

Easy-to-design and easy-to-use HMIs with the zenon software platform

Intuitive HMIs for Galdi's digital filling machines

Digital, high performance, easy to use and maintain: these are the qualities of Galdi Srl's filling machines for Food & Beverage. During the renewal of its human-machine interface (HMI) concept, the Italian machine manufacturer chose COPA-DATA's zenon software platform to create a state-of-the-art HMI capable of supporting and guiding operators while reducing training and maintenance times.

GALDI RG480 Filling made easy



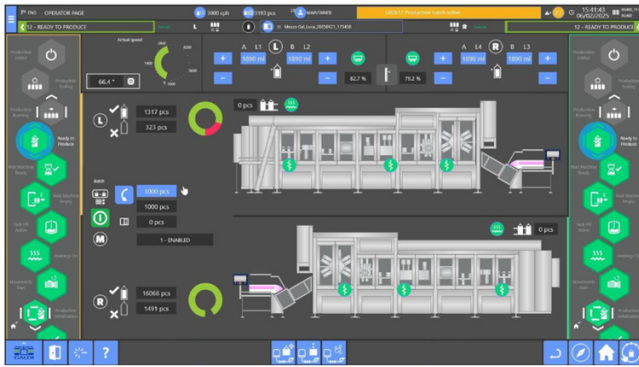
Galdi is located in the province of Treviso in Italy. The company has 40 years' experience in the development and manufacture of high-capacity filling machines for packaging milk, dairy products, fruit juices, and liquid eggs in gable-top cartons.

While renewing its machine-control HMI concept, Galdi began searching for a stable, high-performance, future-oriented software platform that was able to support the development of modern, ergonomic, and high-value-add user interfaces. The solution needed to offer advanced features and ready-to-use templates and ensure the centralized and systematic management of project updates. To reduce project design and maintenance times, it also needed to enable

the efficient reuse of components and graphical assets on different machine configurations.

THE ZENON SOFTWARE PLATFORM MEETS ALL REQUIREMENTS

In COPA-DATA, Galdi found a strategic partner with whom it could look to the future. The Galdi team recognized that the zenon software platform would enable it to fully leverage technological potential, integrate updates, and add new features.



The aim of reducing training time has been fully accomplished with an ergonomic, graphical, and intuitive HMI equipped with a wizard that guides the operator step by step through all production phases.

Galdi's functional requirements included simpler and more intuitive recipe management and a more efficient and structured alarm administration. It also wanted to implement user administration in line with the latest IT security standards, with customizable access levels based on roles and responsibilities.

Tools such as trends, archives, and chronological event lists for monitoring and analyzing machine data were also deemed essential, with the aim of enabling IIoT projects and initiating continuous improvement processes related to performance and predictive maintenance. Not least, it was important to drastically reduce operator training times through a user-friendly, ergonomic HMI that could provide operational clarity.

A DESIRE TO MEET EVOLVING CUSTOMER EXPECTATIONS

"The Galdi automation team is well aware that, today, offering mechanically efficient machines is no longer enough. It is essential to provide an operator with a simple, intuitive, and autonomous user experience," says Damiano Sperindio, R&D Senior Automation Software Engineer at Galdi. "HMIs must guide the user from the very first use, thanks to contextual help and wizards that enable the various processing phases to be carried out safely, without delays and with no need for external intervention."

Galdi's new RG 480 double-line packaging machine was developed to surpass the limitations of traditional high-capacity filling machines. It can fill up to 14,000 cartons per hour, thanks to two integrated lines which can also operate independently. The new machines boast a zenon-based user interface. It has been designed to simplify interaction, particularly for operators with little or no previous experience.



In the event of an alarm, operators have access to a series of advanced diagnostic features that enable easy identification of the fault and, thus, reduce machine downtime.

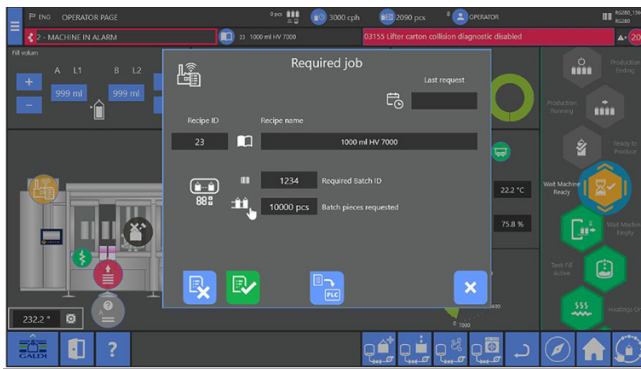
The interface guides the user through all the production phases, outlining the operations to be carried out and providing contextual tips based on the machine status. All relevant information is always displayed on the screen, making work more efficient and errors less likely. The interactive wizard guides the operator step by step through the production phases following a "step up" logic. It is not necessary to know in advance which activity to perform or which phase follows; it is the machine itself that indicates this, suggesting in real time what to do and which actions to take.

Specific attention was paid to the ergonomic design of the graphical objects and the layout of the on-screen information to ensure comfortable, clear, and functional interactions under any operating conditions.

ENHANCED USER ADMINISTRATION STRENGTHENS CYBERSECURITY

There is rising demand for more advanced and secure user administration. Galdi's automation team has met this important need by using the powerful integrated by design features provided by zenon. From an IT security perspective, zenon complies with the international standard IEC 62443-4-1, which is specific to industrial automation and control systems. The by design features available include password protection against unauthorized access and detailed configuration of authorization levels, in line with regulatory requirements. This made it simple for the Galdi team to implement a personalized and highly structured name-based user administration system.

