

EISENMANN: optimal management of automatic warehouses, avoidance of errors and increase in productivity

by Wonderware Italia

“The Object Oriented technology of Wonderware allowed us to modify the system in just a few hours, also using the wide library that the American multinational put at our disposal, and the one we have created over the years”.

Eng. Luca Lo Conte, Project Manager,
B&B Automation



Company Overview

EISENMANN - Morbegno (SO), Italy

EISENMANN manufactures “turnkey” technological systems for surface finishing, transports automation, fumes and reflux water treatments, ceramics firing systems, thermo regulators and special systems for thermal treatments and biogas.

EISENMANN has a wide network of branches throughout the world, comprising 2.800 employees. It is the leader in material handling, logistics solutions for complex product flows in the production, assembly or shipment logistics.

Boeblingen (Germany) – InTouch HMI (Human Machine Interface): rapid deliveries, no shipping mistakes, perfect traceability, space optimisation...

Nowadays, those who have to manage or build a warehouse, irrespective of its dimensions and of the goods stored, have to face the requirements of an increasingly demanding market, intolerant of any error. This situation truly tests the abilities of System Integrators, which are asked to use the most innovative technologies to modernise old warehouses, so that they can meet the competitiveness requirements of the current market.

Nothing is lost

In such a demanding scenario, EISENMANN, one of the world leaders in the construction of turnkey automatic warehouses, has decided to rely on the skills of a System Integrator such as B&B Automation, who specialises in using current technologies, to manage a warehouse that stores goods with high added value. It was a very delicate project, both for the value of the goods stored and for the necessity to operate within a very restricted time frame and with the need to identify the position of a pallet at any given moment. This task became even more complex because of the weight of the goods to be handled and the need to manage the stocks correctly, preventing any product from being left on the shelves for too long. The stock management was therefore based on the principle known by its acronym FIFO (first in, first out), which is very popular in the food industry, where the deterioration of the items is one of the major challenges for those in charge of management.

Furthermore, the system is equipped with a series of alarms, which inform the staff of any abnormal environmental condition, such as temperatures or humidity percentages differing from the expected ones. Obviously, in other cases the stock turnover is not such a priority requirement, while it is fundamental to know how to manage correctly a large amount of positions, with the possibility of reaching over 100 thousand in the future. This while keeping track and informing the offices about the availability of all the products stored.

The manufactured equipment is in fact identified through barcodes and then automatically moved by a system capable of handling both the horizontal and the vertical shifting. This procedure is based on methods accurately planned by specialists, in order to shorten the downtime and use the advantages of the intelligence applied on the field. Besides the planned movements, a series of sensors

Transportation & Storage

InTouch HMI



EISENMANN automated warehouse in Morbegno, Sondrio

fitted in strategic points is designed to check the correct handling of the individual pallets and communicate to the system any possible change, which could also be caused by human intervention.

Non-stop software

To correctly position the pallet though, is just the first step. For every order the real difficulty lies in rapidly finding the pallets, retrieving them and positioning them on the lorries for shipment. This while handling over 100 pallets/hour, without any human intervention and without making any error. A mistake in shipment would cause serious economic damages but most of all it would lead the company to lose credibility. In order to meet such requirements, the engineers at B&B Automation, “chose to use SCADA InTouch by Wonderware, who specialises in these very solutions, and with whom we have worked for 18 years” as the head of the engineering dept. Marco Bellini explains.

The use of a solution such as InTouch HMI, which boasts 270 thousand installations throughout the whole world, is not merely the result of the confidentiality gained over time, rather of its peculiar features.

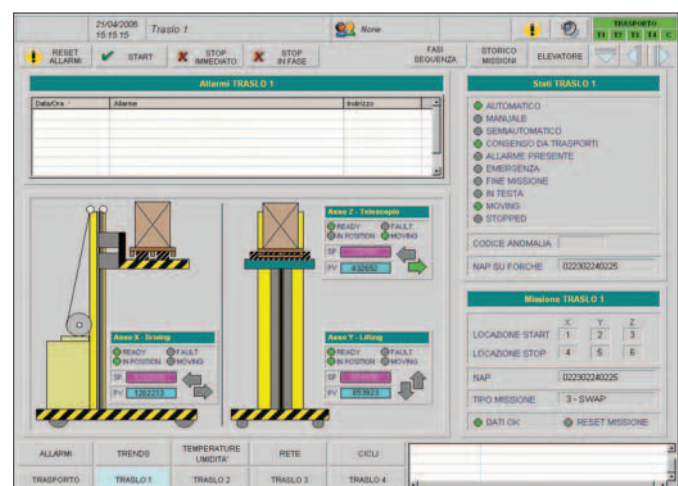
First of all, to manage a warehouse of this size, it is necessary to have an extremely reliable and sturdy solution, capable of tolerating even anomalies. In fact, the breakage of a pallet, a sudden voltage drop or a possible mechanical failure, shouldn't jeopardise the traceability of the entire system. Actually, when working with such volumes, failure to restore the correct conditions after an unexpected event could lead to complete chaos, with hardly quantifiable economic repercussions. In this plant, ‘only’ a few dozen pallets can be handled at the same time, while in larger plants, record numbers of 1,500 boxes handled simultaneously have been achieved. “The solution proposed by Wonderware – states Luca Lo Conte, project manager - guarantees the ability to restart at any time, without any repercussion in terms of management, providing the necessary flexibility to face the most diverse situations”.

