



BLACKLEY CREMATORIUM

January 2021

Response to ITT

**THE PROVISION & INSTALLATION OF 2no. REPLACEMENT CREMATORS and
associated MERCURY ABATEMENT PLANT
AND THE MAINTENANCE FOR A PERIOD OF 15 YEARS.**

INTRODUCTION AND TENDER COMMENTARY

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INTRODUCTION and TENDER COMMENTARY

1.0 INTRODUCTION

Our proposals, specification, and scope of works have been compiled in line as closely as is possible with the conditions set out in your Tender request for the Design and Installation of Cremators and Mercury Abatement System for Blackley Crematorium. This Tender submission has been made in response to your issued Tender evaluation criteria and the issued I.T.T documentation.

In line with the ITT, we can advise that we have priced for 2 FTIII Double End Cremators complete with one Double Mercury Abatement System, dedicated De NOx abatement, a High Speed Cremulator and an Ash Transfer Cabinet, with the requested all-inclusive maintenance agreements covering the 15 years commencing after completion of the first year following commissioning. Additionally, we have also priced for a standalone 6 cell fridge unit to be installed in the current coffin store adjacent to the committal area, this price is outside our tender price, and can be supplied for an additional sum of £15,644.00.

In line with the requirements of the ITT we can additionally supply a suitable, motorised coffin transport trolley incorporating a weighing load cell in order to minimise manual handling by site staff. This is again outside our tender price but can be supplied for an additional sum of £9,123.00.

Our proposals are based upon the use of our standard Dry Scrubbing Mercury Abatement System; this system is capable of meeting and exceeding the full requirements of The Secretary of States Guidance Notes for Crematoria PG5/2 (12). Upon completion of our works at the crematorium, our proposals will enable the crematorium to mercury abate 100% of its cremations.

In developing our proposals, we have selected our most modern technology, with the double mercury abatement systems utilising Compact Cooling technology. Such a space saving flue gas cooling technology ensures the supply of double ended cremators in very similar position and orientation to the existing FCC Newton cremators allowing the same workflow from the chapel's catafalques to the cremator's committal area. Having surveyed the site and cognisant of the building's architectural importance, we have developed a multi phased scheme to deliver all the cremation equipment in component form for build-up on site, and also delivery a special bag filter unit in component form too. Whilst this methodology may in fact increase our time on site, this scheme does not require extensive enabling works to form penetrations in external walls or flat roofs, and so will minimise the overall building works necessary on site to support our scheme. Our proposals are based upon keeping the crematorium operational throughout and maintaining 2 cremators operational at all times. As detailed within our proposals deliveries and major removal works will be made out of hours so as not to impact on day to day operations.

This solution offers the authority a Best Available Technology Not Entailing Excessive Cost solution to the project.

FTL also confirm that the offered double mercury abatement solution is a true 2 cremator in to 1 double abatement plant and as a standard feature will ensure 100% of cremations are fully mercury abated from the two FT cremators operating simultaneously, or any single FT cremator operating individually. FTL therefore confirm that our proposals already include for full capacity installation, with no extra cost necessary to allow two cremator units to work simultaneously with the proposed abatement plant, and without imposing a restriction on charging capacity of the two cremators. This may well be an improvement of the existing abatement system which appears to abate one cremator when operational.

As requested by your issued I.T.T., we can confirm that Facultatieve Technologies Ltd and our specialist subcontractors have attended site for the purposes of site survey in order to design a site-specific installation for Blackley Crematorium. As a result of our site investigations, we can confirm that we are able to install the required abatement system / equipment within the current footprint and envelope of the existing crematorium, that is, the spatial provision is sufficient to house the necessary abated cremation equipment and enable their future upkeep and maintenance.

We confirm we have allowed for specialist subcontractors to perform gas installation and electrical installation works as the enabling works necessary specifically for our equipment installation of the cremator and abatement equipment to proceed, such as gas and electrical supply connections. Our works exclude uprating replacing the existing gas booster sets, and our scope of supply is detailed later within this bid.

