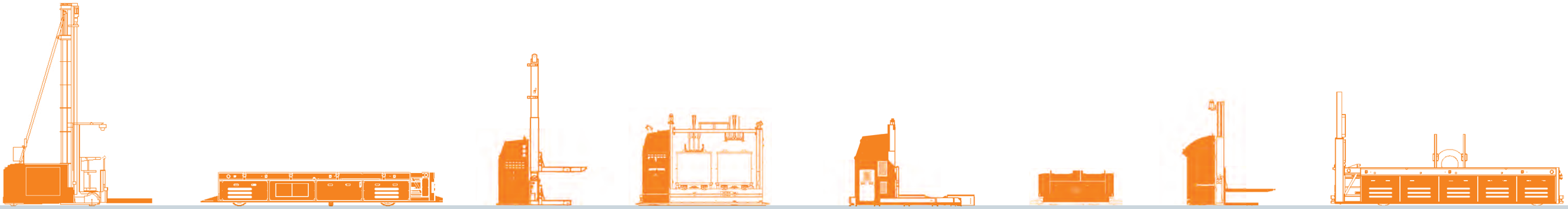
Automated Guided Vehicle Systems

Material flow control
Automation
Internal logistics

A strong partner for your internal logistics

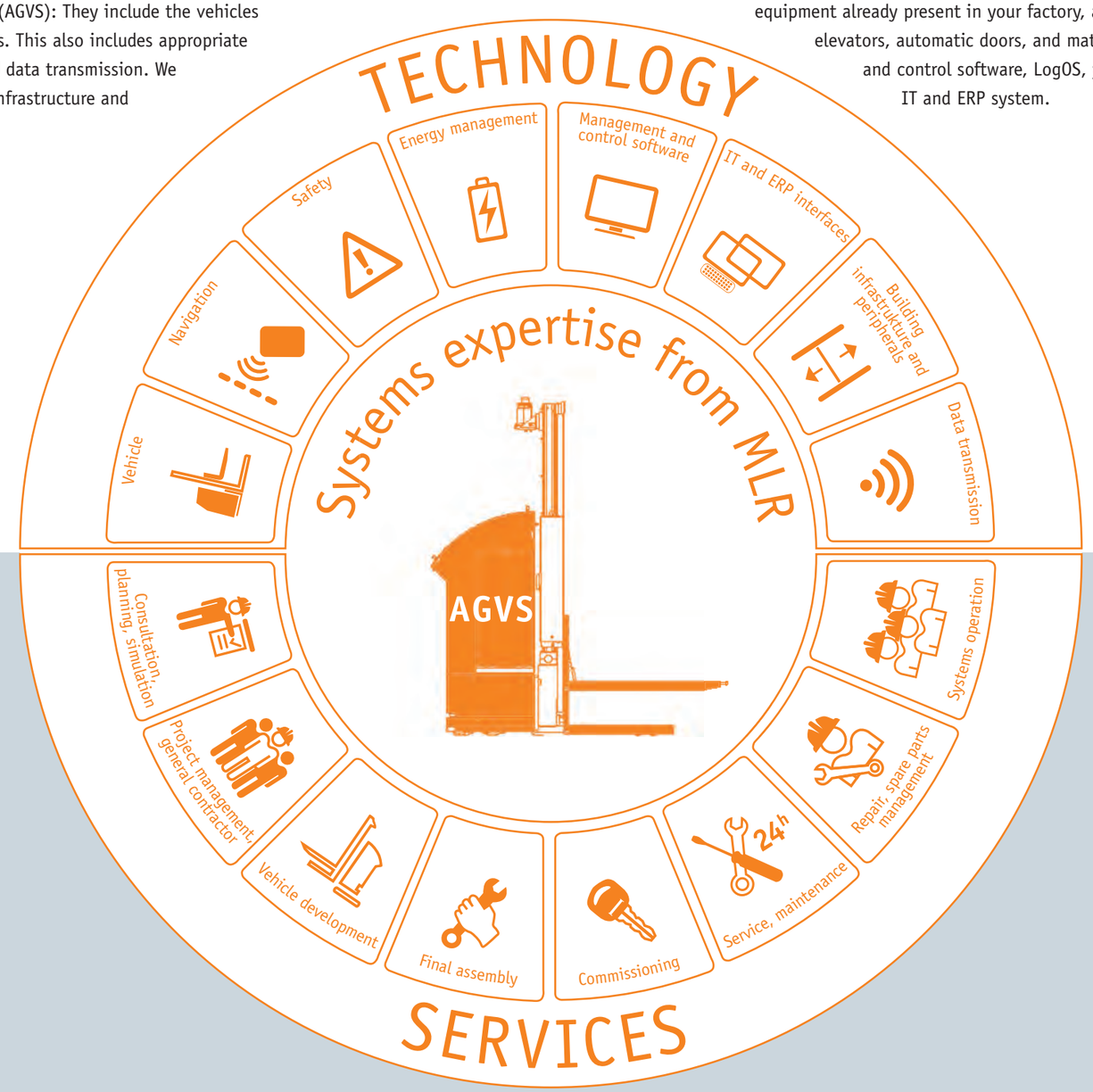
The MLR Group is a leading global supplier of automated guided vehicle systems (AGVS), material flow systems, and internal logistics. We design, build, and install automated guided vehicle systems for new projects and modernize and expand existing systems. As a general contractor, we not only supply the systems, we also work with our customers upon request to develop a financing concept, or fully manage the operation of the system.



