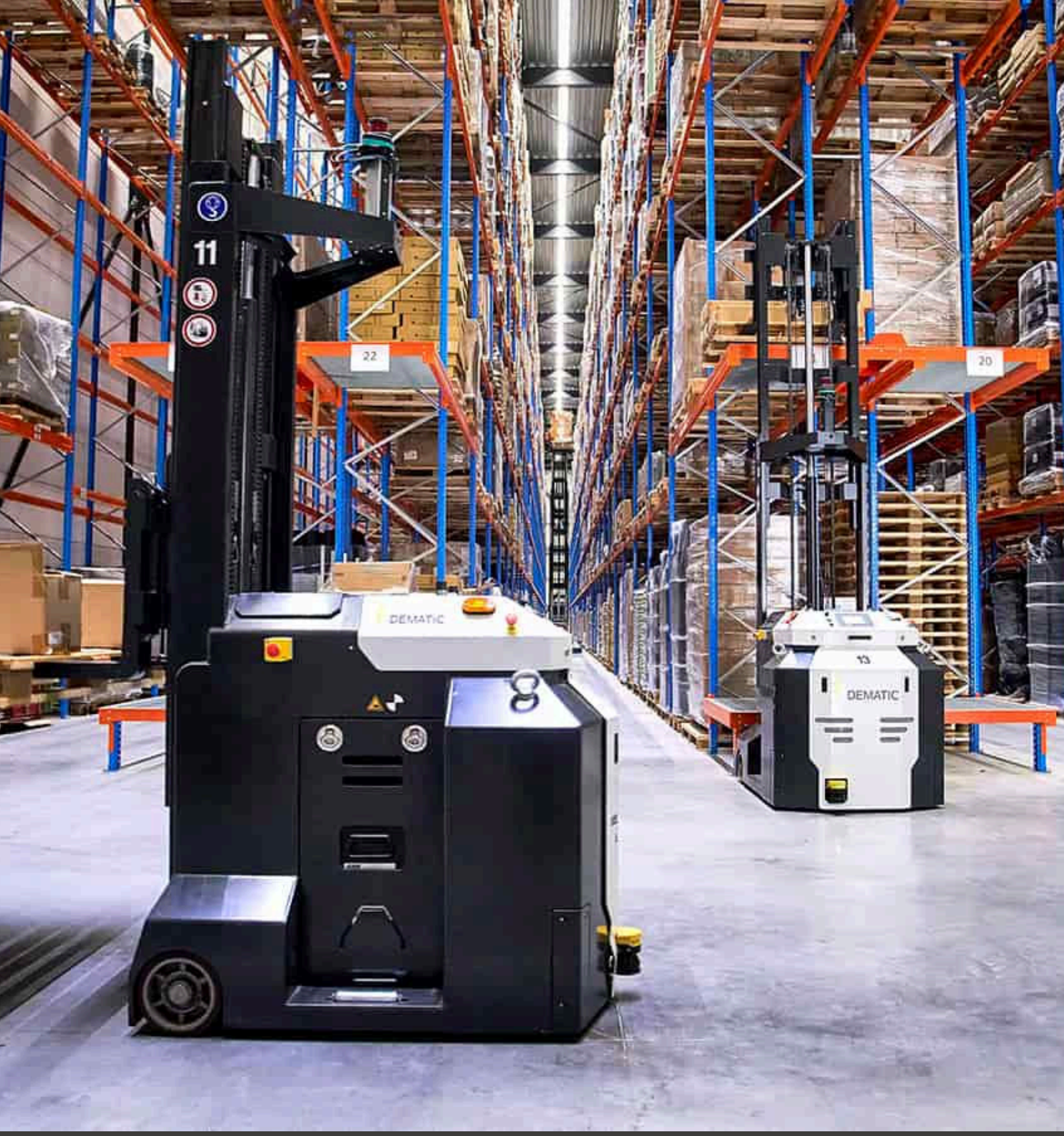


Dematic AGV

Dematic Automated Guided Vehicles

The Automated Transport & Storage Solution

TOTAL WAREHOUSE | DEMATIC

Dematic AGV

The Automated Transport & Storage Solution

Cost-effective & versatile

Dematic automated guided vehicles are unmanned industrial trucks and they are the engine-room of our fully automated transport and storage systems. Dematic AGVs are used in all sorts of industries, to transport and store all kinds of products and materials.

Equally at home in the factory, the warehouse, in distribution or in shipping areas, they are the safe and secure way to increase process efficiency and improve business profitability; all without human intervention.

