



Miles

Autonomous mobile robot

THE KNOW-HOW FACTORY

FLEXIBLE AUTOMATION

WITH UNLIMITED ACCESSIBILITY

INDIVIDUAL, DRIVERLESS TRANSPORT SYSTEMS FOR PRODUCTION AND LOGISTICS PROCESSES

In recent years, autonomous mobile robots (AMRs) have developed into a revolutionary force that has transformed industries and redefined efficiency in many different sectors. AMRs are intelligent, self-navigating machines that are designed to perform tasks without direct human intervention.

They combine state-of-the-art technologies to navigate complex environments, interact with objects and perform tasks with precision.

Transport of various goods such as pallets, material containers or small parts, automatic intake and release of loading carriers and even fully automated fleets.

OUR EXPERTISE – YOUR ADVANTAGES

Free accessibility

- ▶ The best view of the working area at all times
- ▶ Collaborative system – people and machines in a single system

Modular concept with free layout design

- ▶ No safety enclosure needed for the automation system
- ▶ Free positioning options for the individual modules
- ▶ Reprogramming of the AMR travel paths possible at any time
- ▶ Later integration into existing processes

Simple expansion of the automation

- ▶ Additional AMRs can be integrated into the system later



Different goods can be transported in a single system

- ▶ (Euro) Pallets, Off-Cut, Trolleys
- ▶ Commissioning carts
- ▶ Robot modules

Minimal space requirement

- ▶ Free transport system without fixed installation requirements on hall floors
- ▶ AMR travel path remains able to be walked on and driven on
- ▶ Small AMR turning radius

Intelligent safety concept

- ▶ Laser scanners guarantee personnel protection in the drive direction
- ▶ Object detection even to the sides of the vehicle

Economical

- ▶ Combined automated and manual operation possible at all times
- ▶ Simple and fast expansion and maintenance
- ▶ The smallest of downtimes in automation thanks to the fastest interchangeability of the AMRs
- ▶ Cross-area communication in the spirit of Industrie 4.0

BASIC VEHICLE WITHOUT LIFTING UNIT

Order No.	▶ Technical data		
	Miles 500	Miles 1500	Miles 2000
Load max. [kg]	500	1,500	2,000
Length [mm]	1,205	1,530	1,480
Width [mm]	678	910	990
Height [mm]	293	293	360
Speed max. [m/s]	1.5	1.5	1.6
Runtime [h]	10	10	10
Gradient max. [%]	5	5	7
Chassis type	Differential	Differential	Pivot (omnidirectional)
Turning radius [m]	0	0	0

BASIC VEHICLE WITH LIFTING UNIT

Order No.	▶ Technical data		
	Miles 500	Miles 1500	Miles 2000
Dimensions with lifting unit retracted (LxWxH) [mm]	1,380 x 678 x 408	1,530 x 910 x 408	1,480 x 990 x 478
Load max. [kg]	500	1,500	2,000
Stroke [mm]	55	55	80

BASIC VEHICLE WITH ROBOT MODULE

Order No.	▶ Technical data		
	Miles 500	Miles 1500	Miles 2000
Dimensions with vehicle, protective enclosure closed (LxWxH) [mm]	-	-	1,480 x 990 x 2,390
Dimensions with vehicle, protective enclosure open (LxWxH) [mm]	-	-	2,000
Stroke [mm]	-	-	80

COMPLETE AUTOMATION ON THE SHOP FLOOR

MILES IN DETAIL

AMRs move collaboratively with humans in one and the same system and can avoid obstacles. In the process, the AMR transports pallets, robot modules, carts and commissioning carts safely and efficiently from location to location.

