

ENGINEERING
TOMORROW

Danfoss

Case story | VLT® OneGearDrive®
VLT® Decentral Drive FCD 302

Ready-made sauces the sustainable way

Danfoss VLT® FlexConcept® helps to meet the efficiency, flexibility and reliability targets at the Barilla Spa plant dedicated to the production of ready-made sauces at Rubbiano di Solignano (PR).

Up to

70%

fewer variants with
VLT® FlexConcept®



VLT®

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In the words of engineer Mauro Ruozi, Technical Development Director, who has personally followed the expansion of the Rubbiano sauce factory:

“The theme of environmental sustainability and energy efficiency has been the focal point since the project feasibility study. Barilla wants to be environmentally sustainable in the development of any new plant. Therefore, our motto has always been: maximum efficiency, minimum waste. Consequently, we have tried to identify the most efficient electromechanical solutions at every level of the factory.”

From the Rubbiano plant, in the heart of the Parma food district, over 150 million jars of Barilla sauce leave every year for tables all over the world.

The production lines have been built according to the highest standards of safety and respect for the product and people. Initially launched in 2012 with a production line dedicated to tomato-based sauces and another dedicated to basil-based sauces, the Rubbiano plant was expanded

from 2017-2019 with two new sauce production lines and a new area dedicated to meat processing.

The expansion of the sauce factory has a potential annual capacity of 120,000 tons. It is the result of the products' great success on the market, combined with Barilla's desire to further expand the range of recipes that can be produced, which supports its strategy of global consumer satisfaction.

Sustainable manufacturing

Barilla's strategy calls for great emphasis on continuous improvement in manufacturing process efficiency, to reduce greenhouse gas emissions as well as water and energy consumption.

In particular, Barilla promotes improving the environmental impact of its own manufacturing processing through management and monitoring of greenhouse gas emissions, water consumption and waste.

Complete automation ensures total control

The Rubbiano plant is equipped with state-of-the-art automation solutions, using the best technologies on the market and Barilla's extensive knowledge of factory integration and manufacturing resource management.

All the individual machines and plants are interconnected in an intelligent factory network, with over 10 km of data lines and about 1500 Ethernet communication nodes.

At the heart of the facility is the Competence Center, where all the information related to raw material flows and the status of the lines, energy vectors and process fluids converges in real time.

Total control of the entire factory allows Barilla to respond efficiently and flexibly to the seasonality of raw materials and consumer demands, as well as to the commercial distribution initiatives, adapting factory operations to market conditions.

Engineer Mauro Ruozi explains: “Coordinated information allows us to comprehensively control the entire plant: to respond efficiently to production plan changes, to intervene promptly in case of anomalies, and to plan for continuous sustainability improvement based on the daily collected production data.”



Flexible production lines

One of the distinctions of the Rubbiano plant is the complex architecture of the packaging lines, which have been organized to provide maximum flexibility for preparing packages of finished products from the various flows of semi-finished products.

The complex conveyor system is used to move the jars among the machines and systems in the packaging area – both to sort the different flows of unlabeled semi-finished products among the machines, and to prepare the finished and labeled product for shipment.

Decentralized concept for conveyors

Barilla decided to adopt an architecture based on intelligent gear motors distributed along the entire packaging area conveyor system, and integrated into the factory control network.

Danfoss VLT® FlexConcept® proved to be the winning choice. It is a decentralized system (field) combining the high efficiency VLT® OneGearDrive® gear motor and the VLT® Decentral Drive FCD 302 high-performance drive.

More than 400 gear motors and decentralized drives are distributed along the entire conveyor. Because they are mounted directly onto the conveyor itself, the wiring is significantly simplified, notably reducing the space taken up on the line by electrical panels.

The VLT® OneGearDrive® gear motor incorporates a high-efficiency, three-phase synchronous motor with permanent magnets which, combined with an optimized bevel gear reducer, helps optimize productivity and reduce

energy costs. The overall efficiency provided by gear motors combined with VLT® Decentral Drive FCD 302, is over 90%.

Both products have protection ratings of IP66/67 and IP69 K and are designed to meet typical food industry installation requirements such as FDA, which prioritize hygiene.

All the decentral drives have been networked and integrated into the PLC, which continuously acquires the operational status of the units, based on energy consumption. Networking also makes it possible to reconfigure the operating parameters of the drives when necessary, detect any abnormal conditions, or change the line layout, all in real time.

With VLT® FlexConcept®, Danfoss has developed a flexible, efficient solution that reduces the number of variants and thus operating costs, energy consumption, and CO₂ emissions.

Engineer Mauro Ruozi explains:

“Since the conveyor system is very articulated, we carried out an in-depth study on the components (motors and drives) most suitable for achieving the flexibility and efficiency objectives we had set ourselves. In having to build a system with hundreds of motors to service the many conveyors, there were many aspects to consider: energy efficiency, wiring simplicity, space required on the site and by electrical panels, quick maintenance, ease of cleaning and integration into the factory network.”





Outstanding results

The experience gained in two years of plant operation has confirmed the success of Barilla's choice of this

technologically advanced solution, in terms of both reliability and overall economy in total cost of ownership.

Mauro Ruozi attests:

"The use of 400 high-efficiency decentralized gear motors and drives has allowed us to reduce not only energy consumption, but also indirect costs, thanks to using less space for electrical panels and reduced maintenance. Since a single drive model can be used at all points in the plant with rapid remote reconfiguration, we have reduced fixed assets in the spare parts warehouse and speeded up maintenance operations. In addition, thanks to their perfectly smooth surface that is resistant to the most aggressive cleaning agents and disinfectant solutions, VLT® FlexConcept® solutions are perfectly suited for this type of application."

The same type of Danfoss drive, but installed in electrical panels, has been also been used in the Rubbiano plant to drive some VLT® OneGearDrive® in IP69 K conditions in the kitchen area, complying with all the requirements, rules and guidelines concerning

washability, hygienic design and resistance to detergent and disinfectant solutions.

Ruozi concludes: "The use of Danfoss solutions has helped us pursue our sustainability goals, and the results

have fully confirmed what was predicted in the in-depth benchmarking that drove this choice."

Buon appetito!

Barilla

When Pietro Barilla opened his shop some 140 years ago, his watchword was: make good food. Today, this has become Barilla's way of doing business: "Good for You, Good for the Planet," which represents the daily commitment of the more than 8000 people working in the Group and in a supply chain that shares its values and passion for quality. "Good For You" means continually improving products, encouraging the adoption of correct lifestyles and promoting people's access to food. "Good For The Planet" means promoting sustainable supply chains and reducing CO₂ emissions and water consumption in the manufacturing chain. To learn more, visit www.barillagroup.com Twitter: [@barillagroup](https://twitter.com/barillagroup)