A Sierra Monitor Company

Case Studies

Siemens MXL/Modbus -- Offshore Fire Detection System

On a production platform it's imperative that the operators, in charge of the platform, know everything taking place on the platform. Along with the process operation, fire protection information is also needed.

The BHP Angostura platform in Trinidad consisted of several MCC Switchgear buildings. To insure that an event in one building wouldn't compromise the fire protection in another other building, each building had its own independent fire alarm control and suppression releasing panel. Additionally the living quarters for the platform also incorporated a standalone fire alarm control and releasing panel. Each of these panels interfaced with the platforms shutdown system digitally. When it comes to controlling the shutdown process digital communications provides the most reliable means of communicating between two pieces of equipment that don't speak the same language. This however isn't the most cost affective method for providing the operators on the platform information about the fire alarm control and suppression panels.

BHP Billiton decided, at the start of the project, to standardize on one brand of fire alarm equipment that could communicate over a common network. The brand of equipment chosen was the Siemens MXL series of equipment. While the MXL networking configurations permit events from one panel to initiate events in another panel it was felt that for reliability reasons this would not be acceptable. BHP's objective was to network the systems and display the status of the devices associated with these panels on a wide screen HMI display (see figure 1)

Advantage Interests Inc. Fire Protection Company was chosen to install the Siemens MXL system and interface it to the HMI.

As most fire panels don't communicate using a typical communications protocol, a solution was needed that would translate the MXL language into Modbus so that the equipment controlling the HMI could display the status of every device associated with the fire alarm control and releasing systems. To provide this translation a gateway, manufactured by FieldServer Technologies was selected. FieldServer was selected due to their reputations for reliable protocol translators with a wide variety of manufacturers. This method offered a far more cost affective approach as well as the backing for a company whose business it is to write protocol translators.

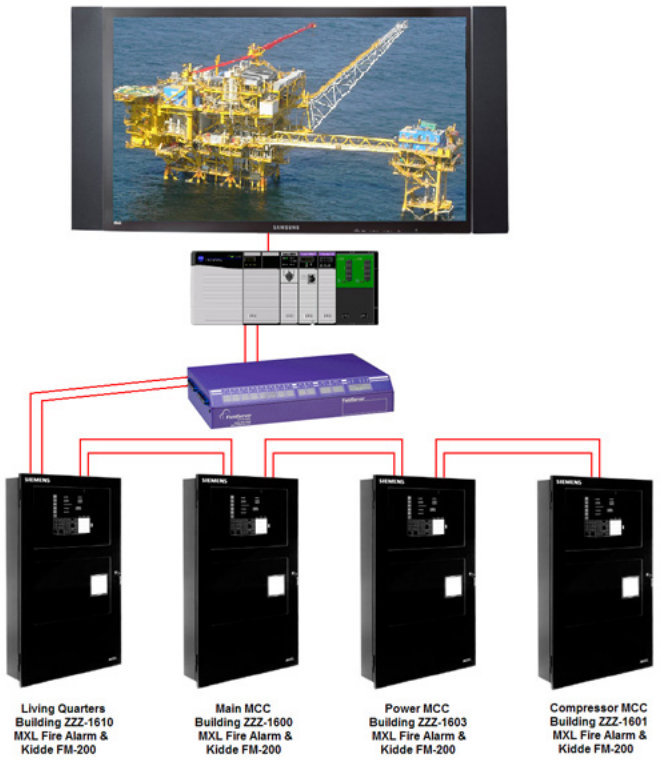

Figure 1

The design consisted of separate MXL panels located in several MCC Buildings and the Living quarters. Each MXL panel was networked together in a redundant configuration, Style 7. This ensures that the should a single cable be damaged, the MXL network could still communicate with all of the other MXL panels.

Siemens provides for a seamless communication between MXL panels. The difficult part is getting this information into the platforms Distributed Control System (DCS) and then to the Human Machine Interface (HMI). While the FieldServer can be configured for "Hot Standby" BHP felt this wasn't necessary and opted for a single FieldServer with redundant serial links between the MXL, FieldServer and the DCS. The FieldServer can translate protocols from a variety of different equipment including the MXL, and output this information to other equipment in a variety of protocols. For this application the protocol of choice would be Modbus RTU.

To facilitate future modifications to the MXL systems, the FieldServer was configured to translate all information within each MXL panel to Modbus. This would allow any future changes to the MXL systems to be converted to Modbus without the need to reconfigure the FieldServer. While the FieldServer isn't able to read logic within the MXL, the programs within the MXL's were configured to facilitate the transmission of logic within the MXL panels to the FieldServer.