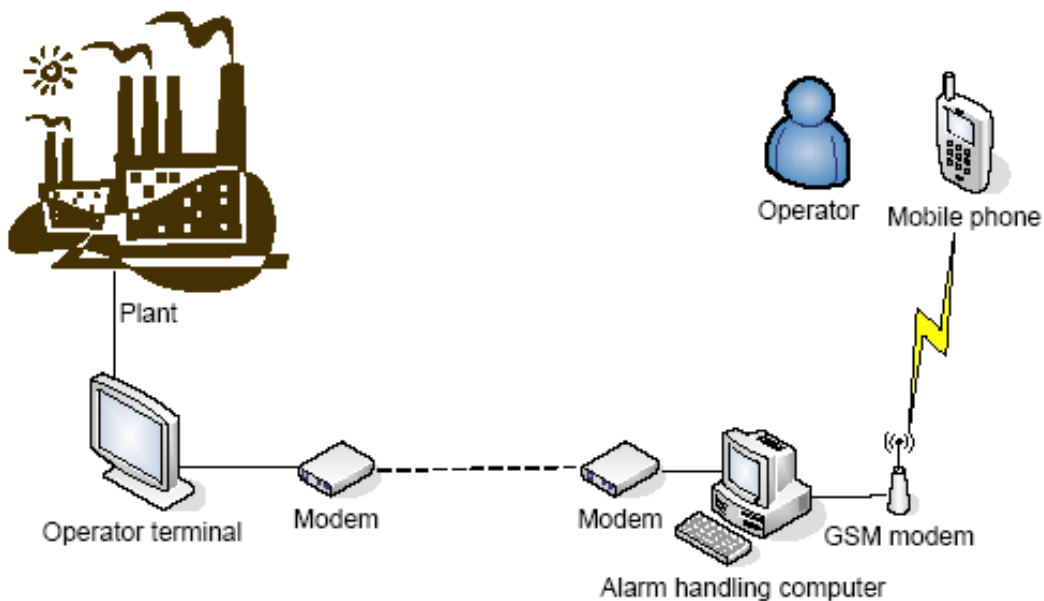# Centralised Alarm Distribution

Introduction

Beijer Electronics are often approached by their customers with questions regarding communication with their automation equipment. This involves the possibility to send alarm reports by Short Message Service (SMS) to the technical operator on call or to be able to interact with decentralised equipment from a remote computer through internet or connection over Point to Point Protocol (PPP). To illustrate this we now consider the following scenario:

Not far from Oarp there is a pump station that supplies the immediate area with fresh water. The pump station is equipped with a number of Programmable Logic Controllers (PLC) controlled by an operator terminal. The operator terminal is connected to a modem with the possibilities of connecting to the internet or establishing a PPP-connection.

If an unexpected event occurs at the pump station the terminal connects to the internet and transmits a report with information about the event through e-mail to the operator on call. The operators take turn being on call one week at a time using a rolling schedule. Since the reports are sent through e-mail the operator on call has to

constantly monitor his or her e-mail client. If the event occurring at the pump station requires any sort of action from the operator he or she has to physically get to Oarp. The limitations with this concept are obvious and directly affect the well being and general happiness of the operator currently on call.

