

CASE STUDY CAW-013

POWER MANAGEMENT AND MONITORING SYSTEM FOR SATELLITE TV COMPLEX.

SCOPE OF SUPPLY.

Control System Design,
Network Design and Implementation,
Generator Interface Protocols,
UPS Interface Protocols,
Mains Metering Protocols,
Software for 4 new PLCs,
Modifications to 3 existing PLCs,
Software for 4 new HMIs,
New Win-Energy overview system.
GSM - SMS alarm system,
Simulation and Training,
Sitework and Commissioning.



SYNOPSIS.

This Satellite TV provider has a complex of several units across an industrial park, all with critical power requirements. Weirgrove Automation implemented PLC systems in each unit for control and monitoring of switchgear, generators, metering and UPS systems. Each unit is provided with a local touch-screen HMI that displays and logs all local events and alarms, it can also view status of adjoining units.

A sitewide fibre-optic TCP/IP network is also configured to a central PC based Win-Energy overview system, which displays graphics and trends and also records alarms and events.

A GSM modem is connected to the system and alerts facilities managers in events of significant alarms, and the Win-Energy PC is web-enabled to allow remote viewing of status and alarms from anywhere in the complex.

TECHNICAL DESCRIPTION.

At the unit level Profibus and Modbus networks are configured to Siemens S7-300 PLCs. The modified Mitsubishi PLCs and Siemens mains quality meters are integrated via Profibus, the generators and UPS systems are integrated on Modbus. All local systems, including the MP370 Touch-screen interfaces are powered from the DC tripping batteries.

(See CAU-004 and CAW-011 for details of typical PLC controlled LV power schemes).

Switchboard control schemes were automated with PLC control using sophisticated programming techniques to give maximum plant availability, even under fault conditions.

Dedicated hardware based simulators were built in parallel with the actual projects and used to test software and train operators. These simulators were eventually installed in the units and are regularly used by operators to rehearse complex switching operations at no risk to the existing supplies.