

# New dairy ingredients plant for Fonterra deploys integrated automation, motor control and process control solution from Rockwell Automation

Leading multinational dairy company successfully deploys worldwide in-house standards on single-solution, single-supplier Connected Enterprise compliant control infrastructure

## Challenge

Brand new European dairy plant needed a complete automation and process control solution in very tight timescales.

## Solutions

A Rockwell Automation solution was installed, which included:

- Allen-Bradley ControlLogix PACs
- Allen-Bradley CENTERLINE 2500 motor control centres with IntelliCENTER solution
- Allen-Bradley E300 Electronic Overload Relays
- Allen-Bradley PowerFlex drives
- FactoryTalk Historian
- FactoryTalk VantagePoint
- FactoryTalk AssetCentre
- Rockwell Software CPGSuite
- TechConnect contract

## Results

- Totally integrated solution
- Connected Enterprise capable
- Faceplates developed based on company standards
- Single software suite
- Premier Integration
- Advanced diagnostics
- Remote MCC access



Peak production will see the plant process up to 2.7 million litres of whey per day, with annual production figures of around 25,000 tonnes of lactose and 5,000 tonnes of protein products

## Background

Fonterra Co-operative Group Limited is a multinational dairy co-operative, owned by around 10,500 New Zealand farmers. The company is responsible for approximately 30% of the world's dairy exports and with revenues in excess of NZ\$19.87 billion, it is New Zealand's largest company and accounts for 25% of the country's total exports.

With a network of offices, production sites and technical centres across the globe, it employs some 16,000 people in New Zealand and around the world; collecting 22 billion litres of milk annually in order to make dairy products available to millions of consumers in 140 countries.

The company recently commissioned a new dairy ingredients plant in Heerenveen, in the north of The Netherlands, which would be used to produce three variants of lactose powder and a range of protein products. This includes whey protein concentrate, whey protein isolate and a lipid-rich whey protein concentrate as well as several specialty functional whey protein concentrate powders for use in high-value paediatric, maternal, and sports nutrition products.

Officially opened in July 2015, with His Majesty King Willem-Alexander of the Netherlands in attendance, the new plant is built on a 25 hectare site and has been developed in partnership with a leading Dutch cheese

LISTEN.  
THINK.  
SOLVE.™

manufacturer – where the Fonterra plant processes the whey originating from the other plant's cheese making process. The plant is Fonterra's first wholly owned and operated ingredients plant in Europe. Peak production will see the plant process up to 2.7 million litres of whey per day, with annual production figures of around 25,000 tonnes of lactose and 5,000 tonnes of protein products.

For the automation and control of the plant, Fonterra had a wide choice of suppliers and system integrators from which to source primary equipment. In New Zealand it uses Allen-Bradley® programmable automation controllers (PACs) and SCADA solutions from Rockwell Automation, with motors and motor-control technology from other suppliers. At the Heerenveen development, Fonterra did initially investigate using the same combination of suppliers. However, with an incredibly powerful integration and Connected Enterprise solution proposed by Rockwell Automation and Beenen B.V., a Rockwell Automation Recognised System Integrator, Fonterra opted for a complete wall-to-wall solution of automation, process and motor control based around Allen-Bradley products.

Recognized System Integrators make the commitment to deliver the highest technical solution and customer service, leading with Rockwell Automation technologies. These integrators have a mutually supportive relationship with the Rockwell Automation sales and/or distributors they work with.

Using this approach Fonterra was able to deploy a completely integrated control solution from a single supplier that also offered effective communication from the shop floor to the top floor. Production data can be captured, collated, and analysed in order to improve processes and Fonterra can share vital manufacturing

information with a wide variety of disciplines both inside and outside of the factory.

## Challenge

The primary challenge for the new site was the relatively short timescales in which the plant had to be up and running – the first orders were received in February 2014 and the plant needed to be up and running by the end of 2014. Beenen, with support from Rockwell Automation, was instrumental in addressing this challenge in its commitment to meet the 12 month timescale, compared to an industry average of 18 to 24 months.