If, instead of receiving an e-mail, the operator gets an SMS with the alarm report he or she would be able to move freely as long as his or her cell phone has network coverage. If the event at the pump station doesn't require a manual intervention but simply an adjustment of some parameter it would be preferable if the operator could connect to the pump station remotely using a computer and change the parameters. Or why not even allow the operator to use a handheld device with General Packet Radio Service (GPRS) capabilities?
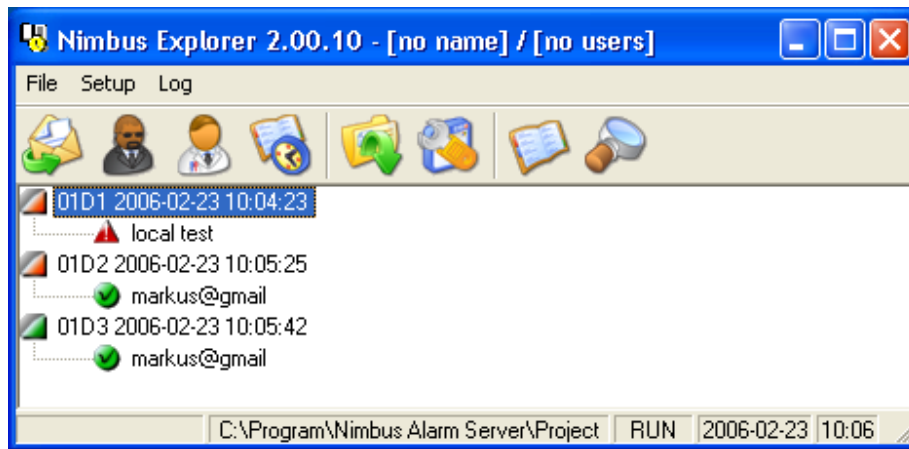
Equipment

The E-1070 is an operator terminal by Beijer Electronics AB. It can be configured to trigger alarms for certain conditions and send those by e-mail to a predefined recipient. Since the terminal is unlikely to be permanently connected to the internet it can establish a PPP-connection using a modem attached to the terminal when necessary.

A GSM modem can be used for the purpose of sending and receiving SMS, or instead of a conventional modem for establishing a PPP-connection.
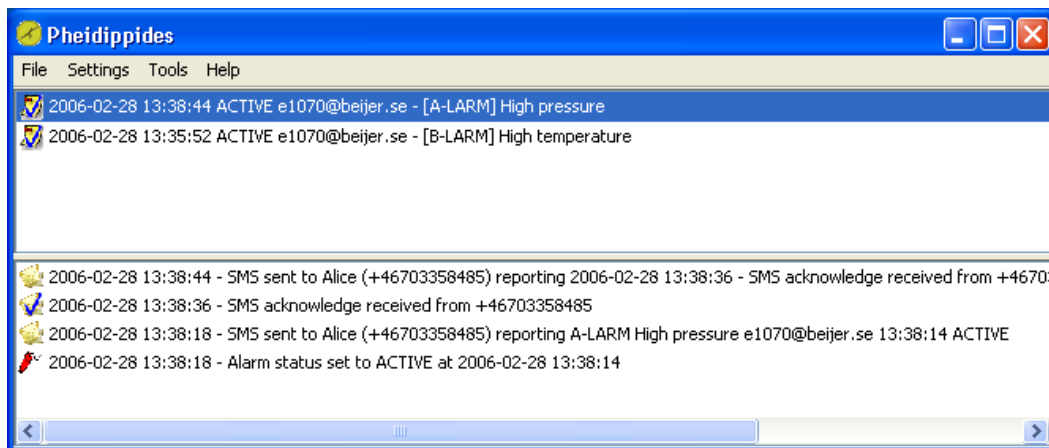

Our solutions

We have constructed a solution for receiving alarms from an E-1070 operator terminal and distribute them to operators on call by SMS with the use of a GSM modem. First we used an existing application, Nimbus Alarm Server by TroSoft HB, and then we developed our own, Pheidippides.

Nimbus Alarm Server is an advanced application that integrates well with larger facilities with Supervisory Control and Data Acquisition (SCADA) systems. It can be used to fulfil the scenario, but the configuration is quite complex and the price range may be out of scope for many small businesses.

As an alternative we have developed an application named Pheidippides, designed specifically to fulfil the scenario. For smaller businesses Pheidippides is probably a better alternative. It has a user interface that is easy to understand and is also provided for free.

Much emphasis has been put into making documentation for setting up the solutions. The documentation provides step-by-step instructions for setting up the applications, the operator terminal and Windows XP. The instructions cover communication between the terminal and computer over both Local Area Network (LAN) and modem using PPP-connection.

Reference

[Hallberg and Helgesson, 2006] Anders Hallberg, Markus Helgesson, 'Centralised alarm distribution', Master thesis at Lund University and Beijer Electronics AB, Lund, March 2006.

For more information visit www.beijer.se or www.iea.lth.se/publications