

Mectra

The Pusher Becomes Linear

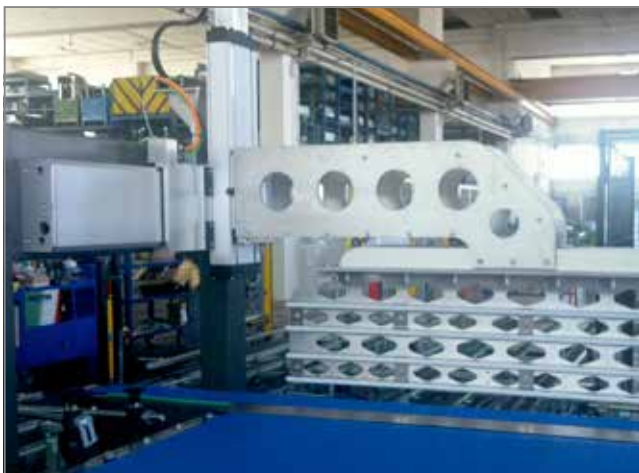


One of the Ristora brand's most recent packaging lines uses a palletizing system created by Mectra, which uses an Omron Accurax Series linear motor.

This project was developed in a very short period of time due to the high level of integration between mechanical and electronic components.

Mectra designs and manufactures automation systems and complete packaging lines, with a major focus in the field of packaging in tinsplate, aluminum, glass, cardboard and bundles.

From its facilities in Montecchio Emilia (RE) in Italy, Mectra creates dozens of palletizing and depalletizing systems every year, intended for use in all of those sectors—from food to beverage, from box factories to the chemical and pharmaceutical industry—where evolved moving solutions are required, both nationally and internationally.



This is the case with Prontofoods, a company that is now among the most successful in the field of soluble food products. Prontofoods chose a Mectra system to palletize composite cans for Ristora brand product packaging.

This solution is noteworthy as it uses an Omron linear motor clutch to move the horizontal axis.

Company management explains the benefits of this system.

Speed, Flexibility, Reliability

The palletizer designed by Mectra is a fine-line machine for poly laminate composite cans (cardboard and aluminum) used to package Ristora brand soluble products.

The unit sorts containers coming from the former/gluer into a single row and then moves them to a mobile platform (row by row) to compose the pallet layer that will be placed on a pallet by a robot.

At the heart of the solution is a shifter that creates rows, which is a unit that operates on two axes. The horizontal axis is driven by an Omron Accurax Series R88L linear motor.

The idea of using a linear motor rather than a belt pusher with a pneumatic lift was dictated by the opportunity to experiment with a new and more advantageous way of moving products, which could be industrialized very quickly.

Giovanni Ronconi, Managing Director of Mectra S.p.A. explains: "We wanted to create an innovative, almost prototype solution that would allow us to understand the practical benefits of using linear technology.

Today, packaging and palletizing systems must not only be fast but also very flexible, capable of adapting to each product and each individual type of packaging.

The market is asking us to build machines capable of adapting to



different formats designed by the marketing departments, and we, as manufacturers, must adapt accordingly: We must design the palletizing pattern according to the size of the container. We must create layers and optimize space by adjusting the ratio between the diameter of the can and the pallet surface.”

A Lightweight Machine

The system uses an NJ controller that uses two Omron G5-Series drives to control the two motors that move the application: an Omron linear motor (R88L) for the horizontal axis and a rotary motor (R88M) for the vertical axis.

Using EtherCAT, the PLC controls the movement of the two motors according to a preset and modifiable cycle, according to the production rate set by the operator, who may intervene at any time to change stroke, height, travel speed and other sensitive parameters.

Using an Omron R88L-Series linear motor allowed Mectra to attain very high speeds using a single row to sort cans.

This has significantly reduced overall machine dimensions by eliminating an entire series of components, such as dividers, encoders and sensors, which often add complexity in terms of adjustment, testing and maintenance.

However, the main advantage of this application probably lies in the improvement of all engineering activities.

Omron Accurax Series linear motors were designed to provide high dynamic and precise positioning in a compactly designed unit featuring an excellent strength/weight ratio and mechanical parameters that may be customized based on the type of performance required.

The possibility of having an engine block in a slider version, which was already assembled to suit production requirements, has facilitated the integration of the axis in the machine by eliminating an entire series of design variables from the outset, resulting in reduced development times.

“The project was completed within a month and a half,” said Ronconi, “a very short development time for a machine of this kind.”

The Importance of Integration

In addition to supplying components, Omron’s technical service created a customized solution capable of simplifying the entire design of the machine, on a mechanical and electronic level. The machine was entirely developed by both customer and supplier, combining Mectra expertise in machine operation with the knowledge of the product and application provided by the Omron staff. The result is a very lightweight machine that can work at high speeds and can be industrialized in a very short amount of time. The high level of integration between mechanics and electronics was crucial in obtaining the final result: All of the mechanical elements were built around the linear motor, the heart of the machine.

Mario Zola, General Manager of Prontofoods explains:

“We wanted a reliable and durable solution. We therefore asked

Mectra to choose from the various solutions that would make the pallet in the best possible way.”

Ronconi clarifies:

“From the outset, we focused on a solution that was much lighter in terms of components and that was easy to industrialize. As this is the first real experience with a linear motor in a project for production, we didn’t want any surprises. This is why we chose Omron.”

On the whole, the application has allowed Mectra’s technical department to obtain all of the main benefits of using a linear motor in place of a normal rotary engine: precision, system repeatability, maintenance, dynamics, mechanical efficiency and reduced overall dimensions.

In this sense, simplifying the kinematic chains became an obvious choice.

“This is an experience that changed the way we think about linear motors and represents a new starting point for the development of new solutions,” concludes the Mectra manager.

“Today we can say that, when the customer requires a certain flexibility regarding size, speed and variable issues, linear technology is key in streamlining parameter management, as well as design and development times.”

