

CUSTOMER SUCCESS STORY

One platform, ten axes: PROTiM and OMRON automate secondary tea packaging

PROTiM,
Poznan, Poland



Seamless multi-axis
synchronization



All-in-one
packaging solution



Simplified
maintenance



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Key Benefits

- 1 **An integrated control system** based on the Sysmac platform - full synchronization of servo drives, easy creation of axis groups, and motion management within a single environment.
- 2 **Tray & hood in one machine:** XYZ manipulator, racetrack feeder, hood forming, tray application, and palletizing conveyor – all integrated
- 3 **Improved packaging quality:** Hot-melt gluing, precise CAM-controlled motion, and integrated safety ensure stable, repeatable results
- 4 **Simplified maintenance:** Single project file in Sysmac Studio, with per-drive diagnostic screens and sensor visualization on the 15" HMI

At a glance

A major food and beverage production plant in Europe sought a local machine builder capable of automating its secondary packaging lines to improve efficiency and packaging quality and to reduce material costs.

PROTiM, a specialized Polish packaging machine integrator, proposed a multi-axis tray-and-hood case packer based on its iFormer platform, powered by OMRON's Sysmac automation system. The result is a fully integrated, high-speed packaging line with 10 synchronized 1S servo axes, a RaceTrack-like transport system, integrated safety, and a single Sysmac Studio project covering all motion, logic, HMI, and safety functions

PROTiM automates secondary packaging with OMRON Sysmac multi-axis control

PROTiM, a manufacturer of packaging machines operating under the iFormer brand, has completed an advanced Tray & Hood packaging line for a leading tea producer, using OMRON's Sysmac control platform. The customer required a fully automated secondary packaging solution capable of reducing labour dependency while improving throughput and quality. PROTiM, a specialized system integrator and machine manufacturer (OEM), was selected for its expertise in synchronized servo-driven packaging machines.



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The Challenge: Secondary packaging automation

To future-proof production the factory launched a project to automate its secondary packaging lines, targeting improvements in efficiency, packaging consistency, and cost.

The technical challenge was significant: the machine needed to handle two distinct packaging orientations, grouping tea cartons horizontally into columns and vertically into rows, at high speed, while also automating hood forming, tray application, hot-melt gluing, and palletizing conveyor release. Achieving this in a single machine required precise multi-axis synchronization across all motion stages.





The Solution: iFormer machine platform with OMRON Sysmac integration

PROTiM prepared a detailed 3D machine concept and motion sketches for each servo axis, which were shared with OMRON. OMRON's field application engineers, in cooperation with gearbox partner Apex Dynamics Polska, performed servo sizing using the Motor Sizing Tool and selected the optimal 1S series motors and drives for every axis. OMRON and PROTiM then jointly presented a complete automation solution based on the Sysmac platform – covering motion control, integrated safety, and HMI – which convinced the end customer to standardize on the Sysmac platform for this project.

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“The biggest challenge in this project was synchronizing all servo drive axes within one control platform,” explains Mateusz Gołębiowski, Key Account Manager at OMRON. *“The use of the Sysmac Studio environment allowed precise synchronization of the manipulator, feeders, and gluing system while maintaining high safety standards. As a result, the entire packaging process runs smoothly and with maximum efficiency.”*

At the core of the machine is an XYZ manipulator that picks individual packages from a racetrack pocket feeder. Tea cartons are formed into 2x6 bundles, then moved and rotated upside-down using actuators. Simultaneously, a hood is formed and filled by the manipulator; the bundle is then lifted into a pre-formed tray using a pusher. Hot-melt gluing technology bonds the carton, after which a rotary lift rotates the finished display unit before a pneumatic actuator releases it to the palletizing conveyor.

The machine uses 10 OMRON 1S series servo axes with absolute encoders, selected individually through the Mechatronics Sizing Tool in cooperation with OMRON application engineer Krystian Golembka. AE series gearboxes from Apex were added for quiet and reliable operation. Three additional drive systems use MX2 (EtherCAT) inverters for carton transport and cardboard feeding. Servo axis motion profiles are defined using CAM curves in the Sysmac Studio editor, and the entire machine is programmed in a single Sysmac Studio project file.

The operator interface is a 15" NA series HMI featuring diagnostic screens for each drive and visualization of limit signals and key sensors. Safety is managed by an NX-SL3300 safety controller connected to all safety peripherals, including D4SL safety door switches. The control cabinet is equipped with E3Z photoelectric sensors, E2A inductive sensors, D4N limit switches, OMRON G2RV relays, and S8VK series power supplies

The Benefits: Efficient automation and a growing long-term partnership

The integrated solution addressed the customer's core challenges: improving packaging quality, and enabling high-throughput secondary packaging in a single machine. The Tray & Hood machine handles a wide range of product types – including sachets, pouches, bags, bottles, sacks, and individual cartons – giving the tea producer the flexibility to accommodate different product formats and configurations.

"Thanks to the use of OMRON industrial automation components, we were able to fully design the control system and plan the entire equipment completion and ordering process," says Filip Rogiewicz, CEO of PROTiM. "Moreover, the entire machine control system was developed in a single Sysmac Studio project file, which significantly facilitates future software modifications and diagnostics by the Maintenance Department."



About PROTiM

PROTiM is a Polish company with nearly 40 years of experience in production automation and logistics. The company offers comprehensive automation of packaging processes, internal transport, and palletizing. PROTiM machines and systems are integrated with equipment from external manufacturers and communicate with production and warehouse management systems. For more information, please visit <https://www.protim.pl/>



About OMRON Corporation

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