In developing our proposals, we propose to re locate the new air blast cooler within the existing service yard in a similar position, however we have proposed a modification to the roof cladding over the service yard – this needs opening up to ensure the correct operation of the blast cooler – details are offered later in this proposal.

To reduce the impact of specialist cremator installation works at your crematorium and to minimise the amount of time on site, our proposals are based on the delivery of partially pre-built cremators and other pre-assembled equipment modules to be assembled on site. Our detailed site survey of the crematorium identified suitable site roadway access for the delivery vehicles, and the confirmed the feasibility of utilising the proposed option 2 site compound. In making our proposals we can now confirm that all the mercury abatement system will now be located within the crematory, and in so doing we have proposed a new staff control room by re purposing the existing fan room.

All building modifications necessary for our proposals whilst detailed in this tender bid are excluded from our tender sum, as is the project preliminaries including site compound and site welfare, this will be carried out by the client's appointed specialist building contractor as required by the ITT.

Facultatieve Technologies Ltd confirm that our proposals include for the replacement of all exhaust flues including the three bypass stack liners within the existing masonry tower structures. Three new liners will be provided, one liner each to suit bypass of the two new cremators, with stand-alone stacks installed within the masonry stack at the rear of the

crematorium designed to exhaust abated gases from the two mercury abatement plant installations.

To reduce the crematorium's overall carbon footprint, our proposals include for the supply of a heat recovery module in the form of a plate heat exchanger for each mercury abatement plant to enable the potential for the utilisation of recovered heat from the flue gas cooling process of the mercury abatement system. The heat recovery plate heat exchangers will be positioned local to the new cremator plant and will be designed capable of recovering approximately 100 kW, and suitable for connection by the client's appointed contractor to the crematorium's existing gas central heating and hot water heat recovery system, and thus reduce the building's general heating costs.

In developing our proposals for Blackley Crematorium our tender offer includes as requested by the ITT for all three cremators benefitting from FT's HIGH TECH long life blocked refractory lining systems. FT's HIGH TECH Long Life refractory system enables the crematorium to benefit from cremators that over the long term (15 years), will have significantly less downtime attributed to regular refractory relining, with a consequent increase in the revenue stream available from the crematorium. We can also advise that energy (gas) consumption is reportedly 5 - 10% less in our HIGH TECH long life refractory lined cremators when compared to standard traditional bricked cremators, which is also beneficial to the authority in the long term.

In making our proposals we have generated a design that has a significant space set aside for a future cremator and/or other form of future technology that may or may not be used. To ensure this space reservation is left free we have elected to locate our process ID fan at high level on a small, dedicated mezzanine, however it is so designed to be easily re positioned adjacent to the crematory rear wall at a later date creating an even larger space should the third device ever be contemplated.

Finally, in making this tender response, and specifically referring to areas of any ambiguity within your tender documents, we have sought to highlight the issues in question and have provided our comment to the relevant clause in an attempt to clarify the position rather than to modify your specification. These clarifications are included in the following section of this Tender response.

In making our tender response, we have compiled your ITT document, ref :BLACKLEY - Invitation to Quote - 8871-ENG-XX-XX-DO-W-0010. Our response refers to supporting responses, all attached marked with the relevant question number.

Additionally, in accordance with your ITT, we have made an assessment of the possible energy consumption of the proposed installation, based upon the scenario of 1,150 cremations per annum, equating to 3 or 4 cremations per day per cremator installed, or 23 cremations per week for 50 weeks. Clearly this is only one possible pattern of usage and we would advocate coffin holdover in an attempt to operate the cremators in a more efficient manner. An average cremation number of 23 per week could be undertaken by only using one cremator in order to minimise support fuel consumption.