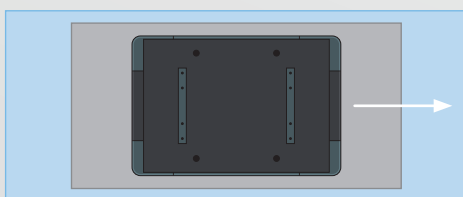
OUR EXPERTISE - YOUR ADVANTAGES

- ▶ Customer-specific, tailored setups
- ▶ Collaborative automation solution with free layout design
- ▶ Omnidirectional movement in some cases for minimal space requirements (turning radius 0 m)
- ▶ Natural navigation
- ▶ Safety based on SICK technology (Performance Level D)
- ▶ Lithium-ion battery as standard
- ▶ European safety standards (CE) for a complete automation solution
- ▶ Fleet management (optional: Master Computer)

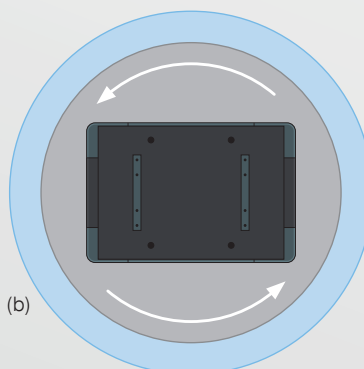


INTELLIGENT SAFETY CONCEPT

Safety is at the heart of autonomous mobile robots (AMRs). Safety scanners ensure a safe environment for humans and machines. When used in drive and load directions, scanners detect obstacles precisely and proactively and provide automatic speed adjustment up to and including an immediate stop to avoid potential collisions – even on curves. Laser reflectors enable a highly precise position determination and, with it, collaborative work.



(a)



(b)

Safety areas when driving (a) and when turning (b) the vehicle

- = reduction of speed
- = movement stop



COMMUNICATION VIA FLEET MANAGEMENT

The Zimmer Group offers you seamless integration of the fleet management and the control technology into your ERP system. Compatibility with VDA 5050 allows you to integrate the vehicle into existing fleet management and control technology systems. Integrated diagnostic systems help you to plan ahead and thus achieve significantly higher availability.



