

## **NOC Estates Guidance for Consultants & Contractors:**

### **Control Systems for the National Oceanography Centre, Southampton**

#### **BMS System**

NOC Southampton operates a building control strategy, which must be followed for all project works.

There is a building control strategy at NOC Southampton. This strategy is to be followed for all project works.

#### **Building Control System Design Rationale**

The building management system is a Siemens system. An overview of the topology is follows:

An Ethernet “backbone” runs through the building with dedicated IT sockets being located within each of the Node main MCC panels upon level 7, Ground Floor Node 10 plantroom and adjacent to each of the four Siemens Desigo BMS PC’s including a socket for the dedicated BMS server backup in the IT suite.

From each of the main MCC’s an LON communications network drops down and through the building and connects to a number of field BMS panels as follows

Node No.1 – 5 x BMS control panels	Node No.6 - 4 x BMS control panels
Node No.2 - 4 x BMS control panels	Node No.7 - 9 x BMS control panels
Node No.3 - 2 x BMS control panels	Node No.8 - 6 x control panels
Node No.4 - 5 x BMS control panels -	Node No.9 - 6 x control panels
Node No.5 - 6 x BMS control panels	Node No.10 – Outbuildings - 10 x control panels

Please refer to attached BMS topology for further details.

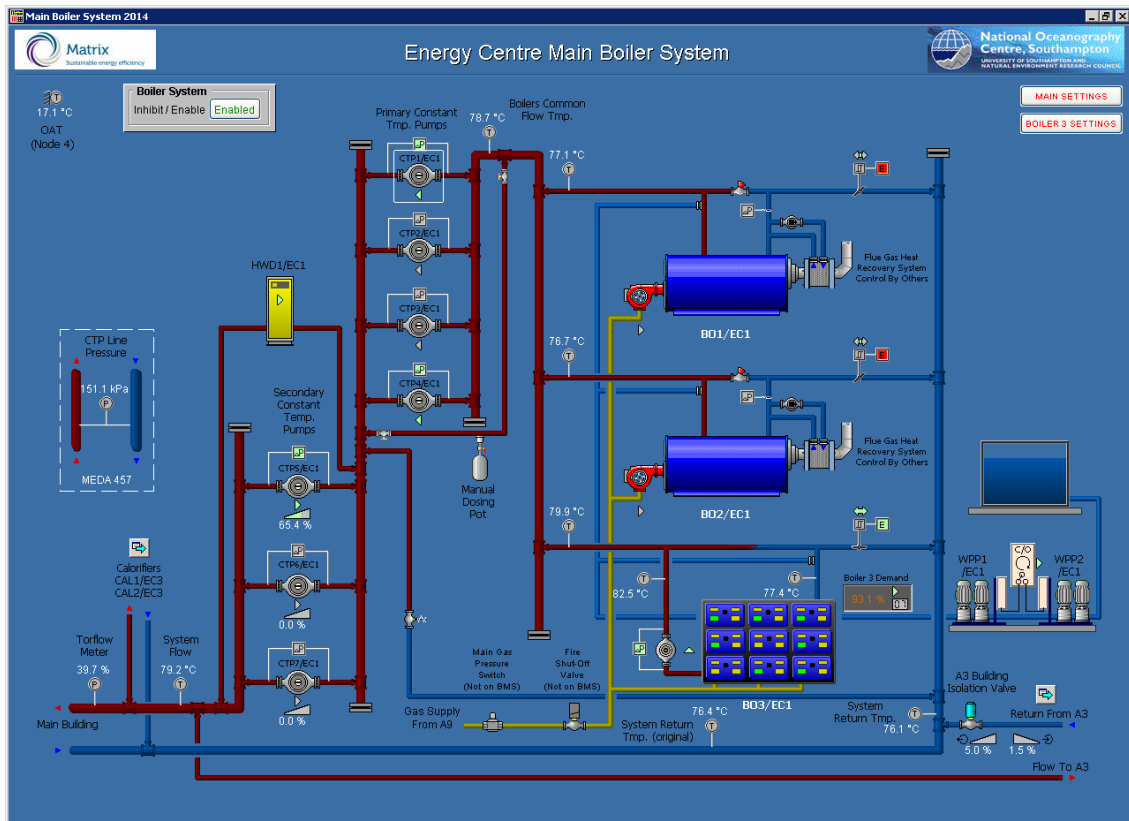
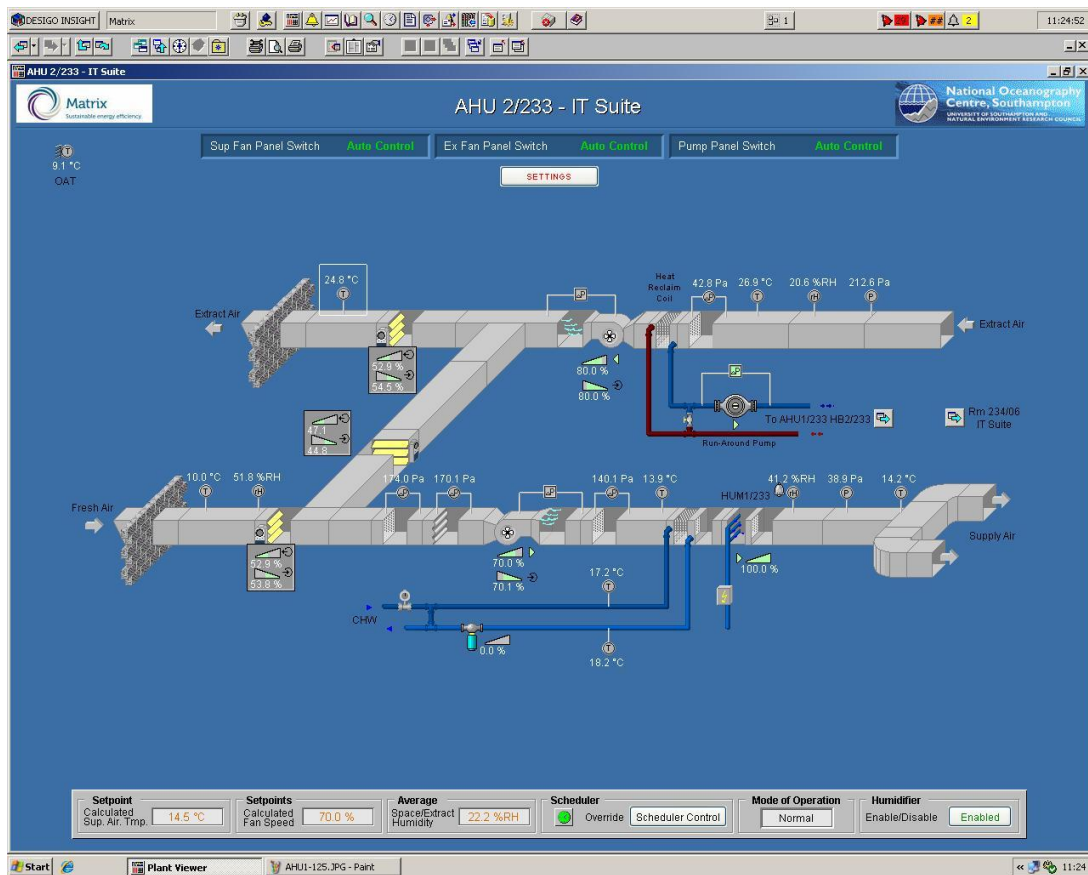
The control system is a Siemens BMS that comprises of “Siemens Desigo” heads end PC’s and a mixture of Siemens PXC modular and compact controls which have Modbus integrations to both the York generator and Riello UPS system and a BACnet integration to the York Chillers, Web licences are also incorporated upon the Desigo headend PC’s.