A “worst case” scenario would be to use both cremators each day to undertake the 23 cremations per week as follows:

Contract Blackley Crematorium, Manchester, UK
 Contract No TS8126
 Comment Fuel Consumption Estimates for Cremator 1
 Operator Dami Solaru
 Date 27 January 2021

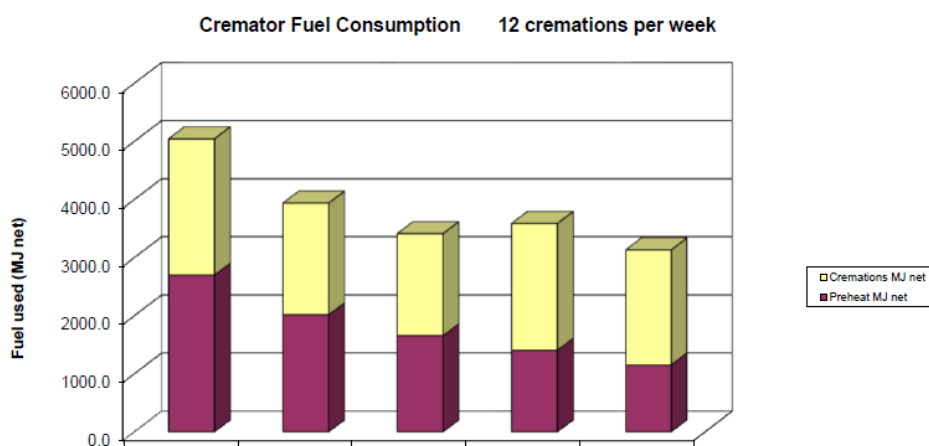


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Cremator type FTIII
 Cremator No. 1
 Cremations per week 12

Based on 2 cremations Monday, 2 cremations Tuesday, 2 cremations Wednesday, 3 cremations Thursday, 3 cremations Friday,

Fuel used		1 Natural Gas 0°C basis		
		MJ net	kWh net	m ³
Daily preheat	Total per week	8928	2480	244
	Average preheat	1786	496	49
Cremations, excluding preheat	Total per week	10179	2828	278
	Average per cremation	848	236	23
Cremations, including preheat	Total per week	19107	5308	522
	Average per cremation	1592	442	44



Electrical Consumption

	Cremations during day	Startup kWh	Cremating kWh	Closedown kWh	Total kWh
Saturday	0				
Sunday	0				
Monday	2	19	41	0	60
Tuesday	2	14	41	0	55
Wednesday	2	12	41	0	53
Thursday	3	10	61	0	71
Friday	3	8	61	0	69
Total	12	63	245	0	308
Average			20.4	15.4	25.7

This gives a predicted natural gas consumption of 44m³ per cremation. If all of the weekly cremations were carried out using one cremator, then consumption would be reduced to 21m³ per cremation giving a substantial reduction in fuel use and greenhouse gas emissions. True consumption will depend on the actual manner in which the plant is operated.

2.0 TENDER COMMENTARY

In making this tender response, and specifically referring to your tender documents and areas of any ambiguity, we have sought to highlight the issues in question and have provided our comment to the relevant clause in an attempt to clarify the position rather than to modify your specification. These clarifications are included in here in this section. We comment as follows:

Terms & Conditions of Contract

Our tender is formulated on the understanding that the Blackley Crematoriums Contract will comprise:

- NEC 3 Engineering and Construction Sub-Contract Option A – standard model clauses without modification – mutually agreed by both Engie and FTL
- FTL Tender

We have the following comments to make against the above conditions:

Payment Milestones including Offsite Payments.

