

# TruMed

TruMed is a compact and automated gasification system for medical waste conversion and disposal.



Medical Waste



## Medical waste gasification

TruMed is designed for use in small and medium-size hospitals and provides a complete solution for disposing of the full range of medical waste. It can gasify hazardous and infected waste such as plastics, textile, rubber gloves, pathological waste from surgery and autopsy, pharmaceutical waste, hypodermic syringes, needles, scalpel blades, microbiological waste, liquid medical waste and animal wastes.

- High gasification temperatures from 900 to 1,350°C ensure complete disinfection and decontamination of waste.
- Environmentally friendly and has no harmful emissions, emits no dioxins, no chlorinated furans and no smell.
- Converts organic waste to heat, which can be used to heat water in the hospital's central heating system or produce steam for sterilisation.
- Inorganic waste and ash are collected in a special tray and can be disposed of as non-hazardous household waste.
- TruMed is a one-button device with a fully-automated, real-time microprocessor control system and requires only one staff member to operate. The operator does not require any special skills.

A complete solution for the disposal of medical waste

### delivering revenue from renewables

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## Technical Advantages

- The use of our proprietary, steam-gas thermolysis, a technology that allows the gasifier to be used with multiple different feedstock including feedstock with a very high moisture content of up to 70%.
- Clean gas production allowing the gasifier to be combined with a number of electrical generation options including ORC turbine and reciprocating engine.
- Top reduction updraft (TRU™) gasification technology that allows very efficient gasification of all carbon, resulting in ultra-low particulate emissions and virtually no ash.
- Advanced reactor design and reaction kinetics, with no dioxin and furans emissions and extremely low NO<sub>x</sub> emissions.
- Very small physical footprint, specifically a low gasifier height.
- Fully automated operation ideal for distributed deployment.

## Functionality

- Simple operation.
- Bottom feeding of waste eliminates explosion risk.
- No drying of feedstock (waste).
- Modern microprocessor technology for automation, visualisation, control, and monitoring.
- High safety measures and risk minimisation.

## Application areas

- On-site disinfection, decontamination and disposal of medical waste in hospitals.
- Gasification of organic medical waste (normal, potentially infected, infected).
  - plastics, textile, rubber gloves, insulation.
- Pathological waste from surgery and autopsy, anatomical waste tissues, organs, body parts;
  - pharmaceutical waste.
  - microbiological waste: colonies of infectious agents, specimens from medical and pathology laboratories, discarded vaccines.
  - liquid medical waste: human blood and blood products, serum, plasma.
  - animal waste: animal carcasses, body parts, bedding.
- Full sterilisation of inorganic medical waste such as sharp hypodermic syringes, needles, scalpel blades, Pasteur pipettes at very high temperatures (900–1,350°C).
- Production of heat can be used to heat water in the central heating system of the hospital or to generate steam for sterilisation.



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## Technical data

<b>Power Generation (with ORC Turbine) or Heat Production (in heat only mode)</b>	50-75 kW <sub>e</sub> 200-300 kW*
<b>Power Consumption</b>	5-10 kW
<b>Warm-up time</b>	40 min
<b>Time of uninterrupted operation</b>	10-24 hr
<b>Cooling time</b>	1 hr
<b>Maintenance service (by machine operator)</b>	1 hr per day
<b>Ash, no more than</b>	1% of waste weight
<b>MTBF</b>	5,000 hr
<b>Warranty</b>	2 years

\*sufficient to heat 2,000 litres of water from 20 to 100°C

## Hydrocarbon emission test of the TruMed gasifier

Compound	Sanitary Norms, mg/m <sup>3</sup> <small>EASC standards 12.1.005-88/ No.3086-84</small>	Actual Value, mg/m <sup>3</sup>		Results (In relation to the norm)
		Immediately after start	After 15 min of operation	
<b>Styrene</b>	0.045	0.05	Not detected	Corresponds
<b>Formaldehyde</b>	0.035	0.05	Not detected	Corresponds
<b>Benzene</b>	0.015	Not detected	Not detected	Corresponds
<b>Xylene</b>	0.02	Not detected	Not detected	Corresponds
<b>Acetone</b>	0.035	Not detected	Not detected	Corresponds
<b>Phenol</b>	0.001	0.0015	Not detected	Corresponds
<b>Heptane</b>	0.003	Not detected	Not detected	Corresponds
<b>Pentane</b>	0.001	Not detected	Not detected	Corresponds
<b>Octane</b>	0.001	Not detected	Not detected	Corresponds
<b>Hexane</b>	0.01	0.015	Not detected	Corresponds
<b>Toluene</b>	0.006	Not detected	Not detected	Corresponds

## Options

- The gasifier can be connected to the hospital hot water system through a heat exchanger.
- The gasifier can be equipped to produce steam for sterilisation purposes.
- Depending on the waste streams to be utilised, the system can be supplied either with an ORC turbine electricity generator; or a reciprocating engine system, with heat produced being used to offset more traditional fuels.

## Specifications

- Capacity: disposal of 30–50 kg of medical waste per hour.
- AC power supply 220/380 V, 50 ± 2 Hz.
- Operation temperatures: 15–25°C.
- Moisture content of feedstock: below 75%.
- Weight: approx 1 ton.\*
- Dimensions (m): 2 (h) × 3 (w) × 2 (d).\*

\*excluding power generation module.

## Site requirements

- Ventilated room with 50 m<sup>2</sup> footprint.
- Reserve autonomous power supply.
- Fire safety system.

## Production and installation

- Order lead time: 8–12 months.
- Installation is by the manufacturer.
- Mandatory personnel training (performed by the manufacturer during installation).

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