

Mobile assistance systems

Reference portfolio

2022/23

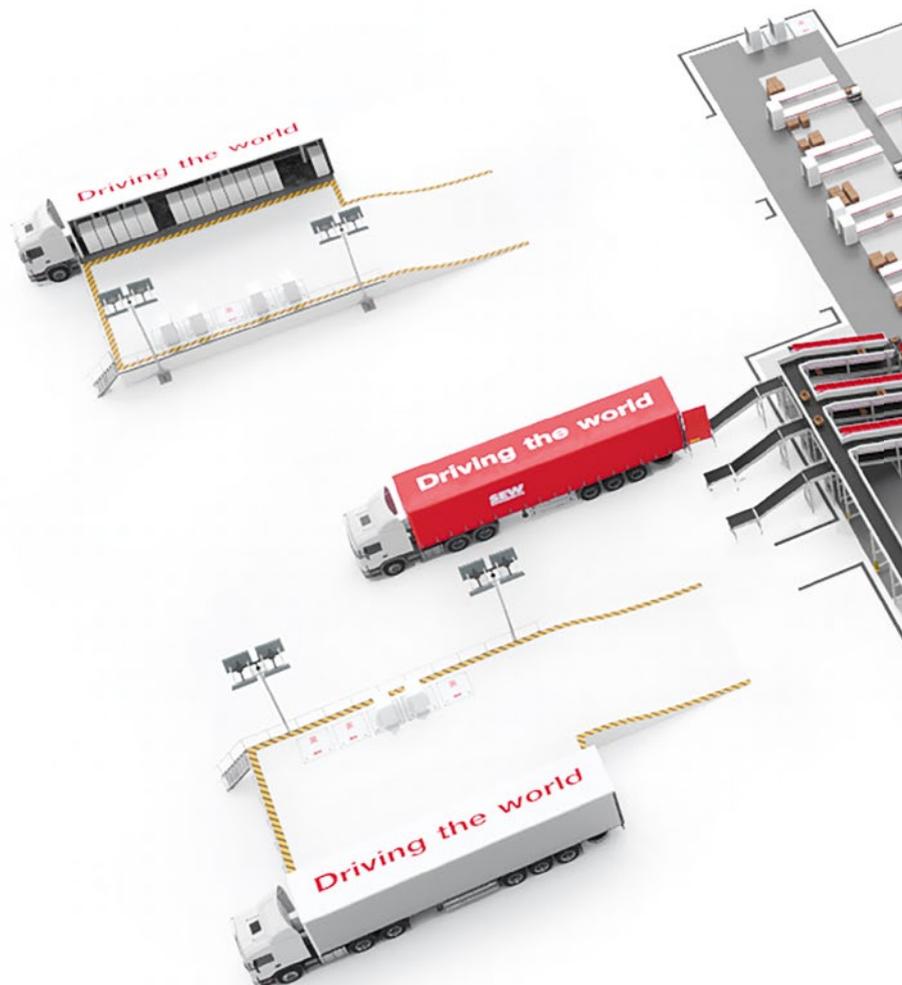


Moving toward the modular factory

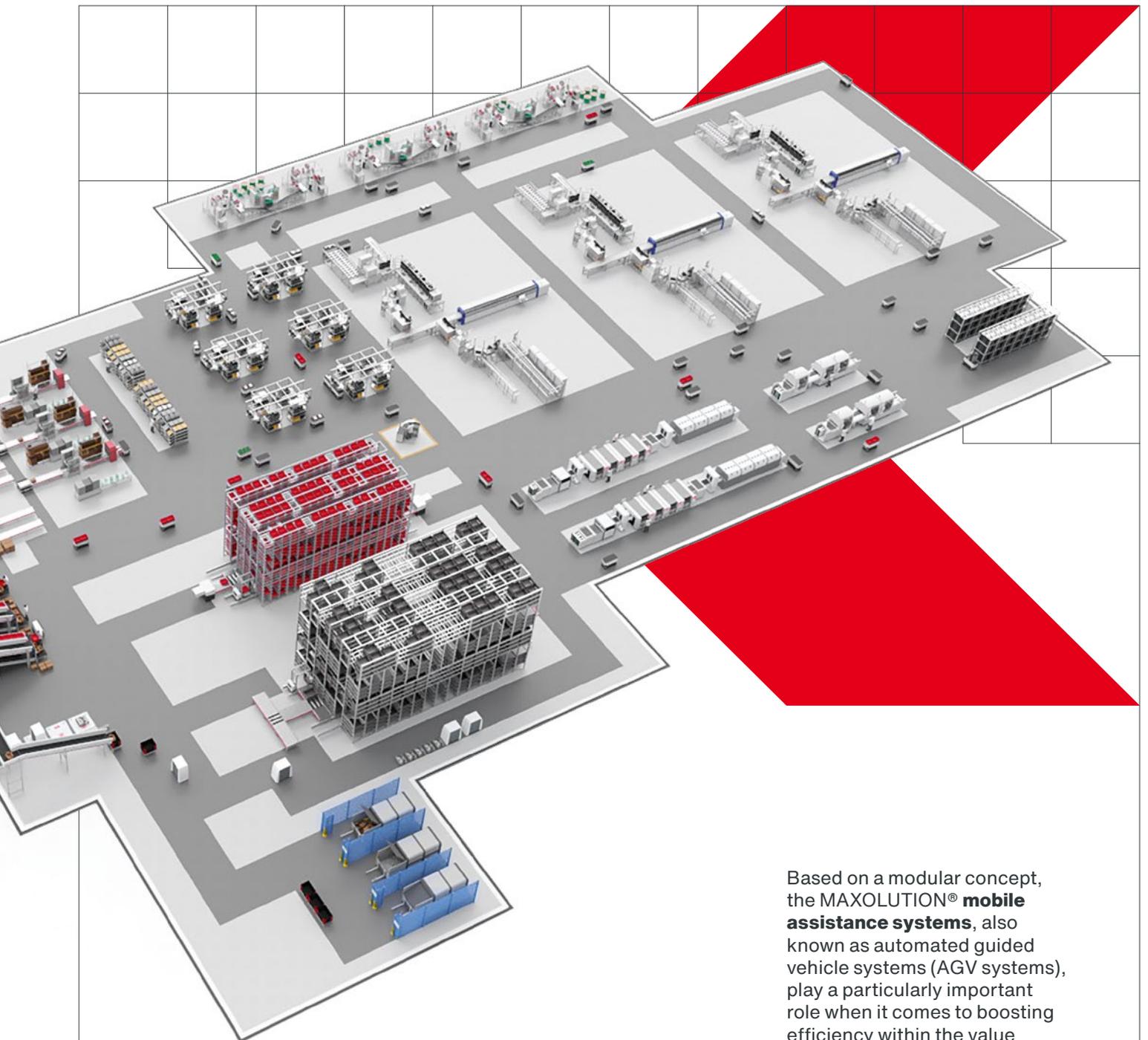
MAXOLUTION® System Solutions is an area of business at SEW-EURODRIVE that is synonymous with the smart factory of the future. It offers system solutions expertise and scalability for all kinds of customer applications in production and logistics operations – across a variety of industries and worldwide.

Intelligent system solutions help turn inflexible production structures into agile, self-organizing factory processes. The associated modular portfolio includes:

- Autonomous assistance systems, along with track-guided assembly and transport systems
- Smart services and flexibly adaptable software solutions



- **A made-to-measure scope of services for each and every customer**
The optimum solution for any application