INDUCTIVE BATTERY TECHNOLOGY

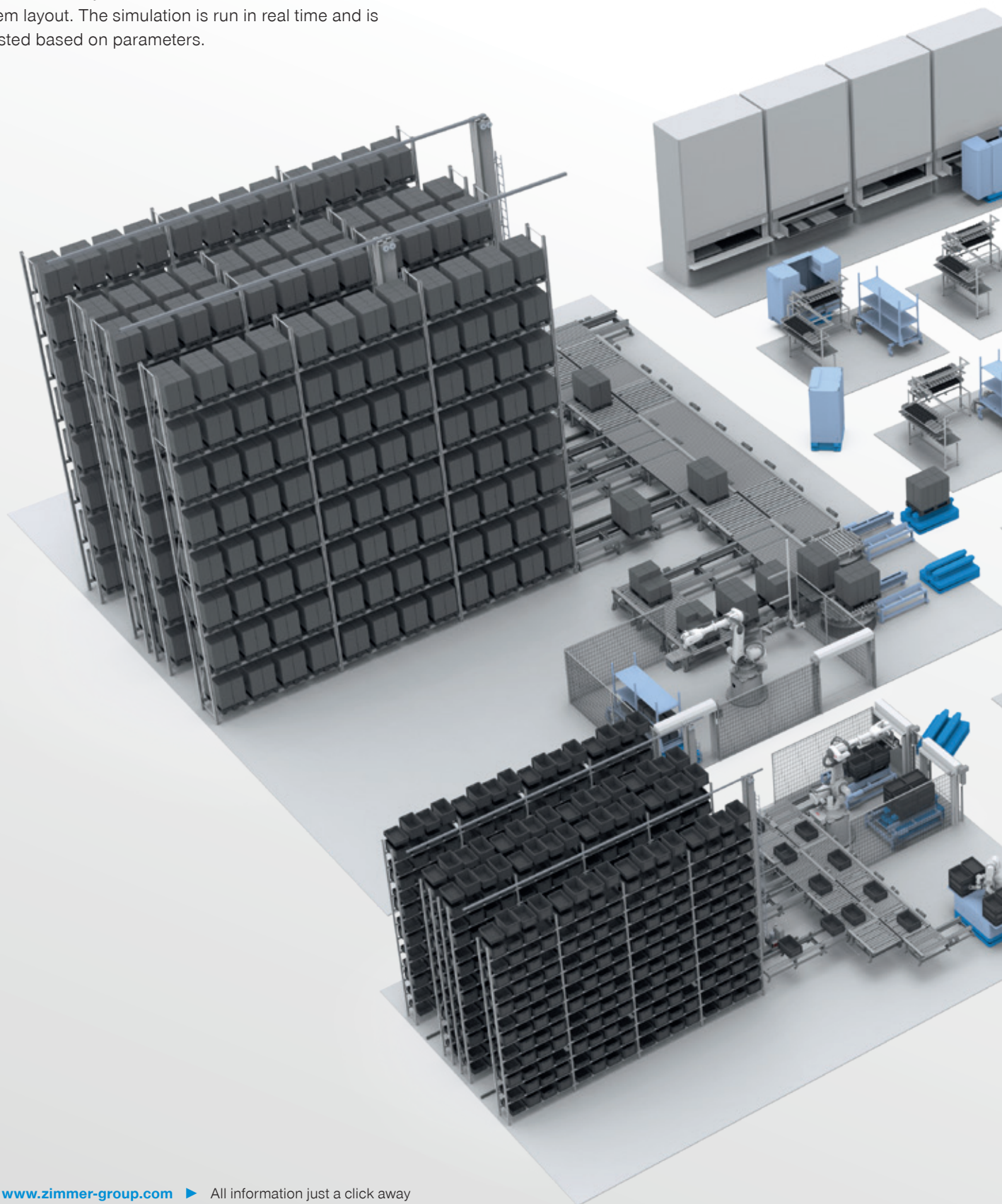
The battery is the heart of every AMR. The Zimmer Group uses modern lithium ion technology for maximum energy efficiency as standard. In addition, it is maintenance-free, has a long service life and ensures fast charging times with maximum flexibility in use. Miles uses contactless and wear-free inductive charging technology. This system does not require any employees. The AMRs receive their charging commands from the fleet management.

USE CASES

IN AN AMR-BASED PRODUCTION

AMR FOR ANY REQUIREMENTS

An optimum concept for any customer requirements is developed with help from simulation software. The layout of the automation system is created based on the customer's system layout. The simulation is run in real time and is adjusted based on parameters.



A 3D perspective rendering of a factory floor layout. The scene includes several blue AMR (Autonomous Mobile Robot) units, some carrying pallets or carts. There are also various workstations, shelving units, and robot cells with robotic arms. The layout is organized into different functional areas, demonstrating the integration of AMRs and robot modules in a Kanban warehouse environment.

AMR and robot module integration

Kanban warehouses are automated and filled in the shortest possible time thanks to the large material storage unit and the use of a robot.

Safe and space-saving

Guarantees uninterrupted operation, even in heavily frequented environments. Even tight transport paths are no obstacle thanks to the omnidirectional drive (if available).

The AMR and the mobile ZiMo robot cell

When combined with our highly flexible ZiMo robot cell, the AMR enables versatile applications such as installation, parts removal & quality control.

AMR as a lifting unit

Lifting and transporting transport loads of up to 2,000 kg such as pallets, carts and commissioning carts.

IN USE AS A LIFTING UNIT

Miles with a lifting unit provides a broad range of customized adaptation options that can overcome nearly any challenge. This means that the parts to be transported can be adapted with complete flexibility. Despite its small size and compactness, the system, which is equipped with a lifting unit, can transport loads of up to 2,000 kg.

