



HIGH TEMPERATURE INCINERATION

the science of managing waste



secure and environmentally safe

Veolia Environmental Services is an international, market-leading waste management company providing a comprehensive range of services for organisations and people across the UK. We anticipate and evaluate new legislation, develop and assess environmental technologies and research our customers' practical requirements to provide successful and sustainable waste management services.

- Hazardous waste services
- Commercial waste services
- Specialist industrial services
- Recycling and recovery services
- Packaging waste compliance
- Municipal waste services



We are part of Veolia Environnement, a world leader in environmental services and the only company to provide a full range of integrated solutions across water, waste management, energy and transportation sectors. Combining our global experience and thorough local knowledge we can work effectively with commercial organisations of all sizes and sectors, while caring for the communities and the environment in which we operate.



Keeping our customers informed

The UK is in the process of developing how we treat and dispose of our waste. Veolia Environmental Services proactively helps customers to adjust to these important changes using a combination of free updates, literature, seminars, roadshows, exhibitions and online services which offer practical advice and guidance in a complex and rapidly evolving market.

Advancing the latest technology

As a result of increasingly demanding commercial and legislative requirements, High Temperature Incineration has developed into a valuable disposal solution for certain waste categories including hazardous and confidential materials.

Veolia Environmental Services' rotary kiln incinerator is the most technically advanced High Temperature Incineration facility in Europe, providing the highest levels of secure, reliable disposal with outstanding environmental performance. Its design features include the latest developments in incineration and gas cleaning technology and some of the most sophisticated monitoring, control and operating systems in the world, ensuring complete peace of mind for waste producers.

an exceptional disposal service

For producers of both hazardous and confidential waste, High Temperature Incineration is an ideal disposal option. From chemical, pharmaceutical and manufacturing industries to retailers, breweries and blue chip companies that require finite destruction of their waste products, Veolia Environmental Services' facility provides a vital service, meeting legal and environmental requirements efficiently and cost effectively.

The High Temperature Incineration process heats wastes to temperatures up to 1,200°C and is fully compliant with the Waste Incineration Directive and the site's PPC Permit. Our facility in Ellesmere Port, Cheshire, can handle 100,000 tonnes of waste materials per annum and can accept waste in many forms, including:

- o Bulk, drums or original packaging
- o Gases (e.g. Halon, CFC)
- o Solids (powder, pastes, pills, resins)
- o Liquids (aqueous, solvent, slurries)
- o Highly toxic liquids via direct injection
- o Organic wastes including PCBs
- o Controlled drugs
- o Packaged wastes
- o Oily sludges
- o Contaminated soils
- o Bulk powders
- o Halogenated wastes*

*Iodine bearing wastes must be declared

Peace of mind at every step

Throughout the disposal process our service operates to exacting standards, supported by in-house health and safety advisors and environmental and legislative experts. All wastes are checked and assessed against delivery schedules on arrival, and computerised bar code systems ensure complete traceability of each consignment throughout the system.

Purpose-built storage areas are maintained for individual waste types, including nitrogen blanketed liquid storage tanks, protected by a water deluge system, with a total capacity of 14,300 m³. Vent gases from these tanks are incinerated and, during shutdown periods, fed to carbon absorbers.

We also maintain a 2,000 m² covered storage area for packaged solid wastes ready for incineration, equipped with automated, computer monitored conveyers that transport wastes to the kiln. Further covered areas are provided for repackaging and re-handling a range of wastes prior to incineration. All drum storage and handling facilities are protected by foam deluge systems.



safe, reliable technology

Rotary Kiln

The Ellesmere Port facility uses an advanced, water-cooled rotary kiln which achieves temperatures of up to 1,200°C, ensuring complete combustion of all waste materials. It is fully automated; operational parameters and waste feed mechanisms are under computer control, and safety interlocks can prevent operation where necessary.

The kiln rotates between 1 and 6 revolutions per hour, allowing a waste residence time of 30 – 90 minutes and ensuring maximum burnout and volatilisation of organic materials. The resultant inert slag flows continuously into a water quench in the base of the secondary combustion chamber (SCC), where it immediately cools to form an inert glass-like solid. This can be reused or disposed of at licensed landfill sites.

Secondary Combustion Chamber (SCC)

Exhaust gases from the kiln pass into the 25m high SCC where further liquid wastes and air enter tangentially, providing a vortex. Separate lances inject aqueous, gaseous and non compatible wastes.

With a residence time after the last injection of air in excess of 2 seconds, turbulence, excess oxygen and temperature maintained at greater than 1100°C a high destruction and removal efficiency for all wastes is achieved.

Gas Cleaning

Combustion gases exit the SCC and pass through a pair of parallel gas-gas heat exchangers which reduce the temperature to around 800°C before being quenched instantaneously in a Saturate Venturi to less than 80°C. This rapid cooling to below the critical band of 250-400°C where dioxins can reform is a major design feature and accounts for the plant's outstanding environmental performance. The saturated gases are then passed through 2 scrubbing towers, these towers remove hydrochloric acid, oxides of sulphur, bromine and some of the inert particulate matter. The gases then enter a fabric filter where, with the addition of lime to aid filtration, the final particulates together with any residual acidity are removed.