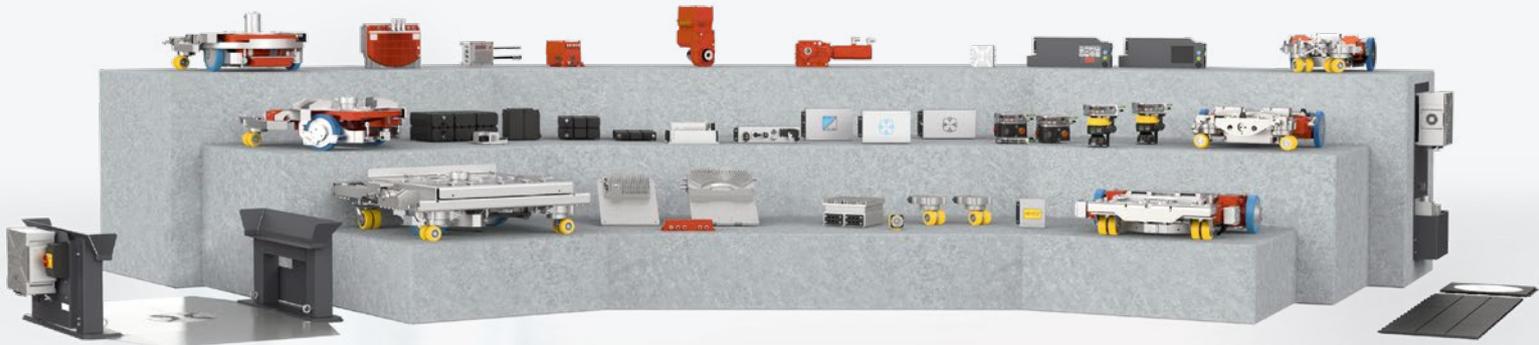
Based on a modular concept, the MAXOLUTION® **mobile assistance systems**, also known as automated guided vehicle systems (AGV systems), play a particularly important role when it comes to boosting efficiency within the value chain and establishing human-technology cooperation.

→ Discover MAXOLUTION®
System Solutions



Modular concept for mobile assistance systems

The modular concept for mobile assistance systems consists of standardized components and modules that are designed in a way that means they can be combined to create all kinds of vehicle solutions.



The modular system includes solutions for

- Drive technology (bidirectional and omnidirectional solutions for various performance classes)
- Inverter technology (various performance classes)
- Control technology (various performance classes)
- Energy absorption (inductive point charging and inductive line charging)
- Energy storage devices (batteries, MOVI-DPS® double-layer capacitors, hybrid solutions)
- Navigation and positioning solutions (laser contour navigation, inductive, optical, RFID)
- Communication
- Safety technology
- Stationary technology

The MAXOLUTION® reference vehicles ...

➤ **Modular concept**

... are based on the modular concept and thus the verified modules of our mobile assistance systems.

➤ **Process and application**

... were developed for one process and one specific application in a particular sector of industry.

➤ **Documentation and service**

... offer you comprehensive documentation and a whole host of services.

➤ **Approved, sustainable, and reliable**

... are approved, sustainably tested, reliable, and available worldwide.

➤ **Successful**

... are already being used successfully in a large number of customer projects.

➤ **Reduced outlay**

... require minimal design adaptations. Using the same system modules for designs minimizes the outlay involved.

➤ **Fast and efficient**

... are incorporated into the design and project planning of related applications by our system planning team – quickly and with minimum outlay.

Creating vehicle solutions

Supporting in-house production processes with people and technology in perfect harmony

Our mobile, autonomous assistance systems benefit from intelligent vehicle software for connection to a VDA 5050 interface, contactless, inductive energy transfer, and WLAN communication – a perfect fit for your fleet and logistics management.