The BMS software is a Siemens Desigo System (currently running Ver 6.1) The software allows a graphical interface between the controlled kit and the Estates team. The design methodology for the graphical interface can be summarised as follows:

There are in excess of 200 x graphical pages that are utilised to give a graphical representation of the buildings plant. The majority of these pages showing air plant are engineered in a 3D format whilst pumps and pipework is shown in a 2D format. From main graphic pages a number of “jump tags” exist that allows the user to monitor and alter such items as set points / time & temperature schedules etc. depend upon the user authority they have been assigned.

When generating graphic pages a strict standard should be adhered to, examples of which may be seen in the following table:-

## Examples of BMS Graphic Pages



The incumbent contractor that maintains the system at NOC Southampton is Matrix Control Systems. Contact details available on request to the NOC Estates office.

**Items for consideration:**

- The building management system controls all major fixed mechanical and electrical services associated with the control of the building. It is not intended as a system for the control of scientific equipment
- All new systems/services associated with building control should as standard be placed onto the BMS for control and monitoring purposes unless otherwise agreed with the client
- All controls and graphics to complement the existing BMS. All plant graphics are to be displayed in 3D to match existing unless agreed otherwise with the client
- All new BMS equipment to be Siemen's manufacture
- Any modifications to existing or inclusion of new MCC's will follow the existing site standards regarding its construction, fascia layout and philosophies. All new inverters should in general be located within dedicated sections of their associated Node main MCC panel – level 7
- Unless local capacity does not allow, all power to be taken from the local MCC panel not local distribution boards.
- All invertors for key mechanical plant should be located in the invertor cabinets on the nodes on level 7.
- All fume cupboards are required to have a 'common alarm' as high priority on the BMS of fume cupboard failure.
- Thermostatic control of building areas should be via the BMS. Local thermostats or adjusters for use by room occupants should not be installed unless agreed with Estates.
- All cable runs are to be cleated and bolted to approved BMS colour coded cable trays. Plastic cable ties are not permitted.

## **DMS System**

NOC Southampton operates a fire system strategy, which must be followed for all project works.

### **Fire System Strategy**

The fire management system is an Apollo Discovery system. An overview of the topology is follows:

*5 in total Fire Alarm Panels – Advanced MX4000 series*

*7 in total Repeater Panels – Advanced MX4000 series*

*17 Loops in use with 123 zones programmed.*

*Front end Graphics Software within security control room.*

The incumbent contractor that manages the system at NOC Southampton is Premier Fire and Security. Contact details available on request to the NOC Estates office.

### **Items for consideration:**

- Consultants must contact the incumbent contractor to discuss project requirements to ensure these are clearly defined **before** the specification goes out to tender.
- All heads and devices need to be added to the local loop. No crossing of loop boundaries.
- No foreign devices – all devices to be Apollo Discovery protocol.
- All heads to be smoke unless specified as heat and agreed with the client
- Creation of all new areas needs to consider the requirements for new devices
- No addressable loop sounders –Fulleon Roshni 24vdc sounders are to be used unless agreed with the client
- No beacons unless specified by the client
- All works to allow for update to the DMS graphics including provision of electronic CAD drawings for update works
- Containment to match existing.
- Cause and effect for any interfaces need to be agreed with the client.
- All new works or alterations to the existing system are to meet the requirements of BS5839 pt1 2013.

There is a fire system strategy at NOC Southampton. This strategy is to be followed for all project works.

### **Principle contractor/consultant sign off**

*I confirm that I have read and understood the client requirements associated with any modifications to the NOC Building Management System and Fire System. I also acknowledge that modifications that go against the building standard described above, without written consent from NOC Estates, are not permitted. I understand and accept if unauthorised modifications do occur \_\_\_\_\_ may be liable for the full costs of follow up remedial works to return the installation back to building standard.*



*Name:*

*Company:*

*Date:*

*Signed:*