Future-oriented internal logistics: Automated Guided Vehicle Systems from MLR

One source for the entire system

We provide the entire automated guided vehicle system (AGVS): They include the vehicles that we develop especially for your internal requirements. This also includes appropriate navigation and safety systems, energy management, and data transmission. We ensure that the vehicles are integrated in the building infrastructure and equipment already present in your factory, and that the vehicles autonomously interact with elevators, automatic doors, and materials handling systems. Using MLR's own management and control software, LogOS, you can administer the AGVS and integrate it into your IT and ERP system.



Over 40 years of AGVS experience

Automotive | BMW, Daimler, Ford, Porsche, Volkswagen, Bilstein, Continental-Teves, Deutz, Dräxelmeier, Notox, ZF | Pharma | Bayer, Novartis, Pfizer, Jenapharm, Rose, Sanofi-Aventis, Salutas | Paper, Priniting, Packaging | Gruner & Jahr, Ball Packaging, Glatfelter, Küster Druck, Leopold Verpackungen, Mitsubishi Paper, Weidenhammer | Production | 3B (Owens Corning), AC Folien, Aero Pump, Baumgartner, Bellheimer Metallwerke, Braun, Dieffenbacher, Taller, Walter Hartmetall | Food | Berglandmilch, Bosch Tiernahrung, Haya, Heinecken, Käserebellen, Merba, Milcafea, Obersteirische Molkerei, Podrávka, Rila Feinmost, Teekanne, Unilever Bestfoods, Wernsing | Hospitals | Sidra Medical Center, Karolinska University Hospital, Akershus Universitetssykehus, Ostfold Hospital, Fiona Stanley Hospital, Tan Tock Seng Hospital, Khoo Teck Puat Hospital, Robert-Bosch-Krankenhaus Stuttgart, Klinikum Offenbach, Klinikum Bremen-Mitte, Leopoldina-Krankenhaus Schweinfurt, Universitätskliniken Jena, Gießen, Marburg, Magdeburg, Düsseldorf

Two Caesar 2F-0.4 Mr transport trays with components at an automotive supplier.

