Smart robotics solutions
The Linde-MATIC range

Linde Material Handling

Linde robotics
Linde robotics, an integrated smart solution

This new robotic solution, the most advanced available today, provides for the first time incredible competitiveness gains and a unique flexibility for your operations.

To ensure a fully integrated solution, our safety system protects continuously your environment: humans, goods and machines which are now able to all work together.
Why robotics?

While logistics tasks will always be directed by people, this new generation of robotic trucks can perform repetitive, low added value material handling tasks reliably and independently. Called “cobotics” - the collaboration between people and robots allows both to work and interact together safely.

Robotics also helps increase productivity and lower costs by reducing damage to goods and putting people at less risk of physical strain by giving uncomfortable tasks to the robotic truck. Robotics also improves the efficiency of material handling flows thanks to consistent timing between transfers optimising the management of work in progress and buffer stocks.

Total cost of ownership (TCO) savings

Operator costs 80%

Maintenance

Energy

Truck

Driver operated truck

Linde-MATIC truck
Our solution offers multiple benefits and cost savings

**Linde expertise and support**

- Standard trucks: volume production, high-quality, proven reliability
- Comprehensive sales network, after-sales services and maintenance
- Proven expertise and market presence

**Technology performance**

- No infrastructure required providing the utmost flexibility
- Easy, fast integration into existing operations
- Fully scalable solution
Robots that can think and work autonomously alongside people

Linde-MATIC robotic trucks are equipped with smart features allowing them to operate in the same environment alongside people and other vehicles without any additional infrastructure.

The robots navigate using existing structural features such as walls, racking or columns: a solution that is economical, easy and quick to install and can easily accommodate future changes to routes or activities.
Competitiveness: The most cost-effective robotic solution on the market

By combining a unique navigation system with Linde’s expertise in material handling equipment, the Linde robotics truck range offers reliable solutions to help our customers optimize their in-house material flows and achieve major cost savings.

Return On Investment (ROI): Rapid payback and massive TCO savings

# Reduced installation costs
# Massive savings on operating costs
Improved costs structure

- Installation
- Infrastructure
- Navigation

TRUCK

Native AGV manufacturers

TRUCK

Standard Trucks with laser navigation

TRUCK

Linde-MATIC geoguidance

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Flexibility: Innovative navigation and easy integration

Navigation

Navigation without infrastructure

The innovative “Geoguidance” navigation system integrates easily into existing warehouses.

Easy to install

The system maps existing physical structures and quickly accommodates changes in the environment. Creating and modifying driving paths is fast and simple to implement.

Real-time localization of robots

Robotic trucks use a map of the environment to locate themselves in real time by comparing what the navigation laser detects with the reference map.
Integration

The DRIVEN BY BALYO technology offers a complete logistics solution interfaced with customers’ own logistics management software ensuring real-time supervision.

Based on Linde’s standard products, the robotic versions are equipped with dual mode commands (manual & automatic) so they can easily integrate into a customer’s existing operation.

Dual mode: automatic or manual control

If needed, an operator can take manual control of the robotic truck to perform ordinary manual tasks.

Supervision & interface

The Supervisor software provides overall management of the robotic truck fleet in real time. It controls traffic, assigns tasks to individual robotic trucks and interfaces with systems such as ERP (Enterprise Resource Planning) and WMS (Warehouse Management System), or equipment such as automatic doors, conveyors, production machines etc.
Safety:
Linde’s best selling features, enhanced

The safety features of Linde-MATIC trucks are based on a combination of best in class safety solutions used on Linde standard trucks with the addition of further innovative safety and detection features.

- Geoguidance laser (range in excess of 30 meters)
- 3D camera: obstacle detection, safety support
- Visual and acoustic warning indicators
- User Interface equipped with intuitive touch screen
- Emergency stop buttons
- Tiller: simply activating the buttons or the tiller itself stops the truck immediately and returns it to manual mode
- Restarting automatic mode is easily done using the touch screen
- Indicators on the user interface bring the truck back on track
- Rear laser scanner: environment recognition, obstacle detection, safety support (recognition module)
- Front Safety laser scanner: obstacle detection, load recognition for stock line management
Front safety
- High safety level (Performance Level D)
- Dynamic and responsive

3D Smart safety
- The end of the safety versus productivity trade-off: unnecessary stops are avoided
- Autonomous decision-making
- Productivity gain

Rear scanners
- High safety level (Performance Level D)
- Mobile load perception
- Pallet detection sensor

Hardware safety features
- Emergency stop buttons
- Tiller switch
A streamlined & versatile truck range

With a comprehensive standard truck range, we cover 80% of all material handling applications in most manufacturing and logistics businesses.

**TOW TRACTOR**
- Load train applications
- Loads transport
- Kitting
- Waste management
- Feeding production lines

**STACKER**
- Pick & drop at low levels
- Bar code scanning
- Conveyor to packing machine
- Order picking
- Stock line management
The combination of Linde’s standard trucks and Balyo’s unique technology enables us to offer our customers the real flexibility and versatility they need.

**COUNTERBALANCED STACKER**
- Pick & drop at low levels
- Bar code scanning
- Conveyor to packing machine
- Order picking
- Stock line management

**PALLETRUCK**
- Long distance load transfers
- Block stacking loads in marshalling areas
- Transferring long loads

**L-MATIC AC**
- Pick & drop of closed pallets
- Handling stillages and industrial containers
- Stacking onto conveyors

**T-MATIC**
- Long distance load transfers
- Block stacking loads in marshalling areas
- Transferring long loads
Linde Material Handling and B Alyo are merging their technologies and strengths to develop innovative robotic material handling solutions. High quality products are matched by the standards of service that we provide.

With a comprehensive network of local sales partners, we are available around the clock and around the world. Your local Linde partner offers a complete single-source package: from qualified pre-sales consulting to after-sales service, including financial packages matched to your business: leasing, rental or hire purchase. Flexibility is guaranteed to meet your operational and decision-making needs.