EN

Modula MIR

Think Vertical, Think Modula

AUTONOMOUS MOBILE ROBOTS

AUTOMATIC STORAGE SYSTEMS AND AUTONOMOUS MOBILE ROBOTS

Efficient storage of materials, handling of the same, picking and placing operations - and all of it managed by simple and intuitive software applications - are some of the main objectives of modern intralogistics management.

Many of these operations can now be automated, thanks to the **integration achieved by Modula solutions**.

AUTOMATIC VERTICAL STORAGE SYSTEM

The vertical storage system is an **automatic storage** system that **takes full advantage of the building's height- and thus has a very limited footprint**.

This solution makes it possible to **save up to 90% of floor space** compared to traditional storage systems and to **store up to 90,000 kg of goods** in special trays. The structure, the so-called VLM (Vertical Lift Module), has the shape of a tower and is made up of three columns: one at the front, one on the back and one in the middle.
The column in the middle is the one in which the elevator moves, picking and repositioning the trays, while those on the front and back are used to store the trays themselves.

The system is based on the **"goods to person"** method and in fact delivers the goods directly to the operator, improving picking operations and reducing the work and time required for order fulfillment.

AUTONOMOUS MOBILE ROBOTS

AMRs, that is, Autonomous Mobile Robots, are devices capable of performing activities and moving around the warehouse autonomously.

They can **move freely within the logistics space** as they are equipped with advanced sensors, artificial intelligence software, and digital mapping of the warehouse enabling them to know where they are at all times.

THE ADVANTAGES OF INTEGRATED SOLUTIONS

The combination of the two technologies (automatic vertical storage systems and mobile robots) provides several advantages.

1. SAFETY AND ERGONOMICS

Automation protects operators by limiting the risks and providing a reliable alternative for carrying out demanding and repetitive operations.

2. MODULARITY AND SCALABILITY

The technologies used are modular and scalable, and can also be adapted to different scenarios and modified over time according to the company's needs.

3. QUICK INSTALLATION

Both technologies can be implemented very quickly without requiring structural modifications.

4. ACCURACY

Thanks to advanced navigation technologies, sensors and artificial intelligence, the robots work with extreme precision.

5. FLEXIBILITY

While carrying out its tasks, the robot is even able to "make decisions" and adapt to changes based on the information it detects directly in its field of operation. It is able to distinguish permanent obstacles from temporary ones and act accordingly.

6. NATIVE SOFTWARE INTEGRATION

Modula's WMS software interacts natively with the AMR's software, making the integration of the two systems seamless.

TRANSPORTATION OF MATERIALS

Robots are able **to transport materials picked from Modula automatic storage systems or from other storage systems.** Picking operations can be done manually or automatically.

MANUAL PICKING

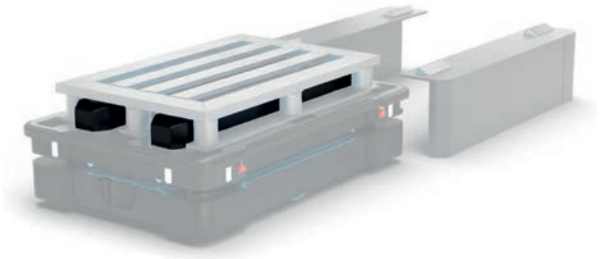
Picking can also be carried out manually by an operator, who collects the product from the tray of the Modula storage system and then hands it over to the robot, or vice versa can place the product in the tray after receiving it from the robot.

AUTOMATIC PICKING

The robot, equipped with a so-called “top module” which is customized according to the weight and type of the material to be handled, automatically places **itself in front of the Modula storage system and picks or places boxes or trays with goods, without human intervention.**

PALLET TRANSPORT

The autonomous robot can pick/place pallets and then move them within the warehouse.



HOOK AND PICKING CART

In some cases, especially when many orders have to be prepared at once, it may be convenient to use a mobile put to light system, the so-called picking cart.