Caesar series

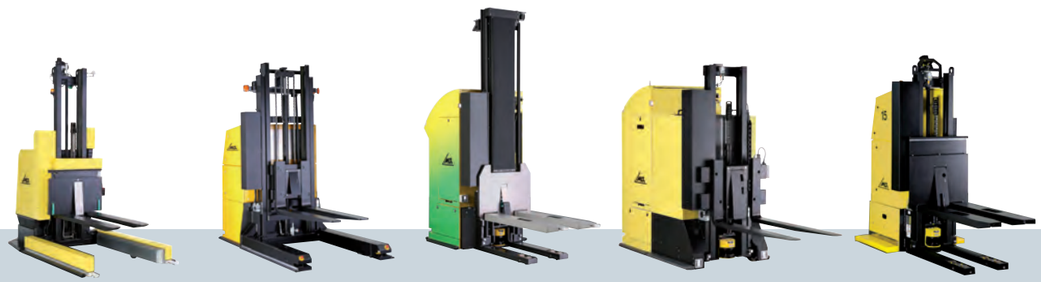
The automated guided platform trucks in the Caesar series can be optionally equipped with roller, belt, or chain conveyors. Their extremely compact size means that the automated transporters are hardly taller than the installed roller conveyors, with a transfer height of just 500 mm. The controller and battery are located directly beneath the payload.

A powerful towing tractor version is also available. As a drive-under tractor, they move underneath the load fixture, then an engagement pin extends upward and the tractor picks up the frame in order to transport it. Drive-under tractors are particularly suitable for transporting containers or tanks supported on rollers, with space beneath.

Versions | platform truck, drive-under tractor, towing tractor | Payload | Standard 150–63,000 kg | Towing capacity | Up to 5,500 kg | Safety equipment | Strip sensors, laser scanner with speed-based warning range, radar sensors, soft bumpers | Power supply | Lead, NiCd, Li-Ion, or LiFePo4 batteries

Phoenix series

The Phoenix series of automated guided fork trucks can be used to pick up and deliver pallets, lattice boxes, and other containers at floor level or at higher storage locations. The lifting forks are lowered directly above or between the support legs on the freely navigating vehicles. Their small turning radius allows load handling in limited spaces. Payload, controller with drive, and battery are arranged one after the other.



Versions | high-lift fork trucks, straddle trucks, rack stackers, reach trucks, counterbalance stackers, side shift stackers, telescoping fork stackers | Payload | Standard up to 1,500 kg, special up to 4,500 kg | Lift height | 1,200 to 3,000 mm | Safety equipment | Strip sensors, laser scanner with speed-based warning range, soft bumpers | Power supply | Lead, NiCd, Li-Ion, or LiFePo4 batteries

Two Phoenix R-1,5 Lr transport pallets with cartons at a pharmaceutical manufacturer.

Two Phoenix TN-0.4 Lr transport containers at a medical device manufacturer.

Specialized vehicles

Our strength is the development of specialized solutions for individual customers, including specialized vehicles. These include, for example, vehicles with scanning, weighing, or metering functions, outdoor vehicles, and four-way or double fork stackers. In addition to classical 3-wheeled vehicles, we offer vehicle chassis with 4 or 6 wheel designs for specific applications. Multiple steering axles are also possible. Depending on the wheel arrangement, all wheels can be steered specifically. This technology allows transverse or diagonal travel (crab moves) and is most suitable for tight space conditions.

Special requirements for hygiene and safety apply for manufacturing food products and in clinics and hospitals. Upon request, we will make the automated guided vehicles in stainless steel and seal off all enclosures and lifting devices in accordance with the IP54 protection level. This means that the vehicles can be disinfected by using steam on all sides.

Specialized equipment | RFID/barcode reader, weighing device, metering device, roller conveyor, belt conveyor, chain conveyor, flexible load supports, cover lifter, dual mode | Stainless steel vehicle | IP54, dustproof, protects against water spray and streams | Clean room certification | Emissions-free, GMP certification

Heavy load transporters up to 63 tonnes

The automated guided heavy payload vehicles in the Caesar series transport large and heavy loads of up to 63 tonnes. If automated guided transport systems are also used in outdoor areas, they must be built to withstand all kinds of weather. Components for personnel protection must work reliably at all times in ice, snow, and rain.