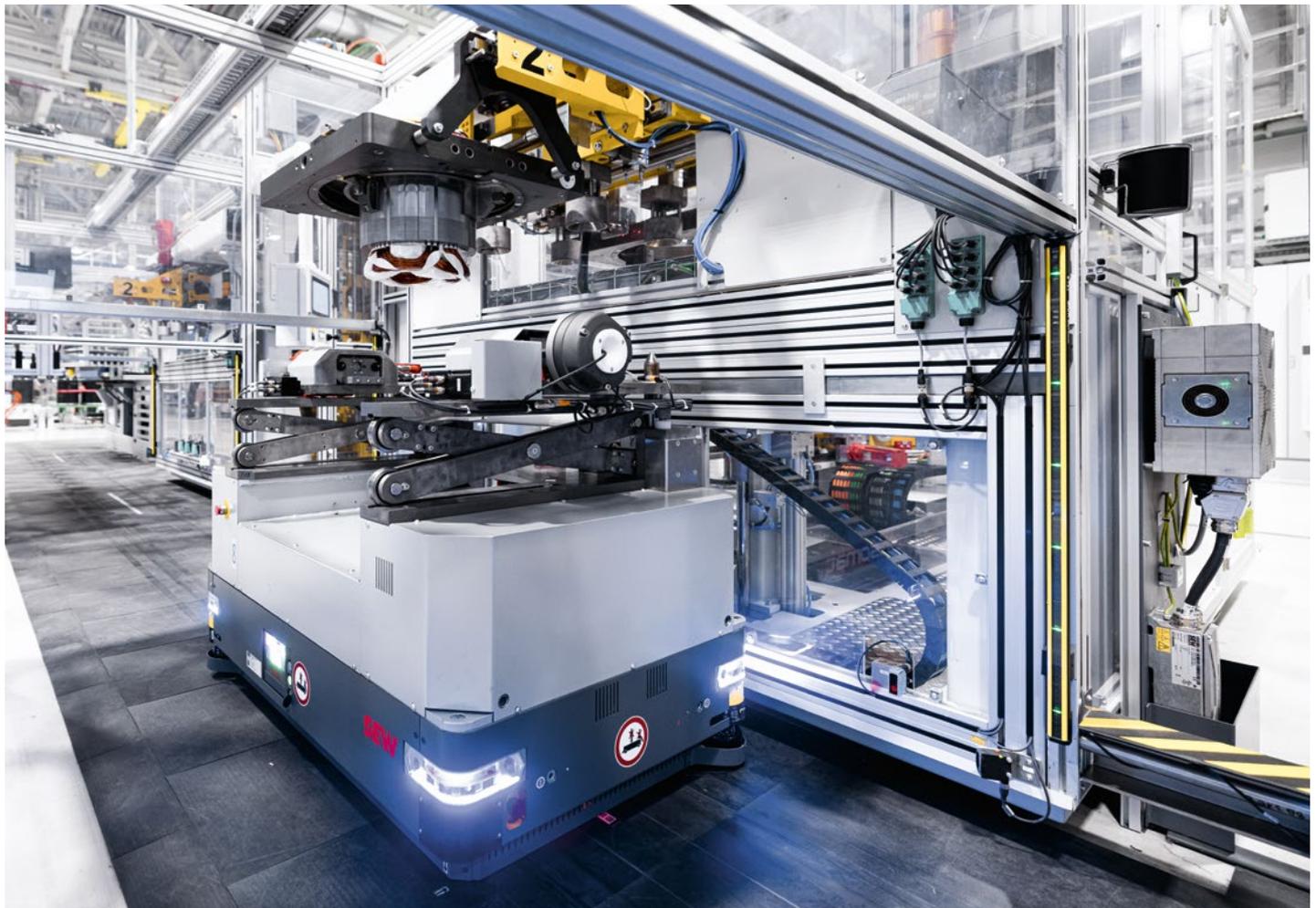
This results in:

- Networked value creation and **maximum flexibility**
- Swarm intelligence thanks to **decentralized** control technology
- Maximum **safety of processes, systems, and personnel**

Did you know? Besides hardware and software solutions, MAXOLUTION® System Solutions offers services such as:

- Planning
- Conceptual design
- Functional safety concepts
- Process analyses
- Process planning

Many other services for a successful system solution are also available.





2



3

4
5



- 1 Production of motor components (synchronous motor)
- 2 Delivery of rotors for further processing
- 3 Provision of raw materials for assembly
- 4 Assistance system in the assembly line
- 5 Pallet transfer



Small load carrier transport

For interlinking materials handling technology

The integrated conveyor unit makes the vehicle an attractive alternative to conventional materials handling technology. Stationary station detection and reliable conveying direction detection make the vehicle ideal for interlinking stationary conveyor lines. No safety barrier is required during use, which means staff can come into direct contact with the solution.