In addition to the timescale challenge, Fonterra has its own standards for motor control and faceplates – with interfaces to devices from other providers and competitors. During the project, they were converted to the Rockwell Automation standards by using our process library.

## Solution

The complete integrated solution chosen by Fonterra, comprised multiple elements of the Rockwell Automation product offering, many of which are part of the company's cutting-edge Connected Enterprise offering.

By using EtherNet/IP™ as the primary communication protocol, Fonterra has given itself the opportunity to move easily into The Connected Enterprise, an approach manufacturers are adopting to leverage the use of connected machines, supply chains and customers. Manufacturers are able to establish manufacturing processes that are data / information rich, supported, secure and future ready for market demands.



Fonterra was able to deploy a completely integrated control solution from a single supplier that also offered effective communication from the shop floor to the top floor

Ultimately, a Connected Enterprise approach for manufacturers 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 there is very little that 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.

From a product perspective, Fonterra has deployed multiple Allen-Bradley ControlLogix programmable automation controllers (PACs), working in conjunction with Allen-Bradley CENTERLINE® 2500 motor control centres (MCC), complete with Allen-Bradley E300™ Electronic Overload Relays and more than 250 Allen-Bradley PowerFlex® variable-speed drives, some with dual-Ethernet capabilities. Arranged in 42 cabinet columns, the MCC installation is 50 m in length. As well as providing intelligent centralised motor control, the CENTERLINE MCCs also offer advanced energy management capabilities and integration into the Rockwell Automation Integrated Architecture – delivering true plug-and-play capabilities.

***We also selected our suppliers based on total cost of ownership (TCO). We not only looked at the CAPEX, but also at the life costs over 10 years and determined that the Rockwell Automation approach developed by Beenen was the best solution.***

According to Alex van Dalen, the General Manager from Beenen BV: “Beenen worked very hard to win this project and was initially bidding against two other local system integrators. We go for quality and the best solution, therefore Beenen employed Rockwell Automation to design and develop the MCC solution, while Beenen undertook the remainder of the electrical and automation work based around other Allen-Bradley solutions. We built up a real team ethic with Rockwell Automation and the positive effects of this cooperation was evident in the dealings with Fonterra and, of course, the success of the project.”



As well as providing intelligent centralised motor control, CENTERLINE MCCs also offer advanced energy management capabilities and integration into the Rockwell Automation Integrated Architecture

The software installation is just as impressive: FactoryTalk® View offers overall visibility into the processes and interface with the ERP and process-control systems; FactoryTalk® Historian is used for collection; and FactoryTalk® VantagePoint is used for information, visualisation and dissemination. By making data freely available in an easy-to-read format, when you need it, in the specific format required for each job role; operators and managers are able to make much more informed decisions, much quicker and with greater positive effects on the line optimisation. FactoryTalk® AssetCentre gives Fonterra the ability to centrally secure, manage, version control, track and report automation-related asset information across its entire facility. AssetCentre also provides automatic scheduled backups of controllers thus supporting “disaster recovery”. Rockwell Software® CPG Suite® delivers value-based applications that can help Fonterra achieve operational excellence, increase supply chain effectiveness, adhere to regulatory compliance guidelines and meet sustainability goals.

Completing the installation is a number of value-added service offerings, which include a parts-management contract providing critical spare parts, a TechConnect® support contract and in-depth training for the Fonterra operatives.

## Results

According to Alex van Dalen: “The Fonterra team was particularly enthusiastic about the benefits of Premier Integration in relation to the motor control offering from Rockwell Automation. They found the diagnostic software very useful to ‘see’ into the contactor from the MCC and also in the frequently controllers. The Connected Enterprise approach will also allow them to leverage their

manufacturing data far more effectively and then share it with all those that need to see both historic and real-time information.”

