WESELEY HILLS CREMATORIUM

Waseley Hills Crematorium and Memorial Garden
Rubery, Rednal, Birmingham, B45 9YW

Description of the Proposed Installation and Activities

The site location on New Inn Lane, Rubery, Birmingham conforms with the requirements of the Cremation Act 1902 Section 5 in that the location of the crematorium does not lie any nearer than 200 yards (181.36 metres) to any dwelling house nor within 50 yards (45.34 metres) of any public highway.

The cremation of human remains constitutes the burning of a human body contained within a wooden coffin, or occasionally within a coffin made of other materials, which is presented at the crematorium for cremation by a Funeral Director. Prior to cremation the Cremation Authority insists on receiving a signed declaration from the Funeral Director to acknowledge their observance of the 'Instructions to Funeral Directors' regarding the coffin construction, clothing and coffin content. Instructions to Funeral Directors, formulated by The Federation of Burial and Cremation Authorities, conform to the requirements of PG5/2 (12) Section 5 Control Techniques, paragraph 5.20.
(see Document **C1a** 'Instructions to Funeral Directors')

The Cremation Authority will install one Facultatieve Technologies FTIII cremator fuelled by LPG gas, and a flue gas treatment plant for mercury abatement. Emissions will fully comply with the requirements of PG5/2 (12) Section 4 Table 4. (see Document C1**b** FTIII)

At the commencement of each funeral service, the coffin is received onto the catafalque within the Chapel area of the crematorium. (see Document **C1d** Ground Floor Plan Flow Diagram – Arrow **A**)

After the service, the coffin is moved from the catafalque to the Crematory via the Transfer Room on an hydraulic charging bier. (see Document **C1d** Ground Floor Plan Flow Diagram – Arrow **B**)

The coffin is then loaded into the cremator, or if the cremator is already in use, loaded onto a temporary storage rack pending the completion of the previous cremation. The bier is then returned to the Transfer Room. (see Document **C1d** Ground Floor Plan Flow Diagram – Arrow **C**)

CREMATOR

The cremator comprises a Primary Chamber, into which the coffin is inserted through an actuated charge door, and within which the primary combustion takes place. The charge door is interlocked to prevent the introduction of a coffin into the primary combustion zone unless the temperature at the exit from the secondary combustion zone exceeds 1073K (800ºC).

The primary chamber hearth is flat and contains no openings so that all materials are retained for combustion, and avoids the by-passing of flue gases.

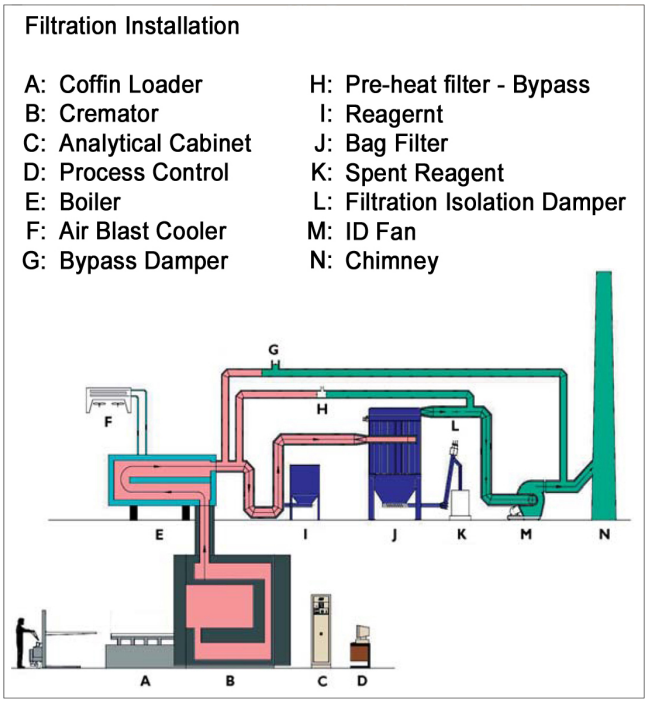
The waste gas from this primary combustion phase exits the primary chamber via transfer ports in the side wall and enters the secondary chamber in which the gas phase combustion takes place. To be compliant with the Process Guidance Note PG 5/2(12) the secondary chamber maintains the flue gas combustion temperature at 800ºC minimum (with Mercury Abatement operational) with a minimum gas residence time of 2 seconds during operation, and with an oxygen concentration of minimum 6% average measured wet or dry, and minimum 3%.

