

Automated Guided Vehicles Application example

MAYESTO – automated high-bay stacker



High-bay storage facilities are usually serviced either by man-aboard narrow-aisle stackers or with a fixed installation of automated storage and retrieval equipment. Now there's a strong alternative: the MAYESTO from MLR.

MAYESTO is an automated narrow-aisle stacker, usually fitted with a telescopic platform where the telescopic retractable fork can extend to the right or to the left – as with a high-lift order picker – in order to retrieve and deposit pallets. Alternatively the vehicle can be fitted with a turret head.

The MAYESTO can be used for load transfer heights up to 11 metres and for loads up to 1.5 tonnes. The new automatic high-bay stacker is based on high-performance narrow-aisle stackers, which have been mechanically reinforced for automatic operation.

The fully automated MAYESTO offers some major advantages. These include speed and manoeuvrability. In the aisles, the MAYESTO is rail-guided moving at speeds of up to 2.7 m/s. Outside the aisles, the vehicle can navigate freely – for example to change aisles – with the proven reliability of the MLR magnetic navigation system.

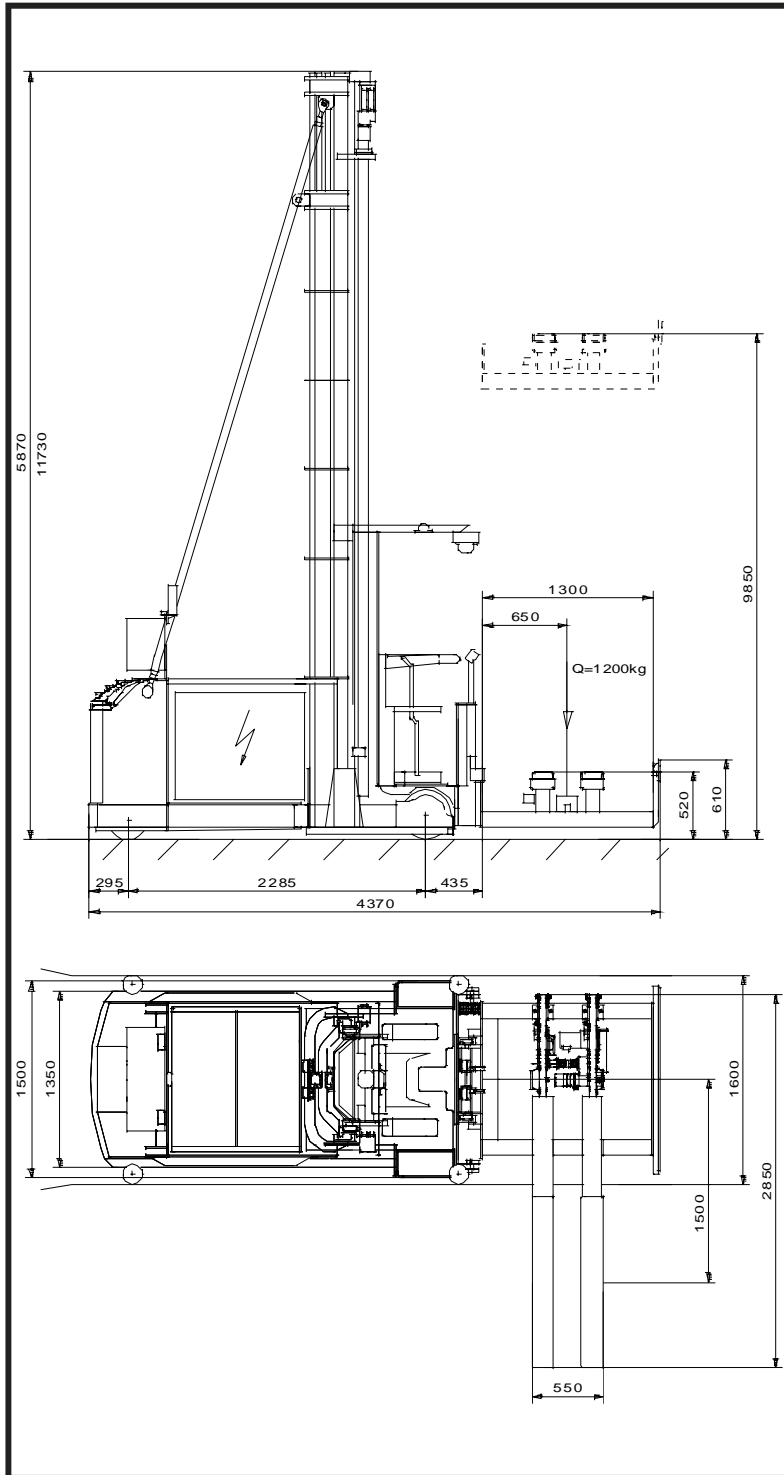
One special feature is the newly developed fine positioning where readjusting laser scanners identify the precise height and size of a storage bay. Laser-based measuring and adjustment is extremely fast.

The MLR LogOS control system manages vehicle routing and assignment and transmits assignments to the AGVs via radio.

Linked to a host computer, LogOS will also handle warehouse management and stock control. Existing warehouse management systems (WMS) can be integrated very easily. Peripheral equipment such as fire doors and high-speed doors can be linked to the LogOS software, as can other conveyor systems supplying or removing goods. The result is fully automated warehouse operation.

Technical Data

MAYESTO - narrow-aisle stacker with telescopic platform



Standard vehicle	
Length x chassis width	4370 mm x 1500 mm
Height with mast retracted	5870 mm
Height with mast extended	11730 mm
Aisle width between guide rails	1600 mm
Payload	1200 kg
Lift height	9850 mm, top edge of fork
Lowest transfer height	440 mm
Floor clearance	30 mm
Drive	80 V/7 kW AC
Speed	2.7 m/s (9.7 km/h) maximum, speed reduction depending on lift height and operation in or outside of aisles
Brakes	Electro-magnetic
Chassis	3-wheeled vehicle
Lift drive	Hydraulic
Lifting/lowering speed	0.45 m/s maximum
Load-handling device	Telescopic retractable fork, 2 prongs
Extension/retraction	Electric motor
Max. extension	1500 mm
Extension/retraction speed	0.2 m/s maximum
Automation	
Control	Special control for use in AGV systems Based on PC platform, LINUX operating system
Navigation	Free magnetic navigation, position determination via magnetic sensor bar, piezo gyro and 2 separate wheels on the load side with counting sensors In aisles additional mechanical rail guidance
Positioning	Via navigation, path measurement in the aisles, also identification of pallet position in the bay by means of laser scanners left and right on the retractable fork
Positioning accuracy	± 10 mm
Vertical path measurement	Absolute with wire rope encoder, data transmission via CAN bus
Horizontal path measurement	Absolute with rotary encoder, data transmission via CAN bus
Load monitoring	Light barrier load recognition left und right, Light barrier contour monitoring left und right
Safety	Laser scanners front and rear
Data transmission	Via WLAN to control computer
Other	2 cameras left and right on the cabin roof, operated via WLAN, swivel & tilt action
Energy supply	Pb battery 80 V/93 0 Ah
Battery charging	Manual plug-in for onboard battery charging, or battery change

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