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BUILDING & ENERGY MANAGEMENT SYSTEM (BEMS)

FOR

CREMORNE ESTATE

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00	29 October 2021	Original Issue
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3199/003 Specification for BMS at Cremorne Estate	29.10.21	MW	MW

Contents

1.0 PERFORMANCE OBJECTIVES

The Controls Specialist shall be responsible for the complete design, supply, installation, testing, and commissioning of all controls and BEMS systems to all elements of the mechanical and electrical services.

The Controls Specialist shall design, supply, install, commission and demonstrate the BEMS installation in accordance with this document, related specifications and drawings, and provide training to the end users.

The BEMS shall allow ease of monitoring (user-friendly monitoring both locally and via the internet) and maintenance to all aspects of the District Heating [DH] system, by on-site Estates/Facilities Management. . This shall monitor district heating, domestic water including tanks, and all metering.

The BEMS shall be designed and installed to ensure optimum DH system and estate efficiencies will be achieved, and to facilitate safe operation to all aspects of the mechanical and electrical services installation at all times, in line with the Building Regulations, British Standards, local statutory authorities, and BSRIA guidelines.

The Controls Specialist shall ensure the design, supply, installation, testing, and commissioning of the mechanical services is in compliance and carried out within the clauses and parameters described within the specifications.

Graphics are to be tailored to RBKC specific requirements and must include metering feedback and historic and current energy usage at each significant element of the system.

The contractor is to submit Des Ops and graphics for approval.

Contractor to allow 2 days training for RBKC and Maintenance Term Contractor

2.0 DESIGN PARAMETERS

To comply and in accordance with:

The Authorities Requirements
Contractor's Proposal Documentation
The Design Parameters identified within each Section of this specification
Fire Strategy
Building Regulations
CIBSE Guides
All statutory requirements
All relevant British Standards

Sub-metering of energy use:
Apply the BEMS control to provide full control and monitoring facilities in accordance withBuilding Regulation Part L2A, and the BREEAM requirements.

3.0 SYSTEM DESCRIPTION

The following Building & Energy Management System descriptions are not intended to be an exhaustive or detailed specification of the complete installation. The following section outlines the performance and minimum requirements for a BEMS and mechanical plant controls. The Controls Specialist shall be responsible for the detailed design, supply, installation, testing, and commissioning of a complete BEMS and controls to **all** mechanical and electrical plant and services, to ensure the above mentioned performance objectives are met – and allow for all costs accordingly in the

Tender return.

The Contractor shall provide cost options for a generic Trend based system as follows:-

A programmable open-network type Building Energy Management System (BEMS) of scaleable/ modular design shall be provided. The BEMS shall be capable of being remotely accessed via theInternet for revision of the set points, time clocks, monitoring and recording of the system.

On-site revisions of set points, time clocks and monitoring of the system shall also be possible viaPCs.

The system shall be interfaced with the fire alarm and security systems.

The performance of each element of the controls system shall be as described within each sectionof this specification and also below:

Note that every system, item of plant and equipment described herein must be represented on the BEMS software and also on the relevant control panel. The panels will allow for the incorporation of all starters, hand/off/auto controls for each item of plant, together with run, trip and fault lamps for all equipment. The BEMS software will provide a graphical interface through which every system and item of plant, equipment, meter and all sensors will be indicated together with its current status, output, etc providing the facility for interrogation and the adjustment of every setpoint.

Fire Alarm Interface

Under a fire alarm condition all the mechanical plant will stop safely (with run on facilities as required to dissipate residual energy). Control of the ventilation plant will be transferred to the fireman's override panel and the alarm will be registered on the BEMS. Once the fire alarm has been reset, the mechanical plant will start safely, control of the ventilation plant will be transferred back to the BEMS (assuming the switch is in the auto position). The BEMS will incorporate an input from a key switch adjacent to the fire alarm panel, which will isolate the whole of the mechanical plant from the fire alarm system to allow testing to take place without disruption to the mechanical systems.

Control Panels

The panels will be provided with a fascia mounted digital keypad controller which will allow the interrogation, set up, adjustment and control of all systems. In addition, the panels will also contain a modem (for dial in / out connection to a remote PC), an RJ45 data outlet and a switched power outlet to allow the connection of a laptop computer for interfacing with the BEMS.Panels shall be suitably IP rated for the external environment.

All sub-main power wiring from the main switchboard to the mechanical control panels shall be provided and installed by the electrical sub-contractor. All final power and control wiring between MCPs, outstations and fixed M&E equipment shall be provided and installed by the controls specialist in accordance with the relevant clauses in the electrical specification.

Primary containment shall be provided by the electrical contractor as indicated on the Electrical Engineer's design drawings. The controls specialist shall be allowed to use the LV primary containment for controls and power cabling where it is suitable to do so. Any additional or secondary containment required for cabling provided by the controls specialist, including basket, tray, conduit etc shall be provided and installed by the controls specialist.

Additional control panels and outstations shall be provided local to plant areas as required by the controls system designer, to interface with the central BEMS. The provision and locations of additional panels and outstations is to be agreed with the architect and the engineer.

Every system and item of plant shall be represented on the BEMS software and also on the relevant control panel. The panels shall allow for the incorporation of all starters, hand/off/auto controls for each item of plant, together with run, trip and fault lamps for all equipment.

The BEMS software shall provide a graphical interface through which every system and item of plant, equipment, meter and all sensors will be indicated together with its current status, output, etc providing the facility for interrogation and the adjustment of every setpoint.

The Contractor shall supply the complete system ensuring there is provision of a web-based representation of the BEMS to allow remote access of the central control system via the internet. This shall be provided with suitable encryption and password protection.

Cabling shall be installed in addition to the BMS cabling generally following the route of the external pipework to provide connectivity from the boiler house to all blocks. This is for future connection to the dwellings in addition to new plate heat exchanger plant rooms adjacent to blocks.
Contractor to allow for seasonal commissioning, metering. Block metering, capacity for dwelling metering.