Although not required by PG 5/2(12), the cremator will have a Facultatieve Denox system fitted which injects a mist of proprietary urea solution into the gas stream within the secondary chamber. Testing of this system has shown that a 65% reduction of NOx emissions is achievable.

The cremator will have an Automatic Process Control System, which supervises the operation of the cremator and combustion process based upon a Programmable Logic Controller with dedicated operating software. An automatic Data Logging System which stores operational information and cremation data, is used to generate reports in a format fully compliant with PG 5/2(12).

An internet Broadband link will allow Remote Technical Support and enable the manufacturers' technicians to remotely monitor cremator performance and to provide online fault diagnosis.

FLUE GAS TREATMENT



Hot gases leaving the cremator are cooled to around 120ºC by passing through a Flue Gas Cooler (E) filled with a glycol/water mixture which is continuously circulated through an Air Blast Cooler (F) to dissipate excess heat to atmosphere.
The Activated Carbon reagent (I) is dosed into the cooled gas stream which adsorbs mercury vapour, dioxins and furans, and is then captured on the bag filter (J) forming a filter cake.
An automatic compressed air system for cleaning the fabric filter ensures there is sufficient additive on the filter, whilst ensuring that the gases pass freely through the filter.
Spent reagent is collected in dedicated drums (K) which are sealed and transported to a specialist disposal and recycling centre under license.
An ID fan (M) creates the required suction to draw the cleaned gas through the filter and finally through to the stack (N).

REAGENT DOSING STATION

The pre-mixed chemical reagent 'Factivate' is supplied easily manageable sealed 15kg containers, which are easily introduced into the automatic dosing station by inserting the lidded container of reagent via the dedicated door which is then closed and sealed before the reagent is introduced, thus ensuring the automatic addition of reagent under controlled, clean and safe conditions.
Under fully controlled conditions the reagent is fed via a dosing screw into the gas stream and filtration system in the required amount necessary to ensure compliance with current emission regulations.

CONTINOUS EMISSION MONITORING SYSTEMS

- A Fuji ZRF Multi Gas Analyser will provide continuous qualitative monitoring of Carbon Monoxide and Oxygen, and the data will be acquired and recorded at 15 second intervals or less.
- A PCME will continuously monitor Particulates, and reference levels will be set upon commissioning to provide a filter leak monitor.

CREMATED REMAINS and METALS

At the end of each cremation cycle, when calcination is complete as required by PG5/2 (12) section 5 para 5.23 and the Code of Cremation Practice, the hearth is raked to move the cremated remains through an integral ash chute into a refractory sump where the remains are air cooled for one hour prior to removal in a covered stainless steel container. The cremator is now ready for the next cremation.
(see Document **C1e** Code of Cremation Practice)

The cremated remains are transferred from the cremator in a covered container, thus avoiding any particulate matter escaping into the atmosphere, and placed directly into the Facultatieve High Speed Cremulator in the Ash Treatment Room. (see Document **C1d** Ground Floor Flow Diagram – Arrow **D**)

The cremated remains are reduced to a fine granular consistency in the High Speed Cremulator which automatically separates any metal residues and deposits them into an empty container, and places the resultant ashes directly into a temporary storage container.

Should the cremated remains need to be transferred from the temporary storage container to another casket or urn, then this is carried out in the Ash Transfer Cabinet.

The High Speed Cremulator and Ash Transfer Cabinet both have an integral dust suppression system with a high efficiency air filter, thus preventing any escape of particulate matter.
(see Document **C1f & g** Cremulator and Ash Transfer Cabinet)

Metal Residues

The metal residues which result from the cremation process are separated into orthopaedic implants, non ferrous metals, and ferrous metals such as pins and nails (required for the safe construction of the coffin) and placed within designated bins.
All metals are collected by a registered waste company for recycling, and the orthopaedic implants are recycled into an end product which is unrecognizable as an implant.
The company presently used by the Westerleigh Group is OrthoMetals Ltd and all proceeds from the recycling are donated to local charities. (www.orthometals.com)

FORESEEABLE EMISSIONS

All foreseeable emissions to atmosphere during the cremation process, including start up and shut down, are detailed and quantified in Document C2.