Dematic AGVs automatically lift, rotate and shift your goods, fetch and carry loads to and from racking, store and retrieve in block-stacks or deep-stack lanes, transport product over long distances, deliver and collect at conveyors or process machines, etc.

Standard or tailored

Standard or tailored Our Dematic AGV systems are built from the most reliable, off-the-shelf components. And our vehicles are available both as standard products or configured from standard building blocks and tailored to precisely meet your needs.

What Dematic Customers Say

"Thanks to our new Dematic AGVs we can process three times the volume we managed in the past. That's way beyond our expectactions. And what's more the vehicles are working error-free. This is extremely important to us, as quality is a top priority for Unilin." **- Stefaan Raedt Warehouse Manager Quick-Step, Unilin Flooring**

Flexible and integrated

Compared to other automated transport technologies, a Dematic AGV system is not tied to the floor and that allows better use of the available working space. In addition, extensions or even relocations of the entire system can be easily achieved. Dematic AGV systems integrate with higher-level ERP and MES software and can be easily combined with other material handling systems like conveyors, stacker cranes and palletizing or packing machines.

Increased safety and ergonomics

Increased safety and ergonomics Thanks to their accuracy and automatic nature, Dematic AGV systems directly lead to a safer working environment, with no collisions and zero damage to loads. We strictly comply with and exceed the demands of international safety standards. Dematic AGV systems provide an alternative to manually transporting hazardous or delicate products and to transport in less operator-friendly environments, such as cold stores, warehouses for chemical products, etc.

TOTAL WAREHOUSE | DEMATIC

Advantages of Automated Guided Vehicles

A wide range of benefits

- Reduced operating costs and higher efficiency
- Reduced manpower
- No product damage
- Increased safety
- Improved product traceability
- Easy and fast installation
- Better use of space
- Low maintenance

Ideal Conditions

- Repetitive transports
- Multi-shift and 24/7 operations
- Short to mid-distance travel – High-frequency throughput
- Material flows with a large number of buffer locations
- Complex production flows
- Transport to and from automated warehouses, WIP (Work-in-process) and production

What sets Dematic apart...

- System development based on standard designs, tailored to the job
- Dedicated project approach and life cycle services from start to finish
- Unique combination of in-house technology and off-the-shelf components
- Committed to R&D (mechanical, electronics, controls, software)
- Excellence in retrofit, upgrade and extension jobs

TOTAL WAREHOUSE | DEMATIC

Different Applications for AGVs

What sets Dematic apart...

– Transport from receiving to production / warehouse
– Transport between production areas / work-in-process buffers
– Transport between production areas and warehouse areas
– Stacking and storing applications in warehouses (very narrow aisle, wide aisle & drive in racking, deep stacking, block storage, etc.)
– Roll handling
– End-of-line automation (packing machines, palletizers, stretch wrappers, etc.)
– Transport in consolidation and dispatch areas









Typical Markets for AGVs

Food & Beverage
Dematic AGV systems comply with FDA regulations, food quality standards and product traceability. They handle any intermediate stage from raw materials receiving, transport to and from AS/RS, supply to processing lines, handling of finished products and trailer loading.

Examples of AGV applications in food & beverage:

- Food transport in less operator-friendly environments (cold storage, freezers, drying kilns)
- Transport of fish tubs in salty and oily areas
- Storage of cheese racks& transport to ripening rooms controlled via recipe management software

Tobacco
Dematic AGV systems for the tobacco industry link the various stages of tobacco production processes in primary and secondary zones.

Examples of AGV applications in tobacco include:

- Transport of tobacco bins from filling machines in primary
- Storage in bin warehouse
- Transport from warehouse and bin tipping into feeders
- Transport of empty bins
- Transport of finished cigarettes to warehouse or shipping

Distribution, Transport & Logistics
Dematic AGV systems support the supply chain and JIT delivery in warehouses, distribution and logistics centers; in from receiving to store and out for consolidation and shipping. With conventional storage space and continuous operation carrying such high price tags, a Dematic AGV system can help to cut costs by unmanned working in very narrow aisles and at heights up to 12 m.

Typical Markets for AGVs

Pharmaceuticals & Life Sciences
Dematic AGV systems work well in clean environments, based on validated concepts.

Typical automated transport applications include:

- Transport of raw materials from receiving to automated warehouse and storage areas
- Transport of products from warehouse to production and WIP buffer (Work-in-Process)
- Product delivery from storage to picking zones
- Supply of pharmaceutical packing materials to packing lines
- Transport of finished products from production to warehouse
- Delivery of meals, linen, waste, medication in hospitals

Paper & Print
Dematic AGVs support the complete supply chain in paper, printing and packaging processes.