- ▶ (Euro) pallets
- ▶ Off-cuts
- ▶ Carts
- ▶ Commissioning carts
- ▶ and much more



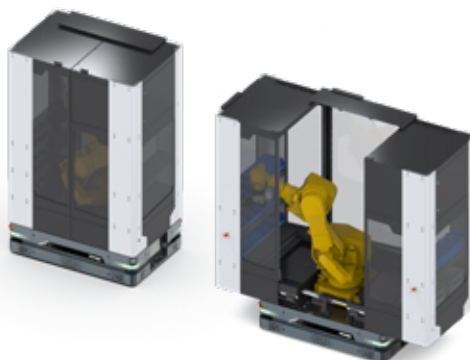
PRODUCT ADVANTAGES

- ▶ Up to 80 mm stroke to lift the loading carriers
- ▶ Up to 2,000 kg load capacity
- ▶ Various storage stations can be combined
- ▶ Customized adaptations of the structure at any time
- ▶ One system for many applications

IN USE IN COMBINATION WITH A ROBOT MODULE

Maximum availability and flexibility thanks to the integration of your AMR with a robot. The modular shelf concept guarantees a variety of workpieces. Starting with Miles' journey to the central warehouse, the robot fills the shelves and ends in the assembly area, where the robot supplies assembly stations with the necessary parts. Your automation knows no bounds. Application examples include the handling and transport of:

- ▶ Kanban containers
- ▶ and much more



PRODUCT ADVANTAGES

- ▶ Robots with up to 50 kg handling weight
- ▶ 400 V voltage source available
- ▶ Optionally available with automatically opening safety fence
- ▶ Modular shelf concept for different workpieces
- ▶ Optional battery packet for longer runtimes
- ▶ Compact design, no additional interference contour during travel
- ▶ Positioning to the hand-off location using a camera



INFORMATION

With our combination of Miles and ZiMo, we offer a flexible, cost-efficient solution for a wide range of logistics tasks.

COMBINED WITH OUR MOBILE ZIMO ROBOT CELL

In this configuration, the AMR takes over the collection, transport and positioning of the flexible ZiMo robot cell. ZiMo can be used flexibly in various applications thanks to its modular design and its battery-powered nature. The Human Machine Interface (HMI) is designed to be robot-neutral, which allows the operation and control of various robot models. Application examples include use in:

- ▶ Loading and unloading machines
- ▶ Assembly work
- ▶ Quality control

PRODUCT ADVANTAGES

- ▶ ZiMo is collected, transported and positioned by the AMR
- ▶ The AMR can then perform other tasks such as pallet transport
- ▶ Battery-powered
- ▶ Variable configuration makes many applications possible
- ▶ Robot-neutral HMI



ZIMMER
group

OUR EXPERTISE – YOUR ADVANTAGES

- ▶ Customer-adapted solutions
- ▶ Reliable operation 24/7
- ▶ Intuitive and quickly teachable functions through graphic-supported operation
- ▶ Complete integration into the process chain of customer logistics

