EcoStruxure™
Innovation At Every Level

INNOVATION

Tradition and innovation in perfect harmony

Mulino Marino – Cossano Belbo, Italy

Digitizing and automating traditional processes
with EcoStruxure for Food & Beverage

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The Modicon family of PLCs is part of the Edge Control portfolio of the Schneider Electric IoT-enabled architecture. Modicon controllers manage complex interfaces across assets and devices or directly into the cloud, with embedded safety and cybersecurity, providing performance and scalability for a wide range of industrial applications.

For the love of quality

For three generations, Mulino Marino has been a family-run business. It was founded in 1956 when Felice Marino purchased a small flour mill equipped for natural stone and roller grinding.

These age-old methods are an art and, like any art form, require passion and experience. Having fallen in love with the craft of milling, Felice embraced the opportunity to take over the business situated in the Langhe area of Piemonte in northern Italy.

The mill originally consisted of three water-powered millstones. In the ensuing years, it continued to evolve, increasingly taking the organic path and adding the processing of a myriad of specialty grains, cereals, and seeds such as spelt, rye, rice, and buckwheat, all of which require different grinding styles.

Today, the company is certified 100% organic (EU regulation 2092/91), with a fully Italian supply chain and a highly automated production process while still paying careful attention to the preservation of traditions and the quality of its products.

Goal

To fully automate and digitize a traditional stone flour mill.

Story

The family-run mill embarked on a digitization journey to increase production and efficiency so it could keep up with growing demand while still preserving traditional methods and maintaining high product quality.

Solution

An EcoStruxure for Food & Beverage solution expertly delivered by Schneider Electric Alliance system integrator partner, Euro Beta.

Results

- Business continuity secured
- Product quality ensured through recipe management and traceability
- Optimized operations and sustainability through energy and production monitoring
- Futureproofed operations

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Growing the business

Mulino Marino recognized that it needed to increase its production to keep up with growing demand. The changes in consumer tastes and purchasing behavior in recent decades also presented new challenges: How to be more attentive to market demands for more sustainability, traceability, and organics, as well as to increased requests for alternative multigrain and multi-seed flours, which required the development of new recipes, processes, and products.

These challenges, coupled with a dearth of experience and expertise amongst the younger generation of workers, highlighted the need to incorporate new technologies.

The company's strong sustainability ethos and its concern for a depleted earth also drove it to invest in energy management solutions such as solar panels, with the rest of its energy requirements coming from other renewable sources.

The ingredients for success

Mulino Marino turned to Euro Beta, Schneider Electric's Alliance system integrator partner, to help it achieve its goals.

"With Mulino Marino, we started taking steps to digitize production 10 years ago with partial automation and today we are almost completely automated, thus realizing the benefits of the Industry 4.0 transition plan" says Pierangelo Carbone, Automation Project Manager at Euro Beta. "Thanks to Schneider Electric's solutions, we have created a solution tailored to the customer's needs, helping to make a process that was previously carried out manually more efficient and automated."

Euro Beta has deployed a range of EcoStruxure for Food & Beverage solutions. A network of Modicon M340 PLCs with Harmony HMIs, Altivar variable speed drives, and Modicon MCM safety controllers are all interconnected on an Ethernet network.

The various areas that make up the mill (wheat storage, sack packaging, flour mills, rolling mills, grain mixing, etc) have been automated so that each can be managed independently and/or centralized on the console.

The recipe process for the various flours, for example, can now be managed automatically by setting the parameters from the operator HMI panels that use a Vijeo Designer graphic interface.

Operators can access a comprehensive view of energy consumption, by sector, using the Com'X data logger and compare it to the energy production data from the photovoltaic panels to optimize energy efficiency. They also have visibility across the physical plant from cameras that are monitored via the Harmony iPC and Edge Box.

And there is still more in the works, including the installation of EcoStruxure Machine SCADA Expert on the central PC console to improve data management from the various systems and, potentially, from SQL databases, new building solutions for the showroom, as well as the implementation of EcoStruxure Machine Advisor for production monitoring.