FTL have in formulating our tender proposal based our tender pricing on the following schedule of payment milestones:

- 30% Initial payment with Official Purchase Order / Contract Award
- 15% Payable upon delivery of first FTIII cremator components to site
- 10% Payable upon delivery of second FTIII cremator components to site
- 15% Payable upon delivery of all major mercury abatement components (defined as bag filter compact coolers and air blast cooler)
- 20% Payable upon successful installation and practical use. (defined as Beneficial Use of Cremators through the Filter System)
- 5% Payable upon all staff training being carried out to the client's satisfaction.
- 5% Upon Official Handover and delivery of Operating and Maintenance Manual

The payment will be subject to retention as identified in any contract terms

Liquidated Damages

In the absence of formulated and agreed contract terms, we can confirm that our tender bid is made, on the understanding that a mutually level of liquidated damages can be agreed by all parties.

Facultatieve Technologies would offer a maximum liability based upon 0.25% of contract value / week, with a maximum liquidated damage is capped to a maximum of 2.5% of the contract value.

In applying any damages, the clause can only cover for delays arising directly from works carried out by Facultatieve Technologies Ltd, and not as a consequence of all other works which are outside our direct control – such delays will be logged on site.

Delays caused by events of force majeure are also excluded, including any constraints arising from the ongoing COVID-19 pandemic.

Indemnity and Insurances

FTL limitations of indemnity shall be taken to be the extent of our cover as detailed in our insurances covers.

Insurances

Details of evidence of the insurance covers Facultatieve Technologies have in place are provided attached in this this tender response. As clarification, our tender bid is made on the understanding that our PI cover is for £ 5 million in aggregate and not for one event.

Time

Access to Site and Site Working Hours

Facultatieve Technologies Ltd - Specialist Cremator Equipment Installation Works

On the basis of supplying the cremators to site in a partially prebuilt form to minimise disruption and our overall installation time on site, our tender is also based upon the ability to work on site during the day, during late nights and weekends as necessary. Our normal working day is up to 12 hours per days, seven days a week as the works dictate. This will enable us to install the equipment in the shortest time and minimise any disruption to the crematorium.

Work which must be conducted during the operational hours of the crematorium will be scheduled so as not to disrupt the services of the crematorium. All noise and disruption on site will be minimised and stringently monitored during the varying installation sequencings. Whilst carrying out any works on site the Health and Safety of the staff operating the new cremators will be not be compromised, as all major equipment and fixings will be either installed during the shutdown period of the weekend or even after normal operating hours where possible. Our tender sum and project programme is therefore based on the assumption that your permission to work to the above stipulated working days and hours will be granted.

Principal Contractor (CDM 2015)

Our tender offer is on the basis that the client's appointed (building) contractor will fulfil the CDM 2015 defined role of Principal Contractor on this project, and the Principal Contractor will provide continuous site attendances whilst FTL are on site throughout the works as required by CDM 2015, all as described in the ITT.

Performance Bond

Facultatieve Technologies can confirm we have detailed the value of a 10% bond outside of the offered capital tender sum.

We have allowed for a performance bond formulated in our standard wording as used by our bankers and surety ABN AMRO provided attached to this tender submission response for consideration by the Council. This bond format recognises our Dutch parent company and surety bankers and has been worded appropriately and has been accepted by several UK local authorities on our crematorium installation projects.

Facultatieve Technologies Ltd can confirm that our tender sum allows for the raising of a Guarantee Bond to a value not exceeding 10% of our gross capital equipment contract value for the duration of the installation, which will be extinguished upon equipment commissioning and handover. Based on this, the value of this bond has been included in the tender sum.

We would also clarify that our tender allows for the bond and its value to **only** cover the capital equipment provision element of the project, to be extinguished upon equipment commissioning and handover as detailed above. The guarantee bond we allow for within our tender sum is **not** intended to cover for the proposed 15 year All Inclusive Service contract value or its duration.

Parent Company Guarantee

As an alternative, to a Performance Bond we would be willing to provide a Parent Company Guarantee of our standard wording free of charge should it be required.



