

Destroys Dioxins and Furans (PCDD/Fs)

Eliminates Particulates

Eradicates Odours

Real Time Monitoring

Cost Efficient

Minimal Down-time

Small Footprint

No Affect on Cremator Operation

Patented Technology

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Clean Air  
Technology

99.9% Efficient Mercury and Flue Gas Abatement System

Mercury abatement and cremator emissions are two major issues facing crematoriums throughout Europe. Abatement will have a major impact on the business: cost of the system and ongoing routine maintenance, disruption whilst being installed, further tightening of restrictions making it very likely that more modifications will be necessary at some time.

### Future Proof

Crystal Technica designs and manufactures Crystal-air™, an abatement system that satisfies current and any future requirements making our system future proof for mercury and flue gas abatement.

The system is so effective in cleaning up emissions and particulates that it gives a new lease of life to old or inefficient cremators and in all cases could reduce fuel costs.

- Destroys Dioxins and Furans (PCDD/Fs)
- Eliminates Particulates
- Eradicates Odours
- Real Time Monitoring
- Cost Efficient
- Minimal Down-time
- Small Footprint
- No Affect on Cremator Operation
- Professional installation team manage, fabricate, fit and commission the total system

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# Crystal-air

## Clean Air Technology

99.9% Efficient Mercury and Flue Gas Abatement System

### Energy Saving


Efficiency is a key part of the system. Running and operating costs are kept to a minimum and with a heat recovery pack which is fitted as standard; heat may be captured and used for building services or even power generation.


### Ease of Operation


The system has been designed to be as compact and easy to use as possible. Starting and stopping the system is simplicity itself, no operator intervention is necessary through the running periods. There are no messy dosing systems to worry about.


### Monitoring of Emissions


The system is logic operated with a real time monitoring and reporting function which can be accessed remotely as well as locally.


 Computerised Flue Gas Analyser


 Cremator

 Crystal-air™ Burner

 UAS Mercury Abatement

 UAS Fine Particle Filter

 Flue Stack

 Flue Gas Cooler

### Service and Maintenance

Cost sensitive and long periods between maintenance are major benefits with no effect on the day to day running of the cremators.

### Maintenance Periods

The system needs little or no regular maintenance, and as the filtration systems have been designed for 3000 cremations, it will be many years before these need recharging. Change over is quick and simple for minimum cremator downtime.

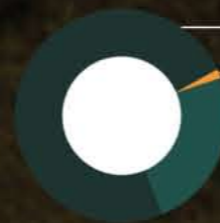
### Cost of System

Crystal Technica's Crystal-air™ system is a very comprehensive package but will cost less and certainly no more than any competitive mercury abatement systems available making it excellent value for money.



The Crystal-air™ unit has no moving parts so is virtually maintenance free. Once commissioned, it will give years of uninterrupted service and spares are easily replaced.

Crystal Technica Service and Maintenance



#### Carbon Monoxide Emission Limits

Current Crematoria Operating Permits 100 mg/m<sup>3</sup>  
 Crystal-air™ 1 mg/m<sup>3</sup>  
 WID/DEFRA 50 mg/m<sup>3</sup>

### System Description

The flue gases from the cremator enter the Crystal-air™ patented three stage burner which is directly in line with the cremator flue. This unit uses natural gas or other fuel types.

### Chamber 1 - Mixing

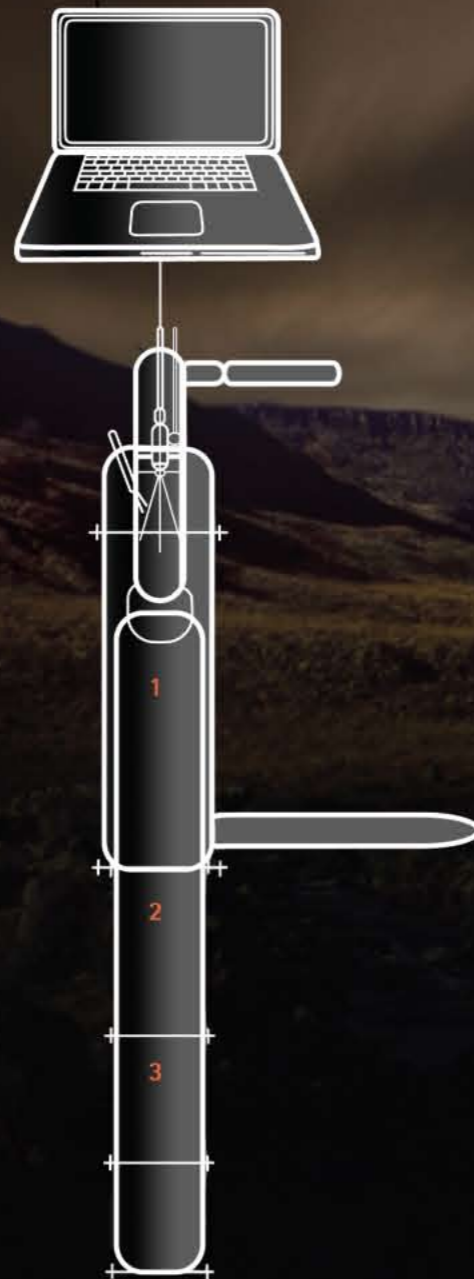
Air and fuel are mixed as they enter the chamber. The mixed gases rotate longitudinally down the chamber. This rotation causes the combusting gases to dwell longer in the chamber.

### Chamber 2 - Combustion

As the combusting gases enter this chamber there is sufficient oxygen for continual and intense combustion. This is the chamber where the majority of the heat is produced. As the gases reach the exit end of the combustion chamber the oxygen content in the chamber has been significantly reduced.

### Chamber 3 - Reaction

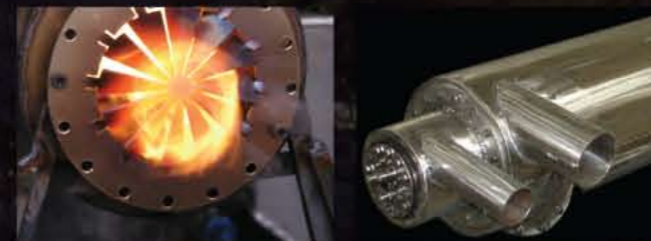
The gases are now starved for oxygen because most of the available oxygen has been used up combusting all carbon and hydrocarbons in the previous chamber. Heat and water are the main by-products. At this stage all residual Dioxins, Furans, CO, NOx, SO2, HF, HCl, hydrocarbons, noxious gases, and particles are removed in the burning chambers.



The cleaned flue gases are exhausted and immediately passed through an inline cooler which reduces the gas temperature to 140 degrees C.

The cooled gases pass through the mercury abatement system which uses activated carbon as its medium, removing 99.9% of mercury oxide.

Final filtration uses the latest downward flow cartridge system and advanced pulse cleaning technology before release to atmosphere through the stack.



Left, Chamber 2 - Combustion cut away

Right, External stainless steel casing