

Environmental Concepts Exchange Association e.V.



WASTE TO ENERGY

Incinerators for Hazardous Waste







HAZARDOUS WASTE

- Definitions and Fundamentals of Incineration Technology
- Process outline/Waste to Energy
- Cleaning of the Flue Gases
- Incinerator Types
- Our offer



- Definition and Fundamentals of Hospital Waste
- Mobile Incinerators
- Description of ECEXA Waste-to-Energy Technology
- Cleaning System for the environment





Wastes classified as hazardous display one or more properties which carry the title "noxious, toxic, irritant, caustic, infectious, carcinogenic, mutagenic, ecotoxic, explosive, flammable, flash point ≤ 55°C". Hazardous waste may not be mixed with domestic waste and must be treated separately in special disposal facilities. Incineration of such waste in hazardous waste incinerators is an efficient, environmentally friendly and resource friendly way of treating hazardous waste.



- Criteria for the incineration of hazardous waste:
- Dangerous waste must be incinerated at a temperature of 1100°C at a minimum residence time of 2 seconds in the afterburner chamber.
- Combustion residues (ash, slag) may only contain a content of total organic carbon which is inferior to 3% of the burnt material.
- The incinerator must be equipped with at least one auxiliary burner which ignites as soon as the temperature of the combustion gases drops below 1100°C.



E.C.E.X.A. Incineration Technology

E.C.E.X.A.



FUNDAMENTALS



- The exhaust gases stream into a flue gas cleaning equipment where the gases are filtered and cleaned so that they can be released into the atmosphere in clean state.
- Exhaust gas measurements are to be carried out periodically. A continuous measurement is required for NOx,CO, total dust,TOC,HCl,SO2.





Waste to Energy





- Fluctuating prices of primary energy sources, steady dismantling of resources as well as the global effects of increased output of CO2 of the last decades make it reasonable to use the energy which is generated during the combustion process of waste.
- This energy leaves the incinerator in the form of hot gases which pass into a heat exchanger where hot water, hot steam and hot air are produced. Hot water can be supplied to district heating facilities or it can be used for heating surrounding buildings or factories.
- With overheated steam it is possible to generate electricity via a turbine and a generator.



Waste to Energy



- With hot air any drying processes used in various industrial applications can be carried out.
 - Production of hot water up to 6 bar, 120°
 - Production of overheated steam up to 40 bar, 400°
 - Hot air systems up to 600°



The complete heat recovery unit is made of individual tube bundle heat exchangers; thus enabling to assemble this unit individually, depending on the desired recovery product.



ECEXA offers the appropriate solution of heat recovery for any application.



Cleaning of the flue gas





To be able to keep to the limit values demanded by international and national laws and regulations, it is necessary to clean the flue gases which are produced in the incinerator. This can be achieved with a dry cleaning system (on the basis of sodium bicarbonate and activated carbon) or with a wet scrubber (consisting of a venture scrubber, a droplet separator, a column scrubber, an activated carbon filter).

ECEXA flue gas cleaning systems fully meet the requirements of the EU directive 2000/76/EC and are well below the required limits. All operational parameters and flue gas concentrations are measured and recorded continuously.

ECEXA supports you at your choice of the suitable cleaning method and equipment according to your legal requirements.







Incinerator types



Туре	Space required on site	Space required on site	Space required on site	Weight	Capacity
	Length/m	Width m	Height m	t	Kg/h
S-20	7,5	5,5	4,0	13,0	20
S-50	8,0	6,0	5,0	17,5	50
S-100	8,5	6,0	5,0	21,5	100
S-200	9,0	6,5	6,0	34,0	200
S-300	10,0	6,5	6,5	42,5	300
S-500	11,0	6,5	7,0	63,5	500





Environmental Concepts Exchange Association e.V.



WASTE TO ENERGY

Part II Hospital Waste

The clean and sterile solution





DEFINITION AND FUNDAMENTALS



Hospitals and clinics are facilities designed for the protection and for the restoration of people's health. Nevertheless, the waste which originates in these institutions can mean a big threat to human health if it is not treated and disposed of carefully. It can be dangerous not only for people who have direct contact with infected waste in the hospital, but also for those people who live in the vicinity of places where such waste is disposed of.





DEFINITION AND FUNDAMENTALS

What is hospital waste

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Waste deriving from diagnoses, control and preventive health care, curative and analgesic activities in the area of veterinary and human medicine. Hospital waste can be divided into non-infectious waste and waste having the risk of being infectious.

Approx. 85% of the waste generated in hospitals is standard waste, while 15% is infectious waste.



INCINERATION TECHNOLOGY

The waste is charged into the main combustion chamber of the incinerator either manually or automatically by means of a conveyor belt. There the waste is burned at temperatures between 700-800°C. E.C.E.X.A. WASTE TO ENERGY



The gases which are produced during this process pass into the post combustion chamber where they are afterburned and cleaned at a temperature of 850°C and a residence time of 2 seconds. If the waste contains components which produce noxious exhaust gases it is necessary to install a flue gas cleaning system.









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Quality and longevity are our main goals! High-quality materials (e.g. steel, highly heat-resistant refractory of high density) guarantee excellent heat insulation, protection from corrosion and therefore a long life of the incinerator. Low operating costs, low costs for spare parts and maintenance are the result.

The incinerators operate with efficient Low-NOx burners of Weishaupt and are equipped with a modern SPC control with colour touch panel. A wide range of additional equipment can be supplied for the benefit of convenient incinerator operation. Please ask for our offer!



Mobile Incinerators



ECEXA incinerators are also available as mobile units designed for use in troubled regions and field hospitals or areas where no suitable infrastructure exists to install a stationary incinerator.

The incinerator is installed in a 20" container which is especially adapted and modified for this purpose (hinged side walls, additional reinforcement, special anchors in the refractory of the oven, dampers to absorb shocks).

Beside a separate storeroom for spare parts, tools and the like, there is room for the oil tanks and the stack segments as well. The container is conceived in a way to be transported on the road, by air or sea to any place and is therefore individually applicable.





Mobile Incinerators



The clean and sterile solution





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RONMENTAL CONCEPTS EXCHANGE ASSOCIATION

Solutions for the benefit of the environment



To be able to keep to the limit values demanded by international and national laws and regulations, it is necessary to clean the flue gases which are produced in the incinerator. Depending on the composition of the waste a separate flue gas cleaning system can be necessary.

This can be achieved with a dry cleaning system (on the basis of sodium bicarbonate and activated carbon) or with a wet scrubber. The hot gases which are produced during waste incineration can be used for production of hot water, steam or electricity. Our partner Incinis supports you in your choice of the suitable cleaning method and equipment according to your legal requirements.





WASTE TO ENERGY







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ECEXA supports from beginning to finalization of projects



- planning of special projects
- technical calculations/ analyses
- decision support with regard to type of incinerator, components, additional equipment
- support at gaining official technical approval













- financing
- transport solutions
- installation, commissioning, training
- service
- maintenance
- > spare parts





The clean and sterile solution





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