Everything is easier

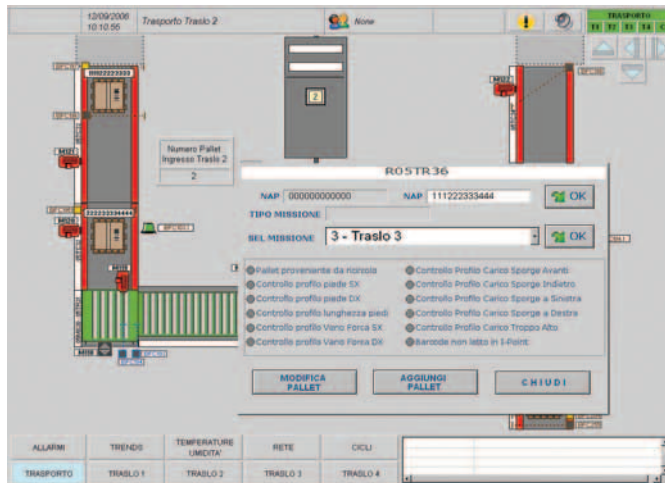
However, besides the exceptional problems, those who work in a warehouse also have to deal with everyday issues. In this sector, these issues concern dozens of pallets moving at the same time and the need to know their exact position at any given time. The Wonderware system excellently gives this capability, and guarantees complete visibility of the position of every box, irrespective of its characteristics or of what has happened to it during the moving phase, including the possible removal of a pallet.

For this reason, thanks to the automatic traceability systems which use the data collected by a series of sensors strategically installed, all the information is instantly transmitted to both the management system and the staff interface system. The B&B Automation engineers had to handle this feature with extreme care. In several cases, in fact, the management of warehouses is outsourced to either inexperienced or low-level education staff. This kind of situation forced us to create a graphic interface that could meet these requirements. The result was an intuitive and easy-to-use support system. This provides information on the interventions needed or on the components to be purchased in order to replace the damaged ones or those requiring maintenance work. InTouch HMI by Wonderware can accomplish these tasks very well, thanks to its libraries.

This feature was designed to facilitate the work of the B&B Automation engineers who, since the early 1990s, gained the licence for the complete development of Wonderware systems. As Mr. Lo Conte, engineer, explains “The programming simplicity proved to be a determining factor also during the installation phase, when the management of our client company realised that another feature had to be implemented. With one of the common products on the market, a similar intervention would have required several development days. On the other hand, the Object Oriented technology of Wonderware allowed us to modify the system in just a few hours, also using the wide library that the American multinational put at our disposal, and the one we have created over the years”.



A conveyor at work



Transportation activities, goods charge/discharge menu

Specialization wins

Certainly the main characteristic of Wonderware is that it specialises in software. So, for the automation of this kind of 'turnkey' warehouse, the B&B Automation engineers had to use hardware components manufactured by other specialised companies. This situation leads to excellent results, since the System Integrator can choose to implement the best solutions for the specific requirements.

As Mr. Bellini highlights: *"All the energies of a company such as Wonderware focus exclusively on the software and, for this reason, it is always at the cutting-edge of its industry, and provides continuous maintenance and upgrade services. The compliance with international standards and the compatibility of Wonderware with the major world brands also prevents us from being tied to one and one only hardware supplier, which would force us to be dependent upon its technological developments, without the opportunity of offering innovative solutions, like those we always offered"*.

But that's not all...

Throughout the design process of an automated warehouse, it is possible to know only the current

requirements, and presumably those of the near future. However, the evolution of said requirements is objectively impossible to foresee, and thus to identify the required features.

Even in this instance InTouch HMI by Wonderware managed to meet the expectations in the best way possible. *"The possibility to scale the solution - explains Mr. Bellini - allows us not to preclude any future evolution. On the contrary, the client was able to implement only the features necessary for his specific needs, with the possibility of enabling the system growth, both in terms of functions and dimensions, at any given time. This special feature allows a Cost Effective approach, as the client only purchases what is really needed"*.

These characteristics of flexibility, guaranteed by the Wonderware platform, give the possibility to access advanced functions even to the small and medium enterprises, irrespective of their size and of the goods stored. Furthermore, as it isn't tied to any particular hardware manufacturer, InTouch HMI can interface with any system. This represents a further advantage, as it means that InTouch HMI can use the existing networks, communicating with the installed database and with any management system.

Actually, the speed at which the networks transmit doesn't represent a determining factor while managing a warehouse, as the pallets move at a relatively limited speed. It is however important to operate in real-time, therefore to know at any given time the exact position of individual batches and to guarantee what's necessary to operate with no interruptions. These are all characteristics that the Wonderware solutions showed themselves able to support, in the most original application throughout the world.

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