with automatic operation through four stage burn cycle.
- Pre-set cycle control for efficient use of fuel.
- Dual chamber combustion, (in excess of 1000°C /1832°F) exceeding regulatory requirements.
- Up to 97% mass reduction, facilitating further disposal of treated waste.
- Modulating, direct-fire diesel burners.
- Open door sensor and door lock.
- Ceramic refractory can be easily replaced in the field with no special tools required.
- Multi fuel capability -Diesel, Heating Oil, Number 2 Fuel Oil, JP8.
- Easy cleanout with supplied rake.
- Environmentally friendly (based on actual flue gas and bottom ash analyses).
- Low weight facilitates shipping in emergency relief operations.
- Optional: Exhaust stack in different lengths.
- Lifting eye to aid installation.

Applications

- Small Hospitals
- Community Clinics
- Poultry Farms
- Dialysis Clinics
- Blood Banks
- Physicians' Offices
- Dental Offices
- Centers for Disease Control
- Acute Psychiatric Facilities
- Outpatient Surgical Facilities
- Health Maintenance Organizations
- Home Health Agencies
- Hospice Agencies
- Animal Cremation
- Disaster Relief Operations
- Pharmacies
- Police Departments
- Laboratories
- Military Bases
- Veterinary Clinics
- Airports

Principles of Combustion

Incineration is a waste treatment process that involves the combustion of organic substances contained in waste materials. Incineration and other high-temperature waste treatment systems are described as “thermal treatment”. Incineration of waste materials converts the waste into ash, flue gas and heat. The ash is mostly formed by the inorganic constituents of the waste.

Incineration has particularly strong benefits for the treatment of certain waste types in niche areas such as clinical wastes and certain hazardous wastes where pathogens and toxins can be destroyed by high temperatures.

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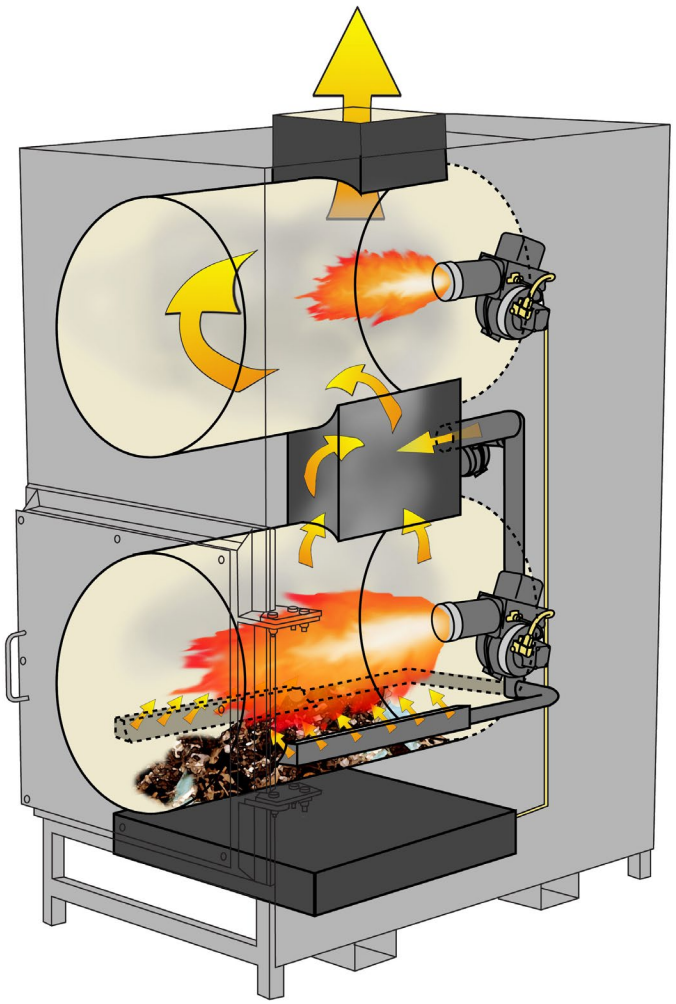


