Control infrastructure at ABN migrated by Datastor Systems to state-of-the-art integrated automation solution from Rockwell Automation

Leading livestock compound feed manufacturer sees simpler migration result in faster, more robust and more economically effective network and automation infrastructure

**Challenge**

Datastor Systems Ltd. was tasked with migrating a legacy control solution at ABN over to a modern automation and SCADA system with as little disruption as possible.

**Solutions**

A Rockwell Automation solution was installed, which included:

- Allen-Bradley ControlLogix programmable automation controllers
- Allen-Bradley AB 1771-to-1756 IO Swing-arm Conversion System
- Allen-Bradley 1747-AENTR modules to provide link between new EtherNet/IP network and existing SLC I/O modules

**Results**

- Faster and more robust plant network
- Simpler and less risky migration path with reuse of existing I/O
- In-house and external remote access capabilities
- Better asset utilisation
- Greater OEE and lower total life costs
- Clearer upgrade path thanks to the use of open protocols

**Background**

ABN is a leading British manufacturer of monogastric compound feed, providing both products and complementary solutions to the pig and poultry livestock industries. ABN operate 10 mills across the UK and is owned by Associated British Foods, a diversified international food, ingredients and retail group with sales of £10.2 billion and 97,000 employees in 44 countries.

Like many market leading companies, ABN focuses on operating its facilities as efficiently as possible and automation is an integral part of its plans. Blending, grinding, pressing and bagging processes require precise control to help enforce the stringent ingredients, processing and quality levels demanded by both ABN and its customer base.

The company recently reviewed its network capabilities and automation products at its Bury St Edmunds plant. The review highlighted that equipment was beginning to show its age and was in need of upgrade and replacement. It called upon Rockwell Automation Recognised System Integrator Datastor Systems Ltd., a privately owned UK software house that specialises in the industrial automation arena, for support. Recognised System Integrators are competent and committed to lead with Rockwell Automation and have a mutually supportive relationship with the Rockwell Automation sales and/or distributors.
Following an appraisal of the existing infrastructure, Datastor Systems, which boasts an impressive record of plant modernisation projects in the UK and around the world, recommended a system migration over to a new Integrated Architecture control and network solution based on Allen-Bradley® products from Rockwell Automation and running on a modern, state-of-the-art EtherNet/IP™ network.

Challenge

The primary challenge faced by Datastor Systems was the development of an efficient and effective migration strategy, which encompassed the phasing of the old system over to the new infrastructure – without too much disruption on the daily production operations at ABN. This meant that the old and new system had to overlap and operate in tandem before the final switchover. A robust and effective migration solution had to be deployed.

With obsolescence and migration becoming more commonplace as automation solutions undergo constant evolution, Rockwell Automation already had in place a migration solution that has been successfully deployed in multiple industries and countries across the world. This meant that a lot of the hard work could be removed from the project, with just the application-specific demands creating the actual unique challenges.

Solution

According to Bill Wright, Managing Director at Datastor Systems: “Datastor is seen as the preferred supplier for process control at ABN. We started working with ABN back in 1989 with the deployment of an Allen-Bradley PLC-5® solution for ABN’s automation needs. Over the years the system successfully provided the control required for the manufacturing processes, but like many older automation products, the PLC-5 was heading for obsolescence, with the possibility of putting ABN at risk in terms of hardware failure.

“We compiled a document based on a traffic light system,” he explains, “that detailed the current state of spares in terms of ‘available’, ‘not available’ and ‘readily available, but heading into obsolescence’. The completion of this analysis highlighted the need for a new solution and it was at this stage that we spoke with Rockwell Automation and discussed its Logix system and its PLC-5 migration tools.”

The large migration at ABN, phased over four weekend shutdowns, comprised the replacement of the core network, multiple controller changes, and the incorporation of a SCADA (Supervisory Control and Data Acquisition) solution that runs on PCs above the new programmable automation controllers (PAC).

“We decided to utilise the Allen-Bradley 1771-to-1756 IO Swing-arm Conversion System,” Wright explains. “This

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enabled the current PLC-5 I/O to be used, while using the latest Allen-Bradley PACs, thus minimising the need for new electrical wiring. As a result, it provided a cost saving to the client. You can use the existing swing arm with terminal wiring and use push plugs into the new backplane. The changeover time is a lot less as you don’t have to rewire, thanks to the reuse of existing terminals and backplanes.

“Along with the replacement of the PLC-5 controllers,” Wright continues, “there were existing SLC-5/04 controllers that had to be brought into the new ControlLogix® PAC environment in both the grinding and blending areas. This was achieved using the existing SLC I/O in the plant with 1747-AENTR EtherNet/IP™ adapter modules. These modules provide an Ethernet link back to the main ControlLogix PAC so the SLC I/O could be used as remote I/O.”

By using EtherNet/IP as the primary communication protocol, Datastor can offer its customers remote monitoring and maintenance, with the option to connect the machine into its customers’ Connected Enterprise. The Connected Enterprise, an approach manufacturers are adopting to leverage the use of connected machines, supply chains and customers, allows them to establish manufacturing processes that are data and information rich, supported, secure and future-ready for market demands.

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Ultimately, a Connected Enterprise approach for manufacturers and their suppliers will create a more competitive, innovative enterprise that can deliver insights to improve productivity, sustainability and economic performance through faster time to market, lower total cost of ownership, improved asset utilisation and enterprise risk management. Other benefits of access to real-time, contextualised information, include minimised downtime, improved technology and process optimisation, greater workforce efficiency and smarter expenditure. Because EtherNet/IP is based on standard, unmodified Ethernet, it means that very little needs to be done for these connections to be established; and full security solutions are also available for user control and to prevent unwarranted access.

**Results**

The Rockwell Automation migration solution saves time and is inherently less prone to the risk associated with a full rewire, such as wrong connections. “We have migrated other I/O platforms over the years,” Wright elaborates, “and the Rockwell Automation system is a huge improvement. This project went live January/February 2015 and so far there have been no issues; it has all worked really well and there is the added comfort factor that the network is now more secure and more robust.

“We can also now connect remotely thanks to the use of EtherNet/IP,” Wright explains, “and the new network is far faster and slicker than the old system’s DH+ network. ABN has asked us to provide remote support at all ABN sites thanks to these new networks and we have given them the ability to have their own remote access. Using graphical screens, we can provide diagnostics from the communications level right down to the hardware.

According to Lindsay Sharp, Group Engineering Manager at ABN: “We knew we needed a more up-to-date solution and the Rockwell Automation system, delivered by Datastor Systems, has certainly ticked all the boxes. The new network and controllers are giving us really clear levels of visibility into our processes and infrastructure. The future upgrade path is also less complicated and more straightforward due to the use of open protocols. Remote access for both ourselves and Datastor will also deliver many benefits in terms of reduced costs and downtimes. The whole integrated approach will help us to maintain our quality and control levels so we can keep our customers happy.”

“We find the Rockwell Automation team is always very open for discussion and support,” Wright concludes, “especially when we are looking for something a little different – they don’t push us down a preferred route; instead they listen to our needs. The Rockwell Automation solution was not the cheapest option available, but in the long term there is a definite cost advantage in terms of OEE, asset utilisation and overall life costs. We were fortunate that ABN had prior experience of Rockwell Automation products and understood that the initial cost of an installation does not reflect the whole life cost and the fact that ABN has stuck with Rockwell Automation justifies our selection of the hardware for this project.”

**Additional Information**

[www.rockwellautomation.co.uk](http://www.rockwellautomation.co.uk)

The results mentioned above are specific to Datastor Systems and ABN’s use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.