

## Cost Savings through Successful MIS Implementation

### Business Problem

A company within the food and beverage industry wished to implement a control/monitoring solution that would trim the cost of product manufacture and improve its quality auditing system. Originally a transittank chemical storage system was utilised, which limited plant capability and denied discounts on bulk chemical purchases.

A Bulk Chemical Storage system with a reticulated distribution system was installed, together with a Blackburn Starling engineered and developed MIS (Management Information System) to monitor equipment and produce reports that would prove the investment in the new system enhanced productivity and eliminated wastage.

### Detailed Solution

Like many companies, its quality system depended upon information gathered from the factory – i.e. cleaning time scales and chemical usage. This information was manually gathered, therefore of low quality. This resulted in inaccurate production reports due to causes such as misplaced paperwork and human error.

For manufacturing solutions providers *Blackburn Starling*, improving production to reduce costs and improving a quality auditing system means focusing on the data source; the factory. Improving the information gathering processes by creating a real time link from the factory to the engineering offices can allow production to be optimised and management to access immediate, real time production information. This real time information can be utilised for:

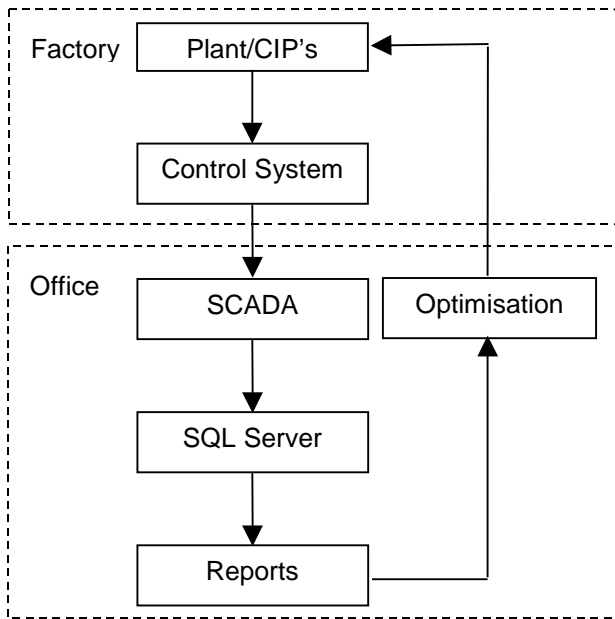
- Providing 'to the second', accurate manufacturing/production information.
- Generating error-free reports.
- Provide insights into under performing areas.
- Allow faulty equipment to be identified easily.

Blackburn Starling believes that the real power to impact business profitability lies within the optimisation of data collation. This data may already exist as the bi-product of a drive to become more automated. Assembling key manufacturing information from the factory floor into a single database allows the data to be used effectively for upstream planning and process reporting functions – which in turn empowers factory/plant operators to react quickly if presented with a problem.

Within the factory, new bulk storage tanks housed the concentrated detergent utilised to clean many vessels around site. A simple distribution system connects the bulk storage tanks to each vessel, which houses chemical totalling flowmeters. These flowmeters were to be prime targets for automatic data collation.

When a final product has been removed from a vessel, a CIP (Cleaning In Place) routine is initiated to remove residue from the tank. Various quality monitors are connected to the outlet pipework of each vessel to provide data regarding the cleaning of its interior; conductivity (for measuring chemical strength), temperature and outlet flow. Over 350 instruments were utilised for monitoring purposes – from chemical storage tank levels to pumps and valves that control flow around the plant.

An MIS and SCADA (Supervisory Control And Data Acquisition) solution was provided by Blackburn Starling to collate the data from the factory and produce a number of production reports.



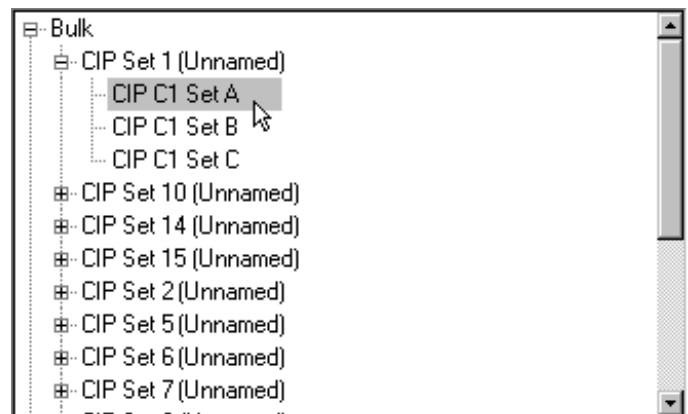
Wonderware's FactorySuite has proved to be invaluable as the means to create a factory-boardroom link. InTouch SCADA is the 'front-end' to the factory's plant and has proved to be second to none with its speed and flexibility. When utilised with the many 'components' that are provided with FactorySuite it becomes a powerful total integration solution. 'Industrial SQL Server' (a major FactorySuite component) was installed/programmed to operate in union with InTouch. Industrial SQL Server is an extension to Microsoft SQL Server (a relational database management system) that enables the acquisition of data from an In-Touch SCADA system at dramatically improved speeds and reduced data storage volumes compared to normal historic data collation. In addition to this, the data can be manipulated using industry standard SQL clauses (Structured Query Language).

The InTouch system was utilised to indicate the current state of all plant equipment – running drives, valve positions, alarm conditions, flow-rates, tank levels, etc. This plant data is passed on to the Industrial SQL Server – for storage every two seconds, forever.

