Client Benefits

Automation reduced labor costs by minimizing operator involvement, lowering supervision, training, and turnover expenses. Increased robotic efficiency reduced operational costs, improving profitability and enabling long-term production optimization.

Full automation of palletizing across two production lines, integrated with the main control system, boosted throughput, minimized human error, and enabled real-time process monitoring. Simultaneous operation of both lines accelerated palletizing, increased capacity, and reduced downtimes. Precision and pallet space optimization were also improved.

Integration with the main system enabled remote monitoring, quick adaptation to production changes, and better demand forecasting, providing flexibility, scalability, and resilience. This resulted in improved efficiency, lower operational costs, and enhanced production quality.

As part of a larger automation initiative (robotic palletizing with Fanuc), the client purchased both the palletizing and marking systems from a single supplier. This streamlined implementation, eliminated the need for third-party integration, and ensured superior marking quality compared to previously tested competitive solutions. All operations, including carton marking, are now maintained by a single provider.

"Hitmark's professionalism was evident at every stage of the project. Their engineers precisely tailored the robotic stations to our needs, significantly improving the efficiency and safety of our palletizing process. Additionally, the integrated solutions allowed easy configuration of palletizing schemes, enhancing our production output."

Barbara Manikajło
Director of Group Facilities

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Robotic palletizing station for two lines with a two-color carton marking system

CASE STUDY

Client: Selena Industrial Technologies sp. z o.o., Dzierżoniów

Application: Carton palletizing and marking

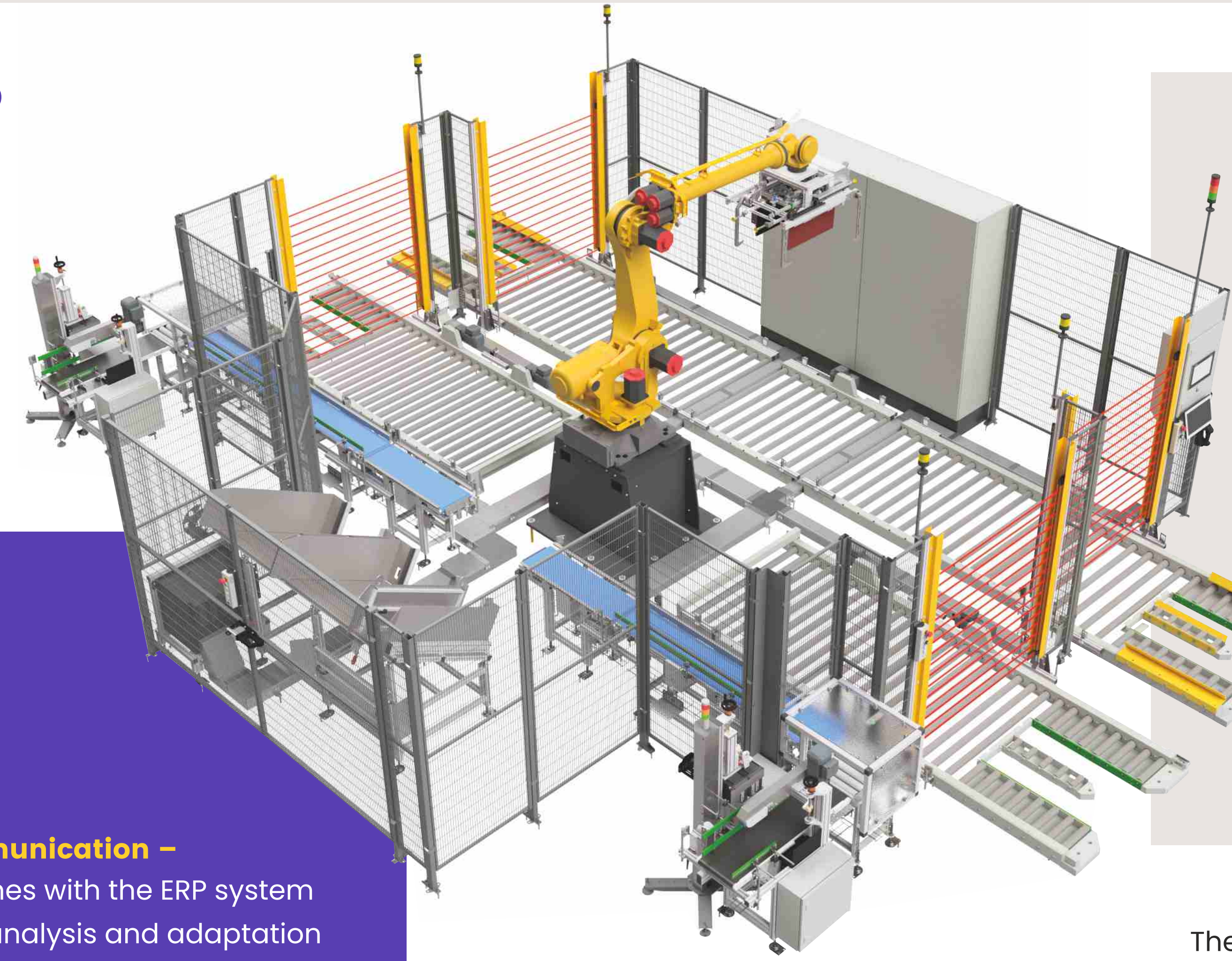
Robot: Fanuc R-2000iC/125L

Marking System: 4 x Tiflex R4 700 DUO Platinum

Completion: December 2024

Efficient palletizing with marking – two one goal: reliable performance!