Summary of Emissions

Pollutant	Testing Method	Small HMIWI (<200 lb/hr)	MediBurn
Particulate Matter	EPA Method 5 or 29	66 mg/dscm	1.16-53 mg/dscm
Carbon Monoxide (CO)	EPA Method 10 or 10B	20 ppmv	1.16 ppm
Dioxins/Furans	EPA Method 23	16 ng/dscm total CDD/CDF or 0.013 ng/dscm TEQ	5.721 ng/dscm CDD/CDF 0.01 ng/dscm TEQ
Hydrogen Chloride (HCl)	EPA Method 26	15 ppmv	.06 mg/dscm
Sulfur Dioxide (SO_2)	EPA Method 6	4.2 ppmv	3.0 ppm
Nitrogen Oxides (NO_x)	EPA Method 7	250 ppmv	67.4 ppm
Lead (Pb)	EPA Method 29	.31 mg/dscm	.006 mg/dscm
Cadmium (Cd)	EPA Method 29	0.017 mg/dscm	.0017 mg/dscm
Mercury (Hg)	EPA Method 29	0.014 mg/dscm	.001 mg/dscm

Source: Environmental Protection Agency 40 CFR Ch. 1 (7-1-15 Edition) - Page 26, Table 1 to Subpart HHH of Part 62, Emission Limits for Small Rural, Small, Medium, and Large HMIWI

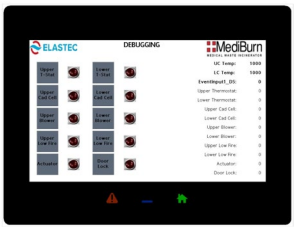
Actual emissions will depend on a number of factors including waste type, volume of waste, moisture content, fuel used and local environmental conditions.

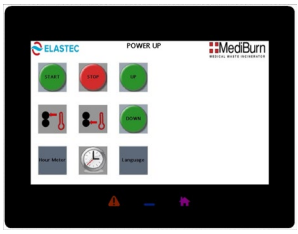
Control Panel

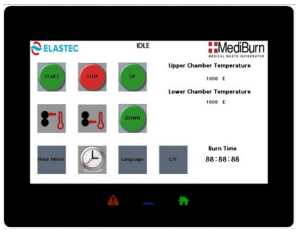
The MediBurn has been updated with a new control system with the following benefits and features:

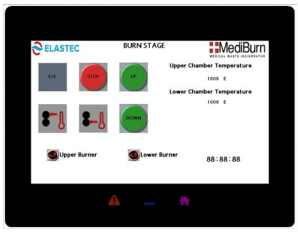
- Touch Screen display with interactive controls and indicators. The multi-layered display shows temperatures (upper and lower burn chambers), timer and visual indicators of system performance (blowers, door lock, burners, burn time).
- Debugging functionality.
- Multi-language capabilities
- Data logging
- Older models can be upgraded.
- Available on the Mediburn 20 & 30

The electronic MediBurn control system automatically goes through the burn cycle with minimal operator input. The upper chamber pre-heats before the waste is burnt. Automatic door locking feature for safe loading and unloading of ash. The control panel is used to control and monitor the operation of the incinerator. The display shows the temperature of the incineration gases in each chamber as well as the remaining time in the current incineration cycle. It also indicates when each diesel burner is in operation. The control panel will log all the information for retrieval as needed.









Endorsements

Northern Territory Govt (Australia)

"*The Department of Health and Family Services - Environmental Health Program endorses the use of the MediBurn incinerator as a consequence of successful trials at Darwin and Katherine Hospitals.*"

Medicans Sans Frontieres / Doctors without Borders

"This equipment allows MSF to reduce considerabely the toxic emissions of the incineration of hostpial waste in a residential area of Port Au Prince, Haiti. The Mediburn allows the Infectious Waste at this hospital to be incinerated following WHO recommendations."

African Union, Addis Ababa, Ethiopia

"We have installed the Incinerator as per manufacturer's instructions and the Incinerator is well functioning. It enables our hospital to dispose the medical waste in a safe manner."

Partners in Health, Boston, USA

"We purchased the Mediburn incinerator for our Haiti-based hospital serving 500,000 indigent poor each year. I would highly recommend to seriously considering partnering with Elastec, as to date have had a concrete impact on our service to the worlds poor."