Using Microsoft Visual Basic, a user-friendly interface for displaying and reporting the data collated by the MIS was developed. This route was selected because of its native support for SQL Server and its integration with the windows platform and applications such as InTouch. This allowed the historical *and* runtime data to be displayed as required in a clear, intelligible fashion.

### Example: Viewing Trend Data

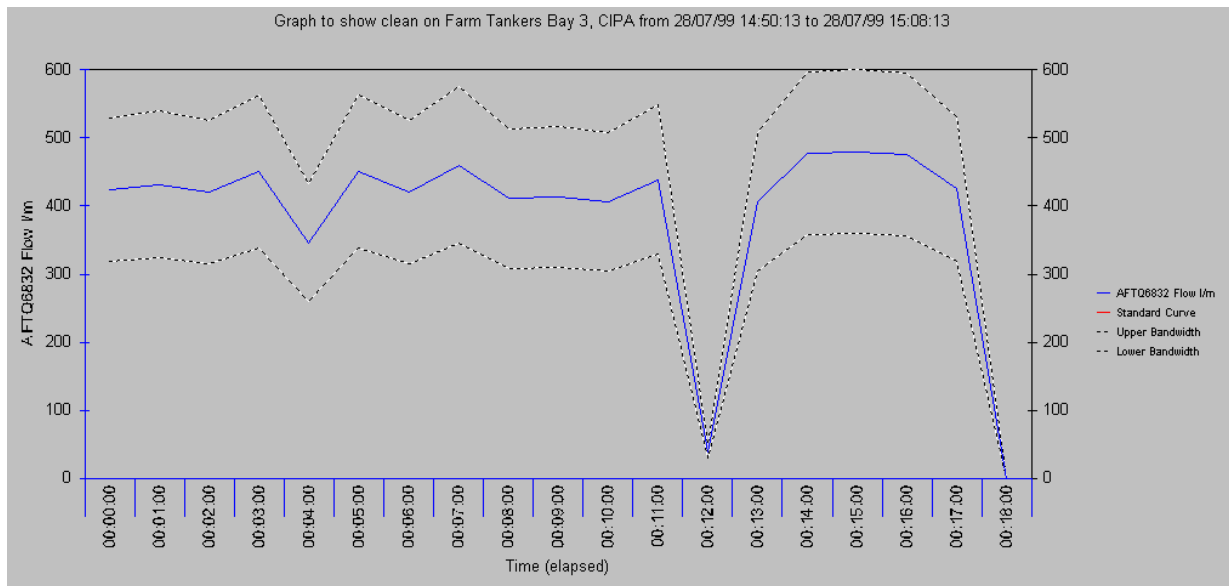
As plant data is stored continuously, data for plotting trend curves for instruments is accurate and immediately accessible. Utilising a simple hierarchical method (right), an operator is able to quickly locate a vessel for which they require viewing trending curves.



Start Date	Start Time	End Date	End Time	Plant	Length
28/07/99	11:03:13	28/07/99	11:40:13	Milk Silo 2 CIPA	00:37:00
28/07/99	13:10:13	28/07/99	13:48:13	Milk Silo 1 CIPA	00:38:00
28/07/99	14:50:13	28/07/99	15:08:13	Farm Tankers Bay 3, CIPA	00:18:00
28/07/99	17:11:13	28/07/99	17:28:13	Farm Tankers Bay 3, CIPA	00:17:00
28/07/99	17:51:13	28/07/99	18:09:13	Farm Tankers Bay 3, CIPA	00:18:00
28/07/99	18:18:13	28/07/99	18:50:13	Unloading Line 3 CIPA	00:32:00
28/07/99	18:51:13	28/07/99	19:15:13	Unloading Line 4 CIPA	00:24:00
29/07/99	01:54:13	29/07/99	02:29:13	Milk Silo 3 CIPA	00:35:00
29/07/99	07:54:13	29/07/99	07:58:13	Farm Tankers Bay 3, CIPA	00:04:00
29/07/99	07:59:13	29/07/99	08:38:13	Farm Tankers Bay 3, CIPA	00:39:00

The system informs them of the number of CIP routines performed within a given time frame, and the length of time they took (left). Upon selecting a 'wash', the appropriate data is trended instantaneously.

## Example trend



The benefits of expressing data as such were not only utilised to report on the success of CIP routines – i.e. - once this data was available, it became evident that some CIP routines used too much chemical – high conductivity values on CIP trends indicated excessive chemical strength.

Within a short period of time, several productivity and raw material wastage issues became evident due to the simplistic data presentation methods. I.e. slowly incrementing flow totalisers mounted adjacent to closed valves aided in the location of faulty valves/pipework.

### **Conclusion**

The correction of chemical loss/over-dosing lead to adjustment of the CIP controller routines and faster maintenance response times - which resulted in a saving of over £50,000 of chemicals in 6 months.

Significant benefits have been witnessed as a result in combining leading-edge software technology with plant controls and instrumentation. The company has seen a decrease in chemical usage and production downtimes due to accurate, error-free reporting and increased response times, tighter production schedules and greater control over inventory and consumption. They now have the ability to be more predictable and reliable to their customers and supply chain. Moreover, the capability to identify problem areas on the production line as they occur and monitor this information from the engineering offices in real time furnishes them with the information to make their business decisions more responsive, more timely and more accurate.