Picking carts can be managed manually or automatically thanks to a special "top module" equipped with a tow hook.

AMRS AND ANTHROPOMORPHIC COBOTS

The MIR mobile robots **directly transport an anthropomorphic cobot** which, once near the automatic vertical storage system, picks the goods directly from the tray in the bay.

This method is particularly useful for picking individual pieces when robots completely replace operators.

MODULA
TECHNICAL CHARACTERISTICS

MODULA

Unit height: from 3,300 mm to 16,100 mm
Unit height increment: 200 mm
Tray storage pitch: 25 mm

Tray width: from 1,500 mm to 4,100 mm
Tray depth: 654 mm - 857 mm - 1,257 mm
Net tray payload: 250 - 500 - 750 - 990 kg
Total net payload: from 40,000 kg to 80,000 kg
(depending on model and configuration)
Total gross unit payload: up to 90,000 kg
(depending on model and configuration)

Throughput: up to 120 trays per hour
(depending on the configuration)
Operator interface: industrial console with
10.4" touchscreen technology

Number of bays: up to 3, also above ground level and on the same side
Types of bay: internal or external with single or dual delivery level
Maximum stackable height: 695 mm (bay S) / 895 mm (bay M) / 1,295 mm (bay XL)

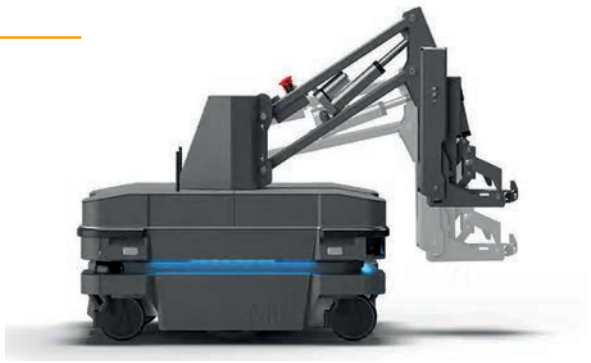
Minimal energy consumption
Automatic weight check on tray return
Dynamic tray height storage
Load-bearing structure in galvanised steel
Eagle steel-reinforced toothed-belt transmission
Elevator guide system with 6 HDPE rollers per side

MIR
TECHNICAL CHARACTERISTICS

MIR 100

Dimensions: 890x580 mm
Height: 352 mm
Robot load capacity: 100 kg
Load surface: 600x800 mm
Battery type: Lithium Ion
Sensors: 360° Laser Scanner, 3D Real Sense™, S300 Ultrasound sensors
Maximum speed: forward 1.5 m/s (5.4 km/h) reverse 0.3 m/s (1km/h)
Autonomy: 9 hours

MIR 250 HOOK



Dimensions: 800x580 mm
Height: 300 mm
Robot load capacity: 250 kg
Towing capacity: up to 500 kg
Battery type: Lithium Ion
Sensors: 360° nanoScan3, 3D Real Sense™, Proximity sensors
Maximum speed: 2.0 m/s (7,2 km/h)
Autonomy: 11.5 hours

MIR 600

Dimensions: 1,350x910 mm
Height: 322 mm
Robot load capacity: 600 kg
Load surface: 1,300x900 mm
Tipo di batteria: Lithium Ion
Sensors: 360° microScan3, 3D Real Sense™, Proximity sensors
Maximum speed: 2.0 m/s (7.2 km/h)
Autonomy: 8.33 hours

MIR 1350

Dimensions: 1,350x910 mm
Height: 322 mm
Robot load capacity: 1,350 kg
Load surface: 1,300x900 mm
Tipo di batteria: Lithium Ion
Sensors: 360° microScan3, 3D Real Sense™, Proximity sensors
Maximum speed: 1.2 m/s (4.3 km/h)
Autonomy: 6.75 hours

MODULA WORLD

Modula is present in 5 continents with dealers and branches located in over 50 countries

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