Elastec has supplied units around the world including these prestigious organizations;

United Nations Childrens Fund, Denmark
United States Army, Iraq Army Clinic, Kirbuk
Department of the Air Force,
UNICEF Supply Division – Copenhagen, Denmark
Belgian Military
Centers for Disease Control
U.S. Dept. of Defense
Jacksonville Aviation Authority
Medecins Sans Frontier - Haiti
United Nations
World Health Organization
U.S. Air Force
U.S. Army
U.S. Army Corp. of Engineers
U.S. Navy
U.S. Marines

Testing

- Environmental Impact Assessment for Baabda Government University Hospital
- Environmental Impact Assessment Notre Dame De La Paix Hospital
- Lebanese Ministry of Environment
- Airsource Technologies Inc. Emissions Testing
- Flue Gas Analysis, Lebanon
- Bottom Ash Analysis: Done at the American University of Beirut (AUB)
- Bottom Ash Leachability Analysis Earth Link and Advanced Resources Development (ELARD)
- Flue gas analysis: done by the Industrial Research Institute (IRI)
- Gaussian Dispersion modeling of pollutants (ELARD)
- Emission Test Results at Yenlac District Hospital Binh Phuc Province, Vietnam
- SAAB EMI Testing (MIL SPEC)
- Flue Gas Analysis, PCL Solutions, Sri Lanka

Mediburn Safety Case Report by Aspen Healthcare Solutions Ltd (2011);

Using a systematic risk analysis process;

Health and Safety at Work Etc. Act 1974 C37

"There is nothing within the MEDIBURN system that would prevent the MoD from satisfying their duty under the HASAW Act. Risk and safety information has been provided."

Provision and Use of Work Equipment Regulations (UK)

"Aspen Healthcare considers that the MEDIBURN system is suitable equipment for use as a clinical incinerator."

Management of Health and Safety at Work Regulations 1999

"Aspen Healthcare consider that the risk assessment and reduction described in this report will assist the MoD in satisfying their duty for compliance with the Management of HASAW Regulations 1992"

Workplace (Health, Safety & Welfare) Regulations 1992

"Aspen Healthcare have produced maintenance procedures and carried out a suitable assessment on the potential for falls and falling objects"

Electrical Equipment (Safety) Regulations 1994

"The electrical equipment is safe and is constructed in accordance with the principles generally accepted with the EU member states as constituting good engineering practice in relation to safety matters and in particular has been designed and constructed to ensure that is it safe when connected to an electricity supply system through providing a level of protection against electrical shock which relies on a combination of insulation and protective earthing conductors contained within the electricity supply system.

A CE mark quoting 73/23/EEC does have to be applied for full compliance, but may be applied to the system paperwork rather than the hardware itself. "

European Directive 2000/76/EC on the Incineration of Waste

Satisfaction of sample EU tests and US requirements is judged as reasonable compliance evidence.

Setup Requirements

Setup: We recommend that the incinerator be set on a hard, level surface, ideally a concrete slab. The position should be at least 7ft / 2m away from buildings or other readily combustible materials. The unit can be operated outdoors, however a structure with good air exchange giving protection from the elements is advisable, with provision for a chimney (max height of 6m).

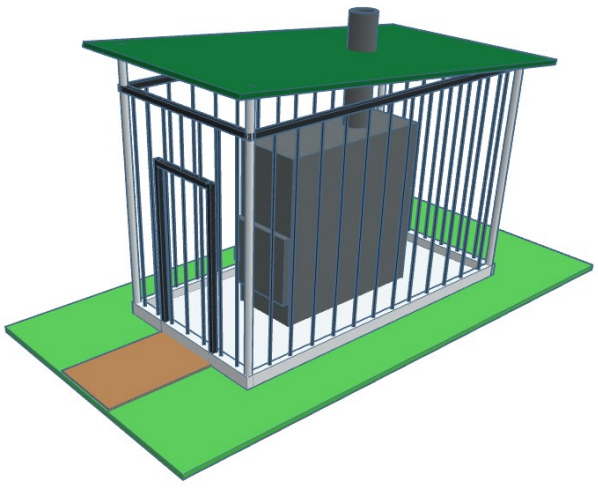
Security fencing may also be added due to the nature of the waste being handled. Elastec can provide sample shelter drawings.