Hans Berghorst, Operations Director at Fonterra, explains: “Rockwell Automation is the Fonterra standard in the Netherlands and by deploying a complete Rockwell Automation solution, we only have one supplier instead of two, which also offers benefits in terms of maintenance and spares. We also selected our suppliers based on total cost of ownership (TCO). Rockwell Automation came out well; we not only looked at the CAPEX, but also at the life costs over 10 years and determined that the Rockwell Automation approach developed by Beenen was the best solution. Our engineers are also enjoying the benefits of the integrated approach. The MCC IntelliCENTER® solution allows them to do restarts from the HMI in the control room; they don’t have to go to the MCC.”

Discussing the creation of the new faceplates, Berghorst adds: “It’s a mixture of Fonterra, Beenen and Rockwell Automation engineering. Our plan was always to have a standardised solution and we do have our own in-house libraries that we use as standard within Fonterra, which are all the same worldwide. But of course now that the motor drives are from Rockwell Automation, we jointly developed new faceplates, based on Fonterra’s engineering standards.

“We knew from the start that we wanted to use Allen-Bradley PACs and control solutions. We do a lot of joint development with Rockwell Automation back in New Zealand, so it is easy to copy and paste routines and programmes. In addition, we have specialists in our process control department in New Zealand who know and understand Rockwell Automation solutions very well. Also, from a support point of view, it’s always better when you have a standardised solution.”

Discussing the five year service contract, Berghorst continues: “I think within Rockwell Automation there are some very knowledgeable advisors, who know the systems inside out. We also saw very good co-operation from Beenen who undertook most of the direct interactions with Rockwell Automation.

“It is the first time we have built a new facility in Europe,” Berghorst concludes, “so it is difficult to compare the performance characteristics compared to other sites and other technology, however, so far we are very satisfied with the performance.”

### Additional Information [www.rockwellautomation.com](http://www.rockwellautomation.com)

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



The Rockwell Automation PartnerNetwork™ program offers global manufacturers access to a collaborative network of companies mutually focused on developing, implementing and supporting best-in-breed solutions to achieve plantwide optimization, improve machine performance, and meet sustainability objectives. For more information on the Rockwell Automation PartnerNetwork, visit [www.rockwellautomation.com/partners](http://www.rockwellautomation.com/partners)

**Beenen B.V.**  
Mercurius 22  
Heerenveen, 8448 GX  
The Netherlands

Phone: +31 513 469500  
Fax: +31 513 469555

<http://www.beenen.nl>

*Beenen B.V., with establishments in Heerenveen, Zwolle and Nijkerk, is a company that carries out the electrotechnical hardware engineering, software engineering, building of control cabinets, electrical installation and commissioning of industrial automation projects (process automation and machine control). Employees: 203 Turnover: 29 million Euro a year. Beenen B.V. is a subsidiary of Batenburg Techniek N.V. Rotterdam. Batenburg Techniek N.V. holds companies in the business of installation, technical trade and information technology. The Batenburg Group includes twelve operational subsidiaries, located in The Netherlands and Belgium, with at the moment a total of 1000 employees. The companies supply products and services for customers in the areas of industry, non-residential building and infrastructure. The shares of Batenburg Techniek N.V. are listed on Euronext N.V. Amsterdam.*

Allen-Bradley, CENTERLINE 2500, ControllLogix, CPGSuite, E300 Electronic Overload Relay, FactoryTalk Historian, FactoryTalk VantagePoint, FactoryTalk AssetCentre, LISTEN. THINK. SOLVE., PowerFlex, PanelView Plus, Rockwell Automation and Rockwell Software are trademarks of Rockwell Automation, Inc. EtherNet/IP is a trademark of the ODVA. Trademarks not belonging to Rockwell Automation are property of their respective companies.

[www.rockwellautomation.com](http://www.rockwellautomation.com)

#### Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444  
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640  
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846