Selena Group, of which Selena Industrial Technologies is an integral part, is a global leader in the production and distribution of construction chemicals, operating in the market for over 30 years. With continuous investments in innovation and an international presence, the company remains one of the key players in the construction chemicals sector, providing solutions tailored to the needs of modern, energy-efficient building. The project was implemented at one of the Selena Group's companies in Dzierżoniów.



Challenges

- **Flexible pallet distribution –** The client faced high variability in orders across both production lines, requiring quick and seamless changeovers between different pallet types. This had to occur without impacting line performance or requiring operator involvement – crucial for maintaining production continuity, minimizing downtime, and maximizing OEE.
- **ERP system communication –** Integrating machines with the ERP system required detailed analysis and adaptation to the client's communication protocols and technologies, while also ensuring data security and integrity.
- **Two-color marking** – Carton marking included black text and black-red pictograms. The client demanded high print quality, especially as some labels contained a large amount of detailed text, requiring exceptional precision and legibility.
- **Vibration elimination –** Due to limited space, the client initially suggested installing Tiflex heads directly on the case sealers. However, to avoid vibration-related print issues, we jointly decided to install belt conveyors with a top pressure belt, positioned right after the sealer.

Implementation

The robotic palletizing station for cartons containing construction chemicals serves two production lines and is based on a 6-axis Fanuc R-2000 industrial robot with a 125 kg payload. Hitmark engineers designed a universal gripper with a vacuum module for interlayer application and an additional module for pallet handling, ensuring full process stability across diverse carton and pallet formats.

Each pallet introduced into the system undergoes a quality check via sensor systems, preventing downstream issues in the supply chain.

Efficiency: up to 14 cartons/min

Maximum product weight: up to 10 kg

Application of interlayers: Yes

Number of serviced lines: 2

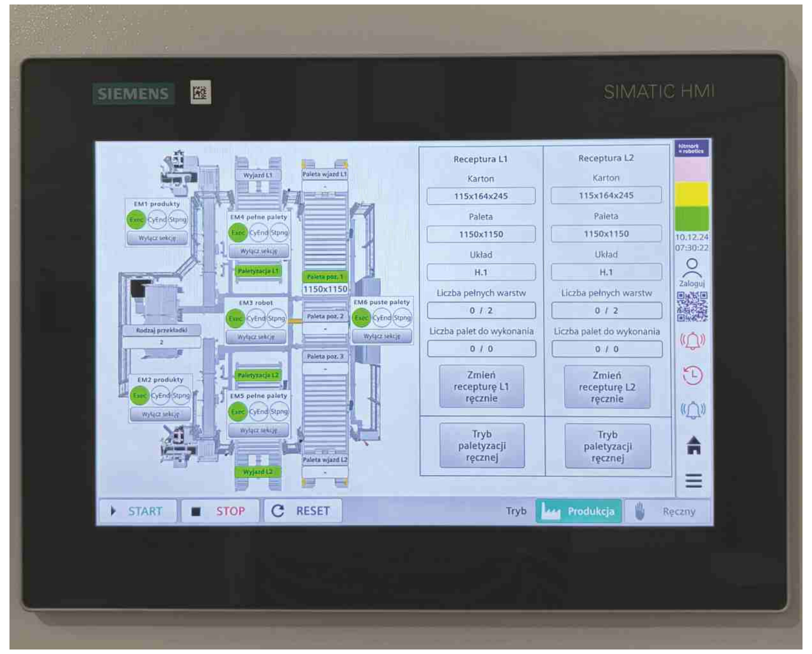
Pallet types: 1200 x 800 mm/1150 x 800 mm/1150 x 1150 mm

Carton type: white uncoated cartons with glue/silicone in cartridges

Extraction system: BOFA Dust Pro Universal

Station footprint: ≈ 61 m²

The station software was developed to support fully automatic changeovers between production orders and integration with the client's main system. It includes features such as order review, production planning, and real-time monitoring of statistics and downtimes.



Thanks to advanced conveyor control algorithms, a universal gripper, and a flexible pallet layout configurator, the station can quickly adapt to market needs, allowing fast implementation of new products and layouts.

During initial discussions, the client expressed a need for direct carton marking. In response, we conducted resolution tests to ensure text readability and full compliance with the client's standards.

Though initially planned to install the heads on the case sealer, we opted for a short belt conveyor with a top pressure belt to minimize vibrations during marking. Each of the four identical marking units was also equipped with BOFA dust extractors to remove debris and ensure sharp, high-quality prints.
The project covered two twin stations delivered within 3.5 months of contract signing. Mechanical installation was completed in less than 7 days from the unloading of the first truck, and production was launched just 11 days later.

Results

Flexible pallet distribution – The use of a three-section roller conveyor in cooperation with a pallet-handling module on the robot ensured fast and precise feeding and retrieval of various pallet types. This enabled full automation and flexibility in the distribution process, supporting efficient production order management.

ERP system communication – An industrial PC was implemented as a command translator between the PLC and the client's ERP. This split the integration into "PLC ↔ industrial PC" and "industrial PC ↔ ERP," allowing effective data exchange. A user-friendly graphic interface was developed on the HMI panel in collaboration with the client for order viewing and editing to identify and eliminate potential errors.

Two-color marking – We delivered four identical direct carton marking stations equipped with Tiflex R4 700 DUO Platinum Seiko printers (each with black-red twin heads), full mounting hardware, belt conveyors, and BOFA extraction systems. Control panels were installed next to the robot's HMI for convenient access, per client request.

Vibration elimination – The print heads were mounted on a shared height adjustment mechanism (with screw and counter) and lateral adjustment system. The entire structure was installed on a custom stand, ensuring precision alignment and easy parameter adjustments.