Each operator has a dedicated profile: after logging in, all operations performed – including entries, changes, and production process interventions – are uniquely recorded and tracked. The automation team has also configured customized interfaces based on role, so that each user –



Integration with MES and ERP systems covers recipe changes and fully automated, remotely manageable production batch scheduling, allowing clients to optimize production planning.

whether maintenance engineer, operator, supervisor, etc. – sees only the information relevant to their job. The different access levels ensure that each profile can perform only the operations for which it has permission, thereby increasing security and reducing the risk of error. This flexible and granular user administration is particularly appreciated by end clients, who can easily manage shift changes, onboarding of new employees, and access level updates.

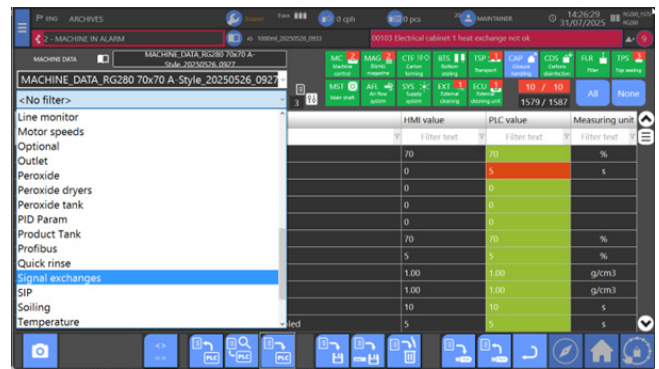
Damiano Sperindio explains, “We are certifying our machines according to IEC 62443 and the fact that zenon not only offers advanced user administration features, but is also already certified according to the standard, is helping us enormously to fulfill the certification requirements.”

The cyber security features provided by zenon are not limited to user administration. The software includes many other security support tools, which are greatly contributing to Galdi's machine certification process in accordance with IEC 62443.

OPTIMIZED RECIPE MANAGEMENT

Galdi's newest generation of filling machines offers a wide range of services that guide the operator through every phase of the production process: from loading the packaging to the finished product, ready to be delivered. This process involves numerous complex phases, which must be initiated, monitored, and managed safely through the analysis of thousands of values.

To make this task as easy as possible, Galdi's automation team decided to use zenon's Recipe Group Manager. With the tabular view and intuitive filter options – including text, measuring units, etc. – operators can easily find the variable or value they need among the thousands that are



With the zenon Recipe Group Manager, operators can intuitively, quickly, and easily filter and manage all the options available on the filling machine.

produced. What's more, based on operator navigation, they are automatically directed to the correct parameter.

Every change, entry, or variation is tracked in real time through the Chronological Event List in zenon. If more information is required, simply double-clicking will open a help function that provides contextual support, describing the meaning of the parameters and the effects of the different set values. This eliminates the need to consult external documents or ask colleagues for assistance, thereby increasing operator autonomy and operational efficiency. All data can be easily imported or exported, making recipe management even more versatile.

Fully automated recipe changes, remote management, the wizard for operators, easy integration with MES / ERP systems, and constant performance monitoring enables clients to improve production planning and reduce the total cost of ownership (TCO) of the packaging machine.

REAL-TIME INFORMATION POWERS ASSISTED AND PREDICTIVE MAINTENANCE

Alarm administration has been designed in full compliance with the zenon philosophy. The main objective of the Galdi automation team is to simplify the interaction between the operators and maintenance engineers and the machine, even in the event of an alarm.

The new zenon-based system now identifies and reports any anomalies and their points of origin. Maintenance engineers are guided by an advanced help mode that gives them access to a whole range of diagnostic options to help identify and resolve the problem.

These include automatic redirection to the page where the process can be viewed in detail. The section and location of

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MASSIMILIANO GUERRA,
AUTOMATION ENGINEERING MANAGER, GALDI

the device or object that triggered the alarm can be identified graphically, a feature that is especially useful for the large filling machines Galdi produces.

The Galdi team is leveraging the option to export and archive alarm lists and chronological event lists, as well as view machine performance trends. This allows it to provide predictive maintenance services and activate a continuous machine improvement cycle through performance and alarm analyses. For Galdi customers, this cuts machine downtime, reduces urgent or unexpected interventions, and provides customized maintenance contracts based on the actual wear of individual components. Furthermore, it is now possible to verify with certainty that the various production phases have been carried out correctly.

READY TO MEET FUTURE REQUIREMENTS WITH ZENON

The development of HMIs for Galdi's high-performance machines is an ongoing and continually evolving process. The continual enhancement of the graphical interface, ergonomics, responsiveness, and features available to the end user is a perpetual challenge full of opportunities.

To successfully tackle this, it is essential to have a reliable and agile software platform that is ready to embrace – and often anticipate – the technological innovations that will define the HMIs of the future.

“zenon proves to be the perfect future-ready tool,” says Massimiliano Guerra, Automation Engineering Manager at Galdi. “Its ability to distribute the interface via the web, its containerization options, and native support for operating systems such as Linux are just a few of the features that make zenon a strategic choice for developing modern, scalable, and future-oriented HMI solutions.”

“Furthermore, COPA-DATA's technical support is always on hand to assist and help us. The relationship we have built over the years makes COPA-DATA the perfect strategic partner. Together, we carry out projects that deliver to the fullest extent of technical possibilities.”

HIGHLIGHTS:

- ▶ Reduced training time
- ▶ User-friendly HMI with help and wizard
- ▶ State-of-the-art user administration and cybersecurity
- ▶ Compliance with IEC 62443
- ▶ Easy-to-use and filterable recipe management
- ▶ Reduced design and engineering time and reuse of graphical objects
- ▶ Excellent technical support