

Petrobras lowers lifecycle costs with System 800xA and IEC 61850

As presented by Ronaldo de Magalhaes at the ARC Forum February 2008

Petrobras is an energy company that serves in Brazil and abroad with over 100 platforms, 16 refineries, and 6000 gas stations. Its vision is to be one of the five largest integrated energy companies in the world by the year 2020. Petrobras is investing over 100 Billion USD over the next five years improving and streamlining their infrastructure.

Problems

Petrobras is faced with many challenges as it expands its Substation Automation (SA) infrastructure. They need to integrate new substations with legacy Power Management Systems (PMS). The PMS functionality and data need to be shared with both the new and legacy systems. At the same time, they are looking for better performance, reliability and system information.

Solution

Petrobras adopted IEC 61850 technology. It is an Ethernet-based global standard for communications and system architecture in Substation Automation and Power Distribution Systems. Published in 2004, key companies like ABB and other major electrical equipment suppliers provided valuable input to the IEC 61850 Standards Committee. IEC 61850 provides a flexible and open architecture for interoperability among Intelligent Electrical Devices (IEDs), virtualized modeling of logical devices and a common IED configuration language. It



allows for easy expansion of new IEDs in the network. With its Ethernet technology, it is easy to connect to an HMI.

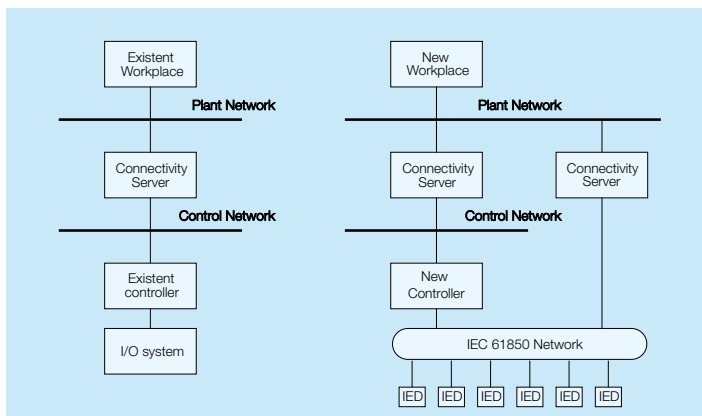
Challenges

Even with the new technology to solve their infrastructure issues, Petrobras had to deal with some barriers and challenges. These barriers included executing multiple projects simultaneously, training employees and suppliers on the new technology and a paradigm shift. Petrobras will now have network communications on substation automation systems with critical interlocks.

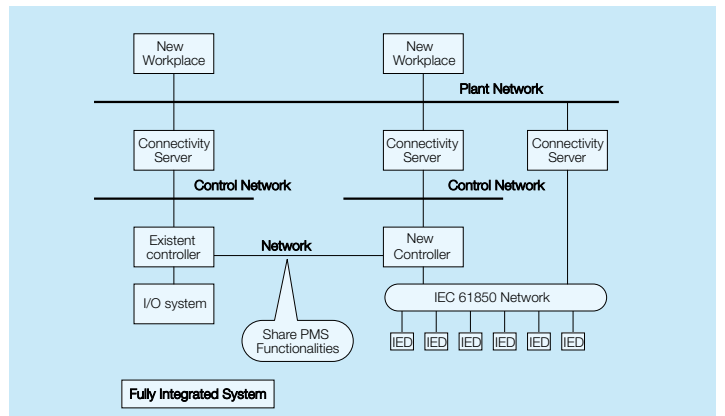
ABB's solution: IEC 61850 Connect

Petrobras implemented ABB's System 800xA to provide a unique and open concept with one IED technology, one library, one control system, and one common IEC 61850 engineering toolset. ABB's solution adds value to the actual assets for the total life-cycle. ABB's control systems are designed for easy evolution and it has a state of the art concept for substation automation.

Petrobras before System 800xA integration



Petrobras after System 800xA integration



Benefits

There are many benefits of using ABB System 800xA and IEC 61850 technology. IEC 61850 Connect is more than just another protocol. It allows interoperability among IEDs from different vendors to work together. It has a standard data naming convention, self describing devices, virtualized modeling of logical devices, and a common language to configure devices. As a result, project engineering and commissioning time is reduced. Operational costs are minimized with fewer assets, spares, protocols, and wiring. Energy costs can more easily be managed and reduced with a unified system. With a common platform, end users experience lower maintenance and life cycle costs, capital cost savings, and efficient engineering by integrated project teams. Electrical and Automation Integration with System 800xA provides a central point for ERP system access, a central data historian for critical data collection, as well as a common alarm and events list. Extended Asset Management capabilities enable both process and electrical condition-based monitoring to be done with one system