Cremation & Incineration Equipment

Other Clarifications

Existing Mercury Abatement Plant

The existing redundant mercury abatement plant is likely to contain contaminated and/or hazardous waste following its time of operation before its removal from service. Similarly, the heat exchanger circuit will contain an ethylene glycol water solution. Whilst our proposal includes for the material removal of the existing cremators and mercury abatement system, our tender sum excludes the removal and safe disposal of the spent reagent waste materials, and glycol water coolant. Until such time that the extent of any such contaminated waste can be assessed following on site test and analysis on instigation of the equipment removal phase, a cost cannot be estimated for materials disposal. We therefore propose these costs to be charged as an extra cost variation above the tender sum during the contract, should you require FTL to dispose of the materials, alternatively the Authority could arrange for disposal of these materials directly.

Asbestos on Site

Whilst our scope of supply includes for the removal of redundant cremation equipment, and all costs associated with the approved disposal, so upholding the council's duty of care, we assume that the Furnace Construction Cremators and associated abatement plant, flue gas ductwork, stack liners and all ancillary plant and equipment to be demolished and removed during this tender project will not contain asbestos materials.

Therefore, our allowance for the removal of the existing redundant equipment is based upon there being **no asbestos** present.

Further, we can advise that our tender proposals are based upon asbestos materials **not** being present in any areas or rooms of the crematorium that we intend to work within to perform our project works.

Consequently, we have excluded any surveys, testing work and subsequent asbestos removal and disposal works which we understand from the ITT is the responsibility of the client's appointed contractor. Prior to our start on site, we would require the client's contractor to perform an Intrusive Demolition Survey.

FTL reserve the right to amend both contract price and programme length should on inspection any asbestos materials be suspected or found during our project works.

Performance Tests

Function Testing

We can advise that after the cremator equipment has been installed and commissioning is complete, we will conduct our standard "in-house" equipment function testing procedure on the cremator-abatement equipment to ensure correct operation.

The above procedure does not include specific emissions testing of the abated cremator plant, however after the installation is complete and our function tests described above have

been conducted but before final handover, the installation will be offered for FORMAL emissions testing. (see below)

Formal Emissions Testing

Our tender scope of supply includes for emission tests on the abated cremator equipment at the conclusion of the installation. Our scope of supply also **includes** for annual EPA emission tests on the cremator-mercury abatement installation at the end of each operational year throughout the duration of the proposed All Inclusive 15 year service and maintenance agreement.

Failure to meet Performance

The plant can only be deemed a failure on completion of testing if there is a proven loss of beneficial use of the cremators and associated equipment.

Site visit

In compliance with the issued Invitation to Tender, Facultatieve Technologies Ltd can confirm that a visit to site has been to familiarise with any access constraints and to survey and assess the crematorium for the proposed installation of new equipment. During this survey reasonable investigations and enquiries were made to satisfy Facultatieve Technologies to the nature and extent of the project. However, we did not undertake any partial demolition or dismantling or destructive test work (such as core sampling of the concrete foundations), we therefore **exclude** any works subsequently identified as the result of not being able to carry out these activities beforehand at the time of tender.

Welfare Facilities

Our tender sum proposals are based upon FTL employees and our subcontractors' personnel being allowed to utilise the appointed client's building contractor's facilities for our nominal welfare requirements during the site works.

Storage & Laydown Areas

Our tender sum is based on FTL being allowed to utilise an agreed area (option2) of the appointed client building contractor's compound for use as secure storage and laydown areas for equipment components during the demolition and installation process.

Lighting and power for the works

During the installation of the cremators, it will be necessary for our personnel and sub-contractors to use equipment with a supply voltage of 240V transformed to 110V i.e. power tools and welding equipment. We ask that this be allowed to take place throughout the period of the contract. Safety precautions such as RCD equipment will be used.

Trade Certification & Safety Certification

All Facultatieve Technologies Ltd personnel and any chosen specialist sub-contractors attending site will hold suitable certification such as NICEIC and also Gas Safe Registration. Copies of these trade certificates, Safety Certificates/ Qualifications can be found within this tender response's support documents, together with our company's Training Log charting the training requirements of our staff which can be provided on request.