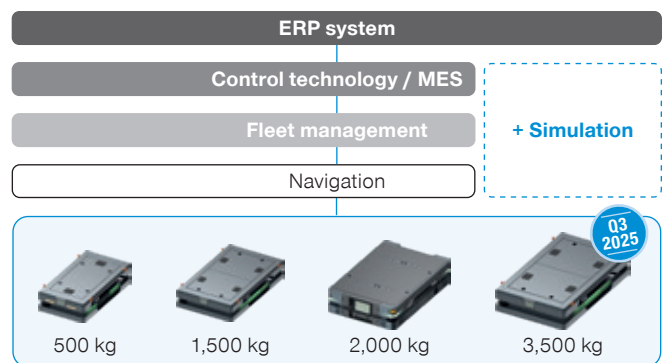
ARCHITECTURE OF AN AMR-BASED PRODUCTION

COMPLETE
SERVICE
AROUND THE CLOCK

DESIGNED TO WORK TOGETHER

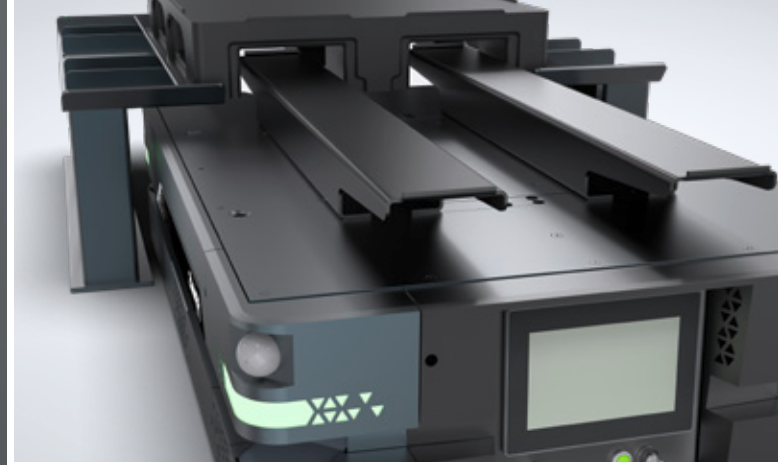
Designed to work together optimally, the ERP system as well as control technology and fleet management are crucial for efficient control and monitoring of your fleet and operational processes. A complete system made up of hardware, software and customer service from the Zimmer Group enables:

- ▶ Customized concepts and designs
- ▶ Planning the hall and the AMR fleet using simulation
- ▶ Fully automated process chain in various areas of logistics and production
- ▶ Commissioning by the Zimmer Group



Modules for use...
... as a **lifting unit** (for carts, euro pallets, etc.)
...combined with a **robot**
...combined with our
ZiMo robot cell





COMPREHENSIVE SYSTEM OVERVIEW

WITH EFFICIENT HOST COMPUTER

SOFTWARE FUNCTIONS

The Navitec Navithor-based control system offers comprehensive control of your AMR fleet and enables your warehousing operation to be designed more efficiently and more smoothly.

- ▶ Traffic management
- ▶ Distribution of orders
- ▶ Route planning including status
- ▶ Prioritization and sequence of orders
- ▶ Battery management
- ▶ Communication with gates, elevators and fire alarm systems

FLEET MANAGEMENT

Fleet management is responsible for controlling, planning and monitoring an AMR fleet within a company. The fleet management system that we use enables us to deliver the complete package. From simulation through to integration into the ERP/MES system.



ZIMMER GROUP – THE KNOW-HOW FACTORY

OUR KNOW-HOW FACTORY WORKS WITH ALL INDUSTRIES AND DELIVERS EVERYTHING FROM A SINGLE SOURCE. OUR PRODUCT RANGE IS FAR REACHING, BOTH IN ITS DEPTH AND ITS BREADTH.

DO YOU HAVE A DEVELOPMENT PROBLEM? WE'LL SOLVE IT! SET US A CHALLENGE IN RESEARCH AND DEVELOPMENT. COUNTLESS INNOVATIONS ORIGINATE FROM OUR COMPANY. WE ARE ENTHUSIASTIC ABOUT NEW PRODUCTS AND PRIDE OURSELVES ON OUR CORPORATE PIONEERING SPIRIT.

CONTACT – WORLDWIDE

With our current 17 global subsidiaries and partners in over 125 countries, we offer the excellent service of a technology leader. We look forward to hearing from you!

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ZIMMER GROUP SYSTEM TECHNOLOGY – THE SPECIALISTS FOR CUSTOM SOLUTIONS

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OUR NEW PRODUCTS

Zimmer Group is renowned as an innovator and for its pioneering spirit. Accordingly, each year we can offer new innovative and individual solutions. For current product highlights, refer to:

www.zimmer-group.com/en-us/innovations



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