Power Plant – Electronic Power Management System
Advantech co-developed an electronic power monitoring and management system together with the client in order to abide by the customer’s global industrial IT standard. The system, which combines monitoring, control and management functionality together as a whole, primarily operated in the power-plant grade Man Control Cabinet (MCC).

Project Introduction:
This is an industrial workstation ODM project of a power management system for the leader in power and automation technologies. The system features all in one power system monitoring, control and management. It is mainly used in power plant-grade Man Control Cabinets (MCC) in substations, and also provides the transparent, standard communication and data transmission interface for the host supervisory system.
Advantech products used in this project:
AWS-8150G

Project Background:
◆ Customer Inquiries:
  ● Web-based browser mechanism, in which users can monitor system operation through an Internet browser.
  ● Features local and remote control mode switching function, and provides a transparent browser mechanism to the host SCADA system.

◆ Customer Requirements:
  ● Visualized a configuration design tool that allows customers to construct system architecture and communication topology directly based on their requirements.
  ● User-friendly interface for relay, operating parameters, alarm… etc.
  ● On-line browsing, maintenance, remote control, remote data collection and dispatching.
  ● To be able to record and display various real-time simulation data (including electric current, voltage, frequency, power, etc.) and to output daily/monthly/quarterly/annual reports, and trend diagrams.

Project Implementation:
◆ Advantages of Advantech Products:
  ● Advantech’s AWS-8150G is a 15” TFT LCD workstation, with a two-piece design (integrated or separated LCD panel & control chassis), which offers a seamless interface between human and machine. Users can use the touch panel to control and monitor power on/off without physically go to the power management system.
  ● The MCC provides local/centralized control platform to carry out all control and monitoring through different levels of authorization.
  ● The MCC features an independent event handling and alert management mechanism, which displays event and alert records.

◆ Customer Benefits:
  ● System structure is a client/server design, with flexible deployment according to customer’s requirement.
  ● Achieves real-time handling of Sequential On Event (SOE) and various test values, through Real Time Data Base (RTDB).
  ● Powerful equipment management function.
  ● Using MicroSoft ® power control software and a visual configuration tool, system architecture and data transmission topology have been constructed according to the user’s requirements.
**System Diagram Description:**

- The Man Control Cabinet (MCC) is based on TCP/IP technology; communicates with the host PC (SCADA) through optical fiber or RJ45 Ethernet interface. The host PC is able to use the Man Control Cabinet’s API (Application Program Interface) to easily transfer data to the relay protection equipment on the client. The maximum number of power management system which one Man Control Cabinet system can control and monitor is 80 units.

- The Man Control Cabinet is compatible with the client’s relays, supports SPA and Modbus protocol; the communication carrier can be optical fiber or copper coaxial twisted cable.

- The maximum distance between the relay and the Man Control Cabinet system is 1.2 Km, and the maximum distance between the Man Control Cabinet system to the host PC (SCADA system) is 2 Km (not including any relay equipment).

- The AWS-8150G is an industrial Workstation with a 15” TFT LCD, 9 expansion slots and an XGA resolution of 1024 x 768. With a two-piece modular design, the LCD display and chassis can be separated for easier installation in rack, panel or wall mount in case of space concerns.

- The AWS-8150G has a Pentium® 4 2.4GHz CPU, 512 MB of RAM, a 10/100Mbps Base-T Ethernet LAN card and uses the MS Windows® 2000 OS. It also features a front panel special design (with built-in touch pad, USB port and floppy drive) that makes maintenance simple, and has a hinged rear door for easy access. It provides vibration protection up to 1 G, with IP65/NEMA 4, and features an aluminum front panel and stainless steel chassis.