

Schneider Electric's Transparent Factory Technology Invaluable to World Wide Efficiency for Raisio

Paper Chemical
Manufacturing



FINLAND

Introduction

Global company Raisio manufactures chemicals for use in paper manufacturing, and has companies all over the world, close to the mills where paper is actually made. Group Raisio also develops and manufactures functional foods and food ingredients, animal feeds and malt. They have a total of 25 locations in 13 countries. They have 2,700 employees of which 42% are outside Finland. The company dates back to 1939 when Oy Vehna Ab was established.



Raisio manufactures chemicals used in paper manufacturing, and in emulsification units such as these.

Merlin Gerin

Modicon

Square D

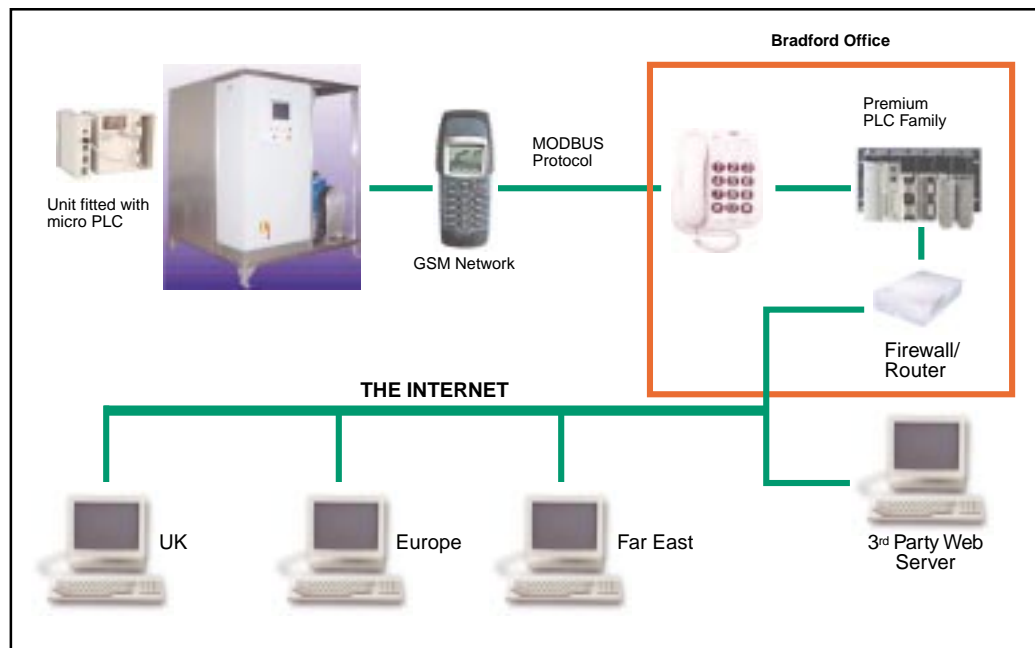
Telemecanique

The Application

Before paper is actually made, an emulsion (which Raisio prepares on site) is put into the paper stock to control water absorbency and so improve printing properties etc. This preparation process is carried out using specially engineered emulsification units.

Northern Pumps was in the process of upgrading units to be controlled by a Schneider Electric Micro PLC together with a Magelis HMI for use by local operators running the process. With some experience of remote tank monitoring and aware of

Schneider
 **Electric**



The open, flexible solution provided to Raisio allows their engineers to coordinate maintenance, so that available skills can be used to solve problems anywhere.

Schneider Electric's web module, it was suggested that Raisio could connect all the emulsification units to the internet to collect data centrally which could then be monitored via a web site.

The Objective(s)

Supporting and maintaining equipment in diverse and sometimes remote locations can be difficult, with problems of language and understanding sometimes resulting in engineers taking long and expensive flights to solve minor problems. What would really be ideal is if engineers were able to co-ordinate maintenance, so available skills could be used to solve problems anywhere, with call-out being used as a last resort. This needs a common, unified system and using the internet, wireless networking and Schneider Electric PLCs, this is exactly what has been delivered to Raisio by Northern Pumps, a specialist equipment manufacturer for the paper industry.

The Solution

"We suggested the idea of remote stations talking back to a central location," says James Jordan, Electrical Design Manager at Northern Pumps. "Raisio were

enthusiastic and asked us to put a system together, so we decided that all the machines should have GSM modems which could call back to a Schneider Electric Modicon TSX Premium PLC in our offices in Bradford. They would transfer data which the PLC would store, and be accessible through an ordinary web browser on the internet."

Each emulsification unit is controlled by a Modicon TSX Micro PLC, with a Magelis HMI for the operators. In the communications slot of the Micro PLC there is a cellular modem, which connects over GSM to a Modicon TSX Premium PLC in Northern Pumps' Bradford Office. Data is sent back to the Premium through this link, and it is also possible to monitor the machine remotely. The wireless connection uses the Modbus protocol.

The web module comes with the Premium PLC and, using a leased line, is connected to the internet all the time. There is a Raisio domain name, and with the correct username and password engineers anywhere around the world can look at web pages which display information about each machine. Working from a map of

Europe engineers can click on different machine locations and bring up alarm annunciator panel displays showing a record of where a unit went into alarm state and what was done.

“This remote monitoring has been piggy-backed on top of the individual control systems in different countries,” says Jordan. “We monitor systems around the world, in Britain, Europe and the Far East. If there is no GSM available locally we can use a land line, as in Korea. The basic principle is the same for them all: for every new system added to the network we write a web page and as soon as the telemetry is in place and working, people in that country can see their machine using a web browser, without the need for any special software or configuration.”

Marc Collinson of Raisio Chemicals says: “I am responsible for emulsification machines that are located in Europe and the Far East. With the information available on the internet I can watch the units run and see alarms from my home. If required I can arrange local engineers to fix faults or carry out maintenance remotely, which certainly saves our company money on travel”.

Customer Benefits

The remote monitoring system has proved to be very effective. Emulsification units often run continuously for long periods, and there have been situations where a mill has been informed of a potential fault before the local operators had experienced a problem. This saves time and money because it has been possible to take corrective action without interrupting the emulsification process. On other occasions, when a customer has questioned the process during papermaking problems, it has been possible to examine machine logs and eliminate equipment issues from the equation.

Colin Jackson of Raisio Chemicals says: “Because I can see the units on the web remotely, I have been able to contact our customers, warning them of an impending alarm or out of specification emulsion which would have the potential to stop the paper machine, causing a unit shutdown. This obviously prevents machine down-time, which is a big bonus from our customer’s point of view.”

Now that the system is proven, enhancements are planned so that quality assurance information can be extracted from the paper machines. An e-mailing module may also be included in the design, so that when an alarm goes off it sends an email automatically. This way when staff turn on their PC at the start of a shift they have a record of all the alarms that have occurred. Using the same telemetry mechanism and Northern Pumps’ expertise in tank monitoring, a system is also being developed to ensure that chemicals are only reordered when there is sufficient space to take a full tanker load.

Although this application of internet, wireless networking and Schneider Electric PLCs has been developed for Raisio, Northern Pumps hopes that the simplicity of the system will make it possible to extend its use to other industries.