Transport materials | Workpieces, press tools, coils, plates, castings, steel beams | Load capacity | 1.4 to 63.0 tonnes | Vehicle length | Up to 8 meters | Specialized equipment | All-wheel steering, coil fixture | Outdoor vehicles | Radar sensors

A Caesar P-63.0 Lr transports coils and work-pieces in a metal processing plant.

Automated narrow-aisle stackers

The fully automated narrow-aisle stackers in the Mayesto series provide clear advantages: The vehicles move through the shelving aisles on roller guides, at speeds up to 2.7 m/s, and thanks to magnetic navigation they also can freely navigate in open warehouse zones – for example, to change aisles. The newly developed fine positioning systems with laser scanners achieves very fast measurement and response times. This also applies, of course, to the automation of high-rack stackers.

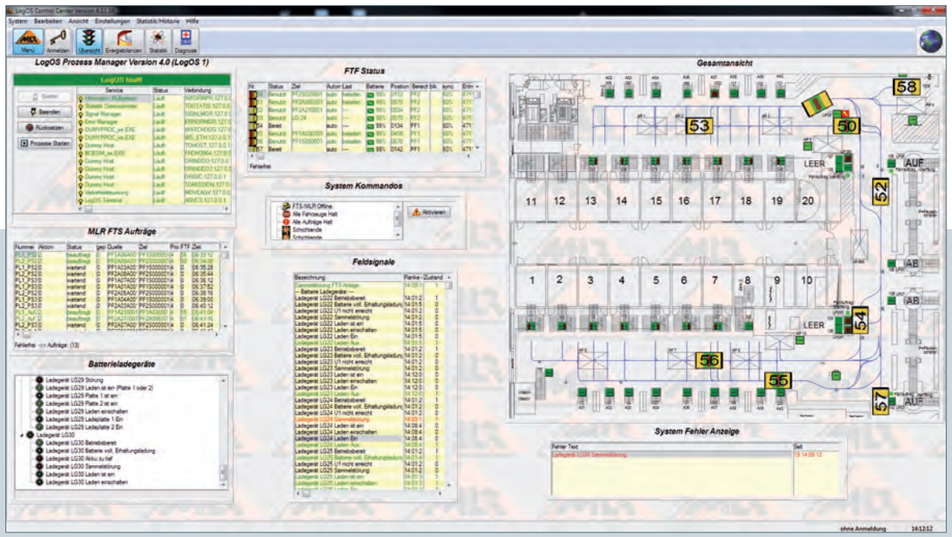
Load carriers | Telescopic, pivot forks | Transfer height | 11 meters | Speed | Up to 2.7 m/s | Payload | Up to 1.5 tonnes | Specialized equipment | Optical sensor for load detection, contour detection, cameras on booth roof

A Mayesto narrow-aisle stacker transports pallets with sacks of cocoa powder in a high-rack storage facility.

Powerful management and control software

The multifunctional Logistic Operating System LogOS has been developed by MLR as a dedicated management and control software platform that controls internal transport systems, monitors machines, coordinates material and product flows, and thereby organizes and manages all common types of warehouses.

External vehicles, such as forklifts and cranes, and materials handling systems and high-rack storage systems can also be integrated in the overall system, as well as elevators, fire protection doors, and safety devices. LogOS has standard interfaces for typical ERP and MRP systems, allowing fast and economical integration in existing IT structures. Continuous development of LogOS guarantees the customer a future-proof investment.



LogOS modules

The powerful LogOS software package is modular in design and easy to expand.

LogOS FTS | The control system administers all of the vehicles and workstations. It dispatches, controls, and monitors vehicles and order execution.

LogOS SLS | The stacker control system is designed for use with human-operated transporters, such as forklifts.

LogOS MFS | The LogOS material flow system controls and coordinates the entire internal material flow.

LogOS LVS | Complete order management with return captures, stock level management, and storage space administration.

LogOS CM | The LogOS Communication Manager forwards status and faults to technicians on standby via in-house telephone and pager interfaces, or by email and cellular communications.

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