Middle East Electric Company – Motorola's Gateway to Innovation

By Shlomo Scop, Marketing Manager,
MOSCAD Products

A Middle East Electric Company is the sole supplier of electricity for its entire country. It is involved in all phases of the production and distribution process. This includes electricity production using various types of generators (coal, gas turbines, crude oil, etc.); transmission of electricity over very high voltage lines (110 kV, 160 kV and 400 kV); reduction to medium voltage lines (11 kV , 22 kV and 33 kV); and distribution of the electricity through regional transformers.

Innovation

The company has traditionally taken a very hi-tech approach towards SCADA, always purchasing the most advanced equipment available. For over 20 years, it has operated SCADA systems of various manufacturers. For the past 10 years, Motorola has taken an active part in the company's innovative approach to designing and operating remote control systems. This article outlines some of the highlights of this activity.

1) Six years ago, the electric utility decided to start remote monitoring of its medium voltage lines (11 kV, 22 kV and 33 kV). Motorola was chosen as the supplier for a system that can monitor disconnect switches mounted on pole tops. To date, approximately 300 INTRAC (the previous generation of Motorola SCADA products) and MOSCAD RTUs were supplied. Four VAX computer-based control centers (each located in a different part of the country) provide wireless control of the RTUs. The company plans to add another 500 - 1000 RTUs in the next two years.

2) 15 years ago, they purchased a Landis & Gyr SCADA system to monitor the regional control centers located throughout the country. The system includes computer centrals and approximately 150 RTUs. Each of the RTU's located at the substations have 500-1000 I/O points for controls, sensors and measurements.

Recently, the company decided to expand the system using Motorola MOSCAD RTUs. To provide an effective communications solution, Motorola developed a special gateway computer. The gateway enables communications between the MOSCAD units (that use the MDLC communication protocol) and the Landis & Gyr SCADA control center.

3) Due to the rapid addition of urban centers in the country the company is often required to supply medium voltage electricity (22 kV) before the desired substation can be manufactured. When this is the case, it supplies a mobile substation: a 30 MW transformer mounted on a vehicle. The mobile substation supplies 22 kV electricity to the new neighborhood, after being connected to a very high voltage line (160 kV). The mobile substations must be supervised by the SCADA system. However, there are usually no communication lines in the vicinity of the vehicle. The MOSCAD RTU was found to be the ideal solution, allowing wireless connection to the SCADA system via radio. The connection is made to the gateway computer mentioned previously.

4) Since the country is not connected to the power grid of any of its neighboring countries, the utility operates gas turbines (located all over the country) for additional production capacity when demand is unusually high. These turbines must be ready to operate immediately at all times. The gas turbines are remote controlled by MOSCAD RTUs, connected to the SCADA system through the gateway computer.

5) Motorola has supplied this electric utility with many other leading edge SCADA solutions, in addition to those described previously. This includes remote meter reading via radio, remote control of underground facilities, alarm reporting (transformer overheating, over-current on very high voltage lines), and many other applications.

Beneficial to Both Sides

In summary, the cooperation between the utility and Motorola has proven to be successful for both parties. Motorola has had the opportunity of learning the needs of the market, while developing state-of-the-art solutions that have been sold worldwide. The company has taken delivery of various products that were developed specifically for their own needs.