Typical automated transport applications include:

- Horizontal roll storage or vertical deep-stack storage on floor
- Transport to unwrappers, sheet cutters, presses
- Intermediate storage of prepped rolls
- Waste paper handling
- Transport of finished products (newspapers, books, catalogs, tissue paper etc.) in shipping areas or mailroom

Distribution, Transport & Logistics
Dematic AGV systems reliably move products from one production cell to the other in manufacturing and production processes.

Some typical applications include:

- Delivery of raw materials
- Transport of semi-finished products to work-in-process buffer storage or the intermediate warehouse
- Supply of other materials like packaging or removal of empty pallets, waste and refused goods
- Move finished goods from the end of the production line to the finished goods warehouse or shipping area

Vehicle Types for Dematic AGVs

Dematic AGV
Dematic AGVs are automated guided vehicle used for automatic transport of products in a wide range of applications. Within the extensive line up of Dematic AGVs, these vehicles cover a wide range of material handling and intralogistics needs in production logistics, distribution centers and warehouses.

Dematic Forklift AGV
The Dematic forklift AGVs are equipped with lifting forks. The forklift vehicles are able to automatically pick up and deliver pallets, containers, rolls, carts and many other conveyable loads. The following types are available within the Forklift series:

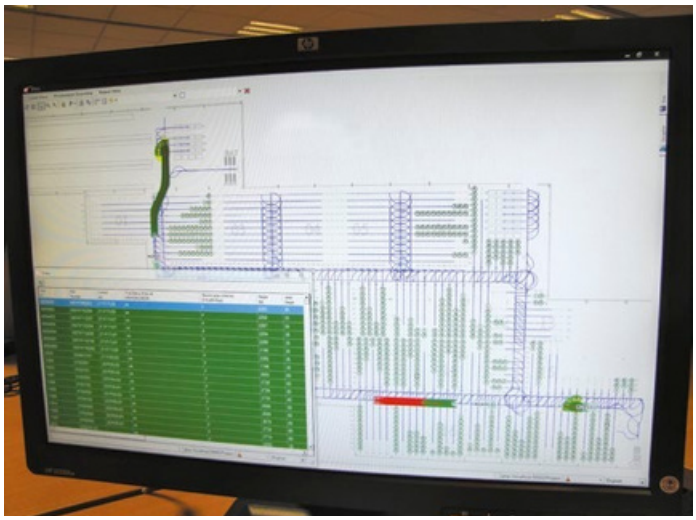
Narrow Forklift AGV
Lifting forks sit over the support legs allowing the AGV to make tighter turns and to transport loads in areas where space is limited.

Straddle Forklift AGV
Support legs are outside the load to provide better support for heavier and taller loads like racks, pallets and rolls. The straddles also allow closed format pallets to be handled and provide improved stability for higher lifts.

Counterbalance Forklift AGV
AGV equipped with extra counterweight to handle narrow and closed loads in confined areas.

Dematic Deck AGV
Deck AGVs are equipped with one or more horizontal transfer devices to transport unit loads like pallets, rolls, bins, racks, carts and containers at high throughput rates. Transfer device options include roller, chain or belt conveyors, lift platforms, shuttle systems or pushpull systems.

Software & Battery Systems for Dematic AGVs



Software for carefree transport & traffic control
Dematic's transport software manages all AGVs in the system and issues transport orders to the vehicles. A transport order contains the optimized route between the order's source and destination location and is given to the AGV that can get there the fastest, taking into account the priorities of the orders. The software keeps track of every AGV in the system to safely manage traffic on the shop floor. Thanks to the route optimization algorithms, the most economical route for all transport orders can be calculated.

Software for accurate vehicle control & navigation
Driving with repeatable accuracy in narrow aisles, positioning loads with extreme precision or managing complex load handling operations, the on-board navigation software has it all under control. The software allows each vehicle in the system to follow a specific path by means of navigation sensors. The software calculates the correct position for the vehicle and ensures that it is able to get to its destination, both quickly and accurately.

Dematic navigation software has an open platform that can incorporate any of the existing navigation technologies and is ready for the future ones to come:

- Laser
- Magnet
- Wire
- Camera
- Natural target navigation

Software for carefree transport & traffic control
Dematic AGVs feature a wide range of battery charging systems to support 24/7 operation of the system. Special battery charging schedules can be programmed by the operator to optimize the charging process according to local needs. The following battery exchange and charging systems are available depending on your needs:

- Manual battery exchange stations
- Automatic battery exchange stations
- Automatic opportunity recharging stations (on-line recharging whenever possible)