

Star Refrigeration Case Study



Star Refrigeration Ltd is using Adroit Technologies' SCADA HMI in its industrial refrigeration equipment. Incorporating Adroit has resulted in improved system performance, plus additional flexibility and speed in monitoring and diagnostics.

Background

Based in Glasgow, Star Refrigeration was established in 1970 and now employs 250 people. The company is a leader in the UK industrial refrigeration market, providing a complete design, management, installation and maintenance service to the food, brewery, dairy, distillery, cold storage and distribution, pharmaceutical, petrochemical and leisure markets. Star Refrigeration build industrial refrigeration plants, using either ammonia or HFCs, and supply complete systems to cold stores, food factories and a wide variety of process cooling applications. Packaged systems are also exported to many parts of the world. As far as possible, work is undertaken in partnership with end users and local contractors.

TELSTAR is Star Refrigeration's family of monitoring and control computers, which have been used to control and monitor every type of system that Star has installed since 1983. Star recently developed the 3rd generation of TELSTAR, a substantially enhanced system retaining all the benefits of the previous systems and capitalising on the wealth of experience gained from the 700+ units presently in operation. Each contract utilising TELSTAR has the software written and tested at Star's design office prior to site installation.

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The Project

Star Refrigeration's TELSTAR control system uses the LonWorks® network. This fieldbus network has become the standard for the building management industry, which encompasses refrigeration and air conditioning.

Star's Electronic Systems Manager and Senior Development Engineers needed to source a SCADA HMI which would fulfill their data acquisition and monitoring requirements and match their networking needs.

The ability to fit into LonWorks was a key requirement for the project. Adroit adopted a close, co-operative approach and adapted their SCADA HMI by writing a comprehensive interface to the LonWorks network.

The Adroit SCADA HMI monitors data and performance of industrial refrigeration plants manufactured and installed by Star. In addition, the system provides an operator interface for altering plant control, with appropriate levels of security, using the TELSTAR system.

The software is now the main data monitoring operator interface for TELSTAR, and is used in applications ranging from ice rinks and air conditioning to pharmaceuticals, distilling, fish processing and food storage.

Star's Development Engineers received training from Adroit, attending Adroit 2 + 1, a fast track course designed for system integrators and experienced end users, and the Adroit Advanced course. Star Refrigeration staff are now able to carry out their own in-house Adroit training for operators.

Why Adroit?

The Adroit software fits into LonWorks very convincingly. Adroit Technologies create a high performance LonWorks driver which supports both standard network variable type (SNVTs) and user definable network variable type (UNVTs). The Adroit driver provides monitoring and/or control of LonWorks network variables (NVs) and does not suffer from limitations imposed by traditional data transfer technologies such as DDE.

Adroit also provides excellent plant visualisation, with vector graphics offering virtually unlimited opportunities for zooming, panning, and resizing, and an innovative Plant VCR feature for rapid fault finding.

How the System Works

In each application, the Adroit SCADA HMI is installed as a "node" on the LonWorks network, on a Windows NT PC. Star's customers receive a system complete with a PC located in a cabinet in the refrigerator plant room or in the local engineer's office. There is a cable connection from the PC to the control nodes.

Adroit monitors and reports on temperatures of areas and products that end users require to be cooled. Pressures, on/off states, motor currents and electricity consumption are also monitored. This information is typically used by customers for validation - such as temperatures of cold stores and duty sensor monitoring - and data is also gathered on all aspects of the refrigeration plant for diagnostic purposes.

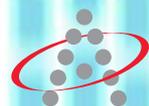
Adroit provides remote communication to Star Refrigeration's regional offices for notification of alarms and faults and also to facilitate maintenance. Using a modem link, Adroit interfaces with the offices' PC based system which, when necessary, transmits an appropriate report to a standby engineer via a national monitoring bureau.

All Star Refrigeration's service engineers, in addition to the relevant office-based staff, have the capability to dial into end users' sites and use the on-site Adroit SCADA HMI to monitor the refrigeration plant. This is carried out regularly, as part of customers' maintenance agreements. Data from Adroit is exported to Microsoft Excel spreadsheets to provide maintenance reports.

Star Refrigeration keeps logged information accessible for display for a month and thereafter stores the information on the PC hard disk for up to a year. The Adroit SCADA HMI's range of logging functions have all proved useful, including trending and event logging. Adroit's unique Plant VCR functionality has been particularly beneficial. This 'video playback' feature enables operators to replay, using various frame rates, chosen sequences of plant automation history in either text format or mimic format.

Users can select the timeframe they wish to view then play, rewind, fast-forward or pause using on-screen controls similar to those on a household video recorder. Multiple mimics can be viewed simultaneously, with varying or synchronised start times.

Users can view events in context, without needing to analyse large quantities of data. The graphical displays can also be used in conjunction with trends and mathematical data to provide in-depth analysis of events. No extra configuration is needed as the feature is a standard component of the Adroit software.



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In terms of the future expansion of the project, Star aims to promote the Adroit system to all major refrigeration plant customers using TELSTAR. The company is also looking at the possibility of using Adroit as a replacement regional 'server' for communicating with its standby engineers.

Key Benefits

The more comprehensive LonWorks interface has improved the performance of the control system. Also, Star Refrigeration and its customers have rapid, straightforward access to vast records of logged information. Adroit is providing impressive mimic/graphic display capabilities, including trending of up to 8 parameters per page.

Adroit's Plant VCR has improved Star's diagnostic capability via video playback, saving many hours on site.

Quotes

John Williams, Electronic Systems Manager of Star Refrigeration, comments "The proof of the pudding is in the eating. The response we've had from our own commissioning and service organisations has been great. The display/monitoring/trending capabilities have obviously impressed our customers too, through continuing demand from new as well as existing customers."

John Ballinger, Managing Director of Adroit Technologies, adds "We were pleased to be given the opportunity to work with Star and produce a high performance solution that other SCADA vendors had failed to do. The solution has already produced significant benefits for both Star and Adroit Technologies."

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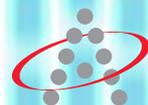


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