

# ROLLON: Managing robotic handling systems in automated warehouses

**ROLLON®**  
Linear Evolution

New perspectives in automation applied to the medical sector, with automated warehouses using technology from Rollon Group. Linear guides give these rooms a new look. Today, they are far from being static, manually managed archives lacking the speed and efficiency to meet the severe standards that have been applied.

The newly designed rooms stand out for their performance levels and functionality because they are controlled centrally by a computer system, which simplifies the operators' daily work and reduces delivery times while optimizing logistic management. However, if these systems are to work properly, it is necessary to use the right components. For the past forty years, Rollon has studied several solutions to favor quality handling systems in several sectors: medical, aeronautics, industrial machinery, packaging, railways and special vehicles.

A particularly significant solution, emblematic due to its ability to resolve critical handling problems in different applications, is what Rollon has perfected to move the robot that picks and places containers of test tubes for blood tests inside a refrigerated warehouse.

## REQUIREMENTS

They needed a smooth, precise translation movement that did not jerk to allow the robot to quickly reach and pick up test tubes positioned on different warehouse shelves. Speeds up to 1.5 m/s, and also with stressful cycles, high precision and dynamics (accelerations up to 1.2 m/s<sup>2</sup>), combined with a load of around

400 kg from the weight of the robot itself and the respective motor.

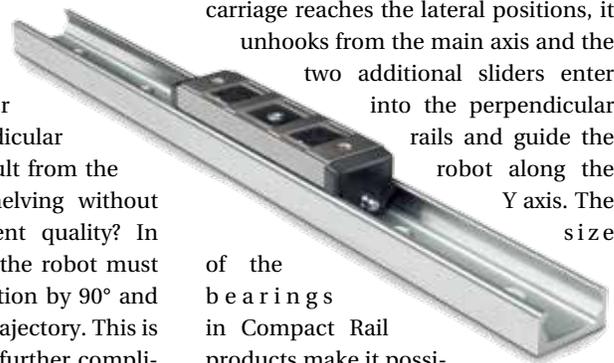
## THE PROBLEM

The robot would have to move along a network of perpendicular axes, reaching different shelves positioned along the warehouse corridors. But how can we favor the passage from the main corridor to the many perpendicular paths available that result from the arrangement of the shelving without compromising movement quality? In these passages, in fact, the robot must be able to change direction by 90° and adopt a perpendicular trajectory. This is a challenging situation, further complicated by the possible irregularity of the surfaces where the rails are set and the need for them to slide easily to prevent blocks and premature wear of components. It is difficult that this type of handling, with the passage of a robot from one track to a perpendicular track, can be managed with common recirculating ball bearing rails, which are very precise but require very precise alignments. At the same time, configuring a sliding system with wheels or bearings set on the rails, which could manage the passage more easily, would not be able to guarantee the necessary stability and precision that the robot needs for placing objects. We needed the right proper solution for handling operations, along with an impeccable configuration for the entire system.

## THE SOLUTION

Rollon decided to use its own Compact Rail products to manage the movements of the robot. These are linear rails with bearings, with the slider that slides inside the rail profile. Rails have hardened and ground raceways, available with different profiles, to absorb possible

problems resulting from surface misalignment. The passage from X axis to Y axis was managed by mounting another pair of sliders on the carriage that sustains and moves the robot, and mounting two sections of rails positioned perpendicularly to the first set. When the carriage reaches the lateral positions, it unhooks from the main axis and the two additional sliders enter into the perpendicular rails and guide the robot along the Y axis. The size



of the bearings in Compact Rail products make it possible to manage the passage of the sliders from the rail sections on the carriage to the perpendicular rail tracks (Y axis) with relative ease. To facilitate their task, in addition to a scrupulous control in the selection and precision of rail profiles, bevels were used to reduce the possibility of criticalities during the passage. T and U profiles were used to solve problems caused by irregularity of surfaces on which rails were mounted. T profiles have shaped raceways that guide the motion of the sliding elements, and U profiles have flat raceways, which allow them to absorb any misalignments without compromising the level of precision. The section of the Compact Rail used by Rollon is 63 mm, which produce optimal performance even with high dynamics and heavy loads.

If needed, for this type of application, Rollon also offers Compact Rail products with certified NFS nickel treatments to guarantee corrosion resistance and prevent dispersion of particles. This type of treatment is quite common in the food and medical industries.

**For more information**  
**Web: [www.rollonindia.in](http://www.rollonindia.in)**