Effluent Treatment

Liquid effluent from the scrubbing towers flows to the automated, computer controlled acid neutralisation plant. The fully neutralised effluent is mixed with a flocculant and discharged to settlement tanks. Clarified supernatant water is discharged to the estuary within EA consent standards. Sludge from the settlement tanks is thickened in a consolidation tank before dewatering, and the cake is discharged to skips for disposal off-site.

Operating to strict environmental standards

The facility's central computer monitors every aspect of the operation, providing continuous readouts of operational parameters and emissions. Additional testing for specific stack and effluent emissions is carried out to maintain efficiency. Our stringent management controls together with regular monitoring carried out by the Environment Agency ensure the highest environmental performance standards are maintained.

Our facility has been authorised by the Environment Agency under the Integrated Pollution Control (IPC) provisions of the 1990 Environmental Protection Act. Our operations are certificated to the international standards for Quality and Environment, ISO 9001 and ISO 14001. The plant consistently beats the limits for gaseous emissions under the EA and IPC procedures, now including the rigorous standards imposed by the Hazardous Waste Incineration Directive 94/67/EC.

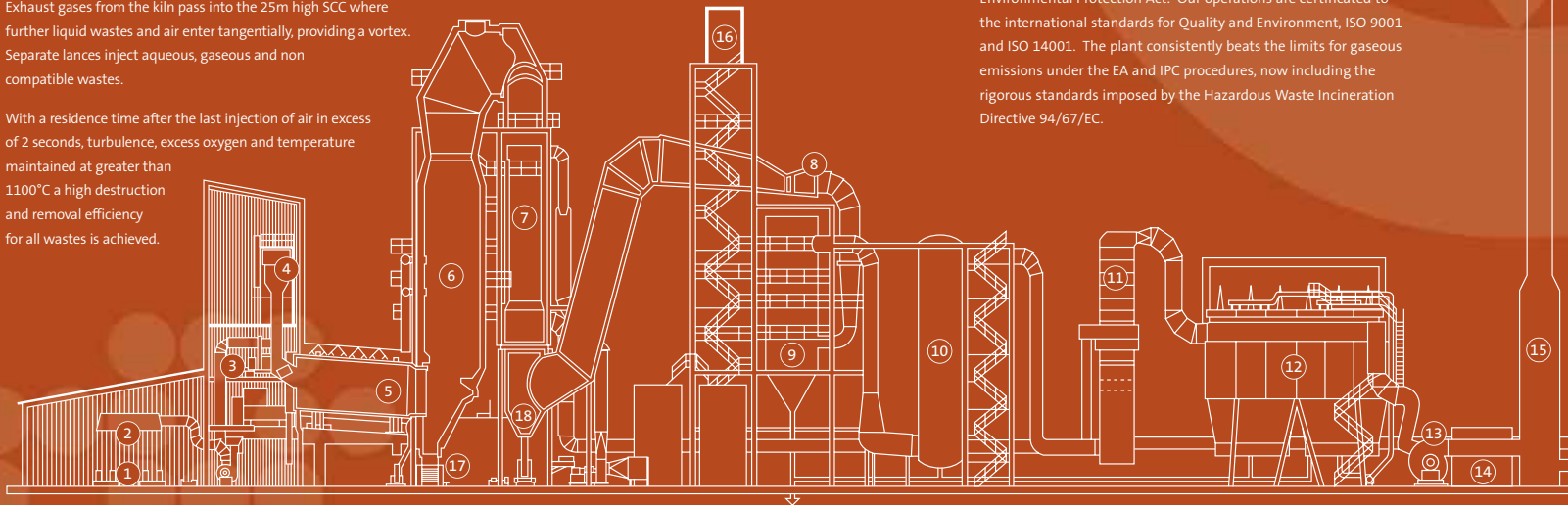


Typical emissions to atmosphere

Particulate matter	0.67 mg/m ³
Total organic carbon	<5 mg/m ³
Carbon monoxide	<20 mg/m ³
HCl	<1 mg/m ³
SOx as SO2	<5 mg/m ³
NOx as NO2	205 mg/m ³
Hg	0.004 mg/m ³
Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V, Sn	0.096 mg/m ³ (total)
Dioxin TEQ	<0.016 ng/m ³
Destruction Removal Efficiency (DRE) for PCBs	99.999996%

High Temperature Incinerator, Ellesmere Port

- 1 Packaged Waste Conveyors
- 2 Furnace Extraction
- 3 Packaged Waste Hoist
- 4 Bulk Solids Hopper
- 5 Rotary Kiln
- 6 Secondary Combustion Chamber
- 7 Gas-Gas Heat Exchangers (Recuperators)
- 8 Saturate Venturi
- 9 First Scrubbing Tower
- 10 Second Scrubbing Tower
- 11 Hot Air Mixer/Mist Eliminator
- 12 Fabric Filter
- 13 Induced Draught Fan
- 14 Continuous Emission Monitoring
- 15 Stack
- 16 Water Tank
- 17 Slag Discharger
- 18 Ash Hopper





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