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— *Pierangelo Carbone, Automation Project Manager, Euro Beta*

"Thanks to Alliance system integrator Euro Beta and a trusted technology partner like Schneider Electric, artisanal tradition and technological innovation have never been so in tune,"

— *Frederico Marino, Miller, Mulino Marino*

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Reaping the rewards

Since Mulino Marino embarked on its technological transformation over a decade ago and invested in the integration of cutting-edge data and process management solutions in the artisanal milling processes, it has gained more precise product information and increased transparency while continuing to produce the highest quality flours. The company has received official certification for its optimization of production processes and energy savings.

Automation and digitization impact on all phases of its production processes:

1. **Loading:** Replenishing the silos is now performed automatically. Humidity control ensures the grain is stored in the correct conditions to maintain optimum quality.

2. **Mixing:** The grains can now be mixed in the right percentages without errors or waste.

3. **Rolling:** In this phase, the temperature of the rollers is constantly checked to prevent the grain being processed from overheating. An alarm sounds if the machine heats up so that the necessary adjustments can be made to the distance between the rollers etc.

4. **Bagging:** The parameters vary according to the bags. Parameters such as quantity per day and hourly flow rate of both the grain and the flour, as well as their compactness, are monitored. These parameters are then recorded.
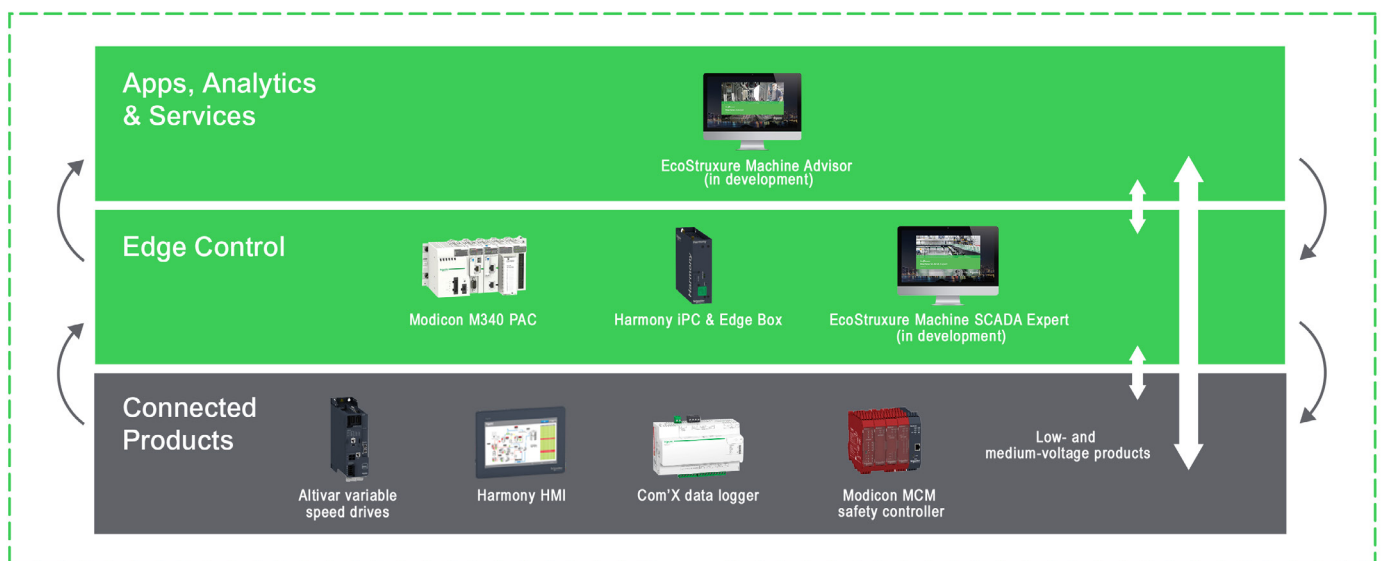
As a result of the EcoStruxure solutions implemented by Euro Beta, Mulino Marino has realized multiple benefits:

- Product traceability, which is critical for a company dedicated to certifying its production chain to guarantee organic products

- Business continuity, since any shutdown of the plant would have serious economic repercussions

- Optimized production thanks to the ability to monitor all production parameters in detail

- Futureproofed operations by ensuring its workforce has the skills and knowledge it needs

Frederico Marino, Miller at Mulino Marino, acknowledges that "thanks to Alliance system integrator Euro Beta and a trusted technology partner like Schneider Electric, artisanal tradition and technological innovation have never been so in tune."