Reference data



Dimensions
L = 1000 mm, W = 1000 mm,
H = 650 mm



Navigation
Inductive/RFID



Drive concept
Differential drive



Weight
400 kg



Power supply
Inductive line charging



Travel time
Permanent power supply



Load capacity
Max. 50 kg per Euro
container



Energy storage
Double-layer capacitor



Speed
Max. 1.6 m/s



Load handling device
Transverse roller conveyor,
including load securing



Small load carrier transport

For transporting goods in battery production

The special feature of this vehicle is its stainless steel structure. It was developed for cleanroom applications. The high structure makes it possible to load the vehicle ergonomically.



Reference data



Dimensions

L = 900 mm, W = 600 mm,
H = 825 mm



Navigation

Laser contour navigation /
data matrix code



Drive concept

Rear differential drive



Weight

350 kg



Power supply

Inductive point charging



Travel time

Up to 3 hours



Load capacity

Max. 40 kg



Energy storage

Lithium battery



Speed

Max. speed 1.6 m/s (forward)
and 0.3 m/s (reverse)



Load handling device

Cover plate with centering for
Euro container and occupancy
detection



Pallet transport

For transporting pallets in production and distribution logistics

This transport vehicle is for intralogistics applications. It helps interlink process modules in an autonomous and cooperative way. Omnidirectional operation makes it possible to enter load transfer stations in the tightest of spaces.



Reference data



Dimensions
L = 1000 mm, W = 1000 mm,
H = 300 mm



Navigation
Laser contour navig. / inductive /
camera system / RFID



Drive concept
Omnidirectional drive



Weight
400 kg



Power supply
Inductive point charging



Travel time
Up to 40 minutes



Load capacity
Max. 1200 kg



Energy storage
NiMH accumulator



Speed
Max. 1.5 m/s



Lifting height
Max. 235 mm



Pallet transport

For transporting pallets in distribution logistics

This vehicle was developed to pick up pallets from a load transfer station – lengthwise – in the tightest of spaces. Inductive point charging was integrated into the load transfer station to optimize the utilization of space. This ensures the vehicle is charged up sufficiently during the load change.



Reference data



Dimensions
L = 1500 mm, W = 1000 mm,
H = 500 mm



Navigation
Laser contour navigation



Drive concept
Center differential drive



Weight
570 kg



Power supply
Inductive point charging



Travel time
Up to 3 hours



Load capacity
Max. 500 kg



Energy storage
Lithium battery



Speed
Max. 1.6 m/s



Lifting height
Max. 150 mm



Pallet transport

For transporting pallets in the construction materials industry

This vehicle was developed specifically for use in rough environmental conditions. Thanks to inductive charging and navigation technology, it is very robust and therefore ideally suited to the special conditions in the construction materials industry, such as in plaster production.



Reference data

 <p>Dimensions L = 1400 mm, W = 1000 mm, H = 750 mm</p>	 <p>Navigation Inductive/RFID</p>	 <p>Drive concept Center differential drive</p>
 <p>Weight 800 kg</p>	 <p>Power supply Inductive line charging</p>	 <p>Travel time Permanent power supply</p>
 <p>Load capacity Max. 1000 kg</p>	 <p>Energy storage Double-layer capacitor</p>	
 <p>Speed Max. 1.5 m/s</p>	 <p>Load handling device Longitudinal conv., incl. load securing and GAP control (FS)</p>	



Pallet transport

For transporting pallets in battery production

The special feature of this vehicle is its stainless steel structure. It was developed for cleanroom applications. Thanks to the inbuilt sensor technology, the pallet can be transferred from vehicle to vehicle or from the vehicle to stationary materials handling technology.