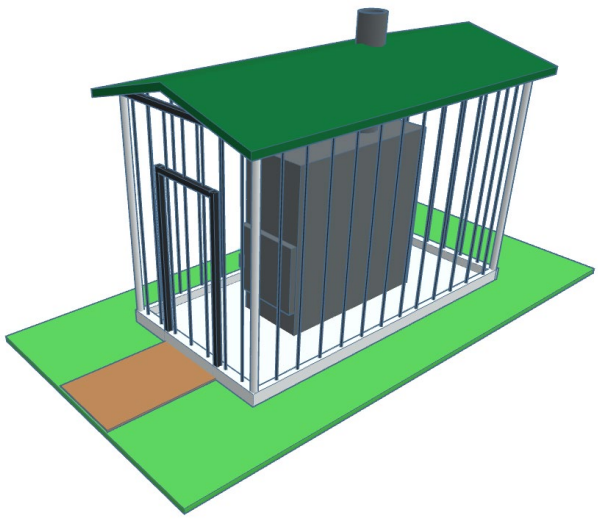
Permitting and use; Always check local, state and country guidelines before purchasing any incineration system.

The minimum size of a shelter platform should be no less than a 13x7 ft / 4x2 m and at least 8 ft / 2.4 m high roof support. Security barriers are suggested.

Capacity: The capacity of the units will depend on the waste type, calorific value, burn cycle duration and local environmental conditions.

The images below show two common shelters that utilize an optional 3ft exhaust stack extension. A minimum of 1 ft / 0.3 m clearance is required above the unit to assist in heat dispersion.





Specification	MediBurn 30	MediBurn 20
Weight:	2,440 lb / 1,107 kg	2,000 lb / 907 kg
Length:	79 inches / 2.01 m	62 inches / 1.57 m
Width:	34 inches / 0.86 m	34 inches / 0.86 m
Height:	82 inches / 2.08 m without stack	82 inches / 2.08 m without stack
Primary Chamber Volume:	13 ft^3 / 0.37 m^3	10.5 ft^3 / 0.28 m^3
Suggested Load Volume:	10.5 ft^3 / 0.30 m^3 load	8 ft^3 / 0.22m^3 load
Capacity:	66-110 lb/hr / 30-50 kg/hr	44-88 lb/hr / 20-40 kg/hr

Diameter of Stack:	12 inches / 0.3 m OD	
Required Electrical:	220/240 V 50/60 Hz	
Electrical Consumption:	0.35 kW/hr - Starting 10 ampere - Running 5 ampere; Min 20 ampere breaker	
Required Fuel:	Diesel, Heating Oil, Number 2 Fuel Oil, JP8	
Fuel Consumption:	2-3 gallons per hour / 7-11 litres per hour	
Fuel Capacity:	35 gal / 132 liter	35 gal / 132 liter
National Stock Numbers:	4540-01-581-2479	4540-01-551-9666
Spares Kit:	4540-01-581-2546	4540-01-581-2546
Thermocouple:	6685-01-567-5073	6685-01-567-5073
Shipping Dimensions:	90 x 43 x 89 inch /2.26 x 1.1 x 2.26m	72 x 43 x 89 inch / 1.83 x 1.1 x 2.26m
Shipping Weight:	2,800 lbs / 1270 k	2,300 lbs / 1043 kg

Options & Accessories

Accessories included - grounding rod, ash rake, diesel funnel, 18 inch / 450mm tall removable stack.

Optional extras - 3ft stack extension / taller stacks (3ft / 7.5ft / 18.5ft), spare parts kit, tool kit, rain cap, stack stabilizer, roof flashing, portable generator, external fuel tank, 20ft container.

20FT SIDE OPENING CONTAINER with MEDIBURN 30 Installed

A standard 20ft Side Opening Container modified to ship, store and operate a MEDIBURN 30. The Mediburn is secured to the base of the container with rails, with roof access for the flue. The container is also fitted with two louvers and a fan. Once on site, power can be connected to the unit, flue installed, doors swung open, then the Mediburn is ready to operate. The container has sufficient space for storage of waste and an addtional fuel tank (optional extra). When operations are complete the side and end opening doors can be closed and the unit secured.

The system includes:

- MediBurn30 Incinerator with mounting rails
- Flue access with Roof Flashing
- 20 Inch Industrial Electric Fan
- Louvre vents

Note: Extended flue with rain cap required.

Optional: Auxillary fuel tank, waste storage containers, spares, tool kit, fire extinguisher, PPE

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