EcoStruxure™ for Food & Beverage

Apps, Analytics & Services

EcoStruxure Machine Advisor (in development)

Edge Control

Modicon M340 PAC

Harmony iPC & Edge Box

EcoStruxure Machine SCADA Expert (in development)

Connected Products

Altivar variable speed drives

Harmony HMI

Com'X data logger

Modicon MCM safety controller

Low- and medium-voltage products

EcoStruxure™ Architecture

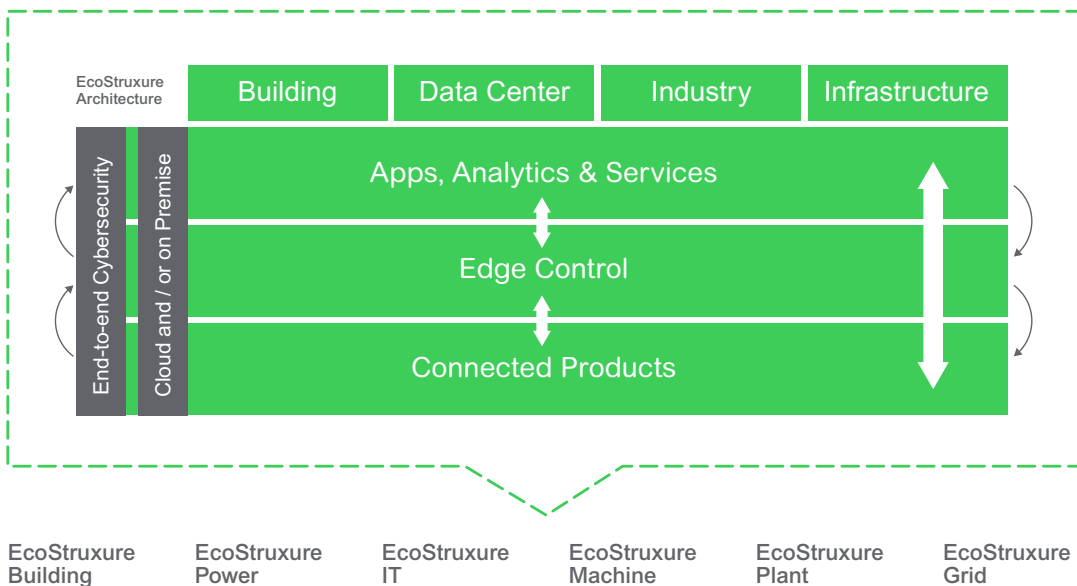Life Is On | Schneider Electric

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Innovation At Every Level

IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is our open, interoperable, IoT-enabled system architecture and platform. EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers. EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level.

This includes Connected Products, Edge Control, and Apps, Analytics & Services which are supported by Customer Lifecycle Software. EcoStruxure has been deployed in almost 500,000 sites with the support of 20,000+ developers, 650,000 service providers and partners, 3,000 utilities and connects over 2 million assets under management.

One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise

EcoStruxure Architecture	Building	Data Center	Industry	Infrastructure
End-to-end Cybersecurity / Cloud and / or on Premise	Apps, Analytics & Services			
	Edge Control			
	Connected Products			

EcoStruxure Building	EcoStruxure Power	EcoStruxure IT	EcoStruxure Machine	EcoStruxure Plant	EcoStruxure Grid

Connected Products

The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

Edge Control

Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

Apps, Analytics & Services

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

Find out more about EcoStruxure

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Learn more about EcoStruxure for Food & Beverage

About our Alliance partner program

Modicon, the industrial Edge control for IIoT

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