

ABSTRACT

Supervisory Control And Data Acquisition (SCADA) systems are very important to the operations of factories and industry plants. These systems have to be robust and provide extremely high reliability and availability. SCADA systems provide an entire picture of plant operations via its Human Machine Interface (HMI) screens. The HMI will be installed on computers which are used by operators. Operators via the HMI will be able to monitor, control and acknowledge alarms of plant processes.

This document will look at a design of a SCADA system that uses the Internet and web technologies. The design will look at how plant equipment such as Programming Logic Controllers (PLC's) and Remote Terminal Unit's (RTU's) can transmit data via the Internet as a communication channel. The Internet is a public domain. The best available security protocols and encryption techniques will be explored and incorporated in the design. Web services and Extensible Markup Language (XML) is the choice of design for retrieving and inputting data into a database. The design will use a simple web page that can act as the HMI. A partial implementation of this design will be carried out and tested. The implementation will focus on retrieving pressure values from a database every ten seconds by making use of a web service. The web service will present this data in an XML format which will then be parsed to the HMI screen. The development environment used is Visual Web Developer 2008 Express Edition.

An Internet Based SCADA system has the advantage of saving huge costs. Many traditional SCADA systems use radio frequencies for communication. Radio towers and devices are costly

and have to be maintained for its life cycle. An Internet based system will allow authorized users from anywhere in the world to access plant information. Corporate users will have the added advantage of easily accessing critical reports once they have an Internet connection.

The main tool used for research was the Internet. Also I am currently functioning in a SCADA environment for the last three years in my workplace which aided my direction with the design.