Reference data



Dimensions
L = 1400 mm, W = 1200 mm,
H = 620 mm



Navigation
Laser contour navigation /
data matrix code



Drive concept
Center differential drive



Weight
850 kg



Power supply
Inductive point charging



Travel time
Up to 3 hours



Load capacity
Max. 1000 kg



Energy storage
Lithium battery



Speed
Max. 1.5 m/s



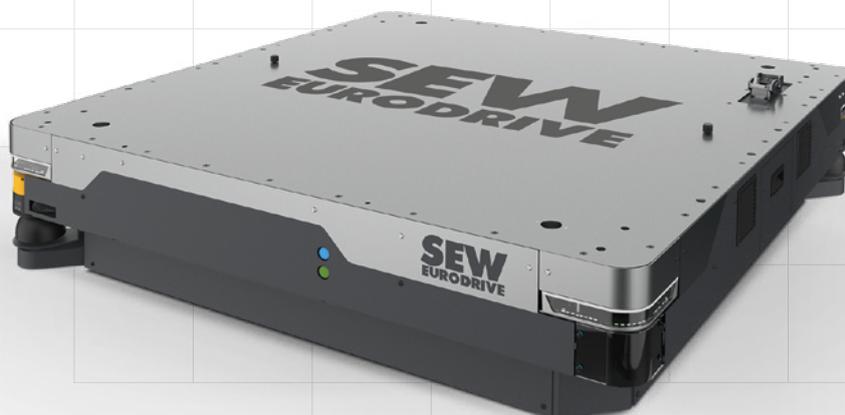
Load handling device
Longitud. conv., incl. GAP
control (FS), centering, securing



Pallet transport

For transporting special pallets in distribution centers

A vehicle powertrain that is particularly resistant to tipping was used in this application. High load carriers can therefore be transported at maximum speed.



Reference data



Dimensions
L = 1400 mm, W = 1400 mm,
H = 360 (base), 3100 mm



Navigation
Free contour navigation /
RFID / data matrix code



Drive concept
Center differential drive



Weight
1120 kg



Power supply
Inductive point charging



Travel time
Up to 3 hours



Load capacity
Max. 1110 kg



Energy storage
Lithium battery



Speed
Max. speed 1.6 m/s (forward)
and 0.5 m/s (reverse)



Load handling device
Transverse conveyor



Rack transport

For transporting racks in production logistics

Thanks to its particularly compact and flat design, this assistant is perfect for transporting various frame structures. Omnidirectional operation means it can pick up and transport these structures in the tightest of spaces.



Reference data



Dimensions
L = 1200 mm, W = 860 mm,
H = 380 mm



Navigation
Laser contour navigation /
RFID



Drive concept
Omnidirectional drive



Weight
425 kg



Power supply
Inductive line charging



Travel time
Up to 3 hours



Load capacity
Max. 600 kg



Energy storage
Lithium battery



Speed
Max. 1.6 m/s



Lifting height
Max. 150 mm



Container transport

For transporting containers in the wood processing industry

A customized platform vehicle was designed based on the modular concept. The customer integrated the load handling device for transporting wood that it developed in-house into this vehicle. Inductive charging technology makes the vehicle particularly suitable for the wood processing industry.



Reference data



Dimensions
L = 1500 mm, W = 1000 mm,
H = 500 mm



Navigation
Laser contour navigation



Drive concept
Center differential drive



Weight
580 kg



Power supply
Inductive point charging



Travel time
Up to 3 hours



Load capacity
Max. 500 kg



Energy storage
Lithium battery



Speed
Max. 1.5 m/s



Lifting height
Max. 150 mm



Assembly assistant

For automated and manual assembly work

Assembly mode makes it possible to work safely on the vehicle itself. Thanks to its integrated lifting system, the vehicle adjusts to the perfect ergonomic height for each employee.



Reference data



Dimensions
L = 1200 mm, W = 600 mm,
H = 717 mm



Navigation
Laser contour navigation /
inductive / RFID



Drive concept
Rear differential drive



Weight
450 kg



Power supply
Inductive line charging



Travel time
Up to 3 hours



Load capacity
Max. 350 kg



Energy storage
NiMH accumulator



Speed
Max. 1.6 m/s



Lifting height
Max. 300 mm



Assembly assistant

For the interlinked assembly of asynchronous motors

This vehicle was specifically designed for the motor production process and accompanies the motor from order picking and assembly all the way through to final testing.



Reference data



Dimensions

L = 1200 mm, W = 700 mm,
H = 900 - 1000 mm (lifting)



Navigation

Laser contour navigation /
inductive / RFID



Drive concept

Center differential drive



Weight

520 kg



Power supply

