

Case Study

Global Bank, Canary Wharf

Overview

This project, in one of the large financial institutions based at Canary Wharf, was to replace the obsolete and unreliable generator control system and 'load management' system which was installed at base build.



Sector/Location:
Financial, London UK

Size:
n/a

Timescales:
2017-2018

Value:
£600k

Design and install a replacement PMS system and integrate in an occupied building

The system synchronises 6no 11kV generators and manages the load breakers on 11kV distribution switchgear and LV substations.

The load management system is designed to control 100 points throughout the building

The primary function of the PMS system is to automatically transfer load to generator power, after failure of one or both Utility supplies. The PMS system will sequentially energise the load transformers thereby minimising inrush currents, during failure recovery and restoration scenarios, and reenergise the LV switchboards sequentially to a priority table. The system also interfaces with the ComAp generator control system and the EMS and BMS systems on site

The control system network is based on a Fibre to Ethernet TCP/IP and Modbus over Ethernet protocols. The physical network communications are achieved using Managed Fibre to Ethernet Network Switches configured in a dual redundant ring configuration. ▶

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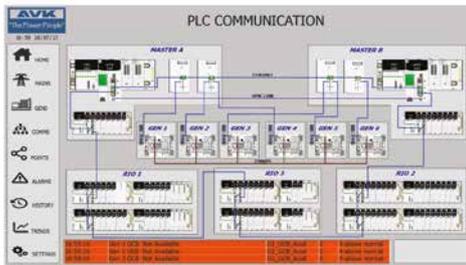


Implementation

Following a period of collaboration and multiple design workshops with client and representatives, the FDS was developed and agreed.

The control panels and I/O outstations were built in our panel building facility, and a bespoke test panel was also built to mimic the switchgear.

Following completion of a full controls FAT the system was delivered to site and integrated using a clear migration strategy to always maintain building resilience.



System highlights

- **PLC:** Schneider M580 hot standby using Ethernet TCP architecture to communicate with remote IO and intelligent devices. Ethernet Cat5e synchronising link between PLCs. RIO and DIO scanning.
- **I/O and remote I/O:** Schneider X80 system using RIO scanning. The dual Ethernet network connection port on each drop adapter allows Daisy Chain Loop connections using the RSTP protocol (Rapid Spanning Tree Protocol) Remote IO Panels
- **Controls and Communication:** Control of the entire system is carried out by the PLC via the fibre LAN networks. The remote I/O panels communicate with the master plc via a Schneider system that extends the PLC rack over an Ethernet network. This allows for high speed and delivery critical messaging between the PLC and the RIO. Each remote panel contains dual I/O racks that have on-board fibre converters to link to the network. The touchscreen HMIs connect into the switches mounted on the RIO rack and communicate with the system via the on-rack switches. This allows the system components to prioritise PLC to I/O traffic over that generated by the HMIs.
- **HMI's:** 4no Fanless 21.5" Wide-Screen Industrial Panel PC with Intel® J1900 Quad-Core™ Processor located at strategic points in the building. System also connected to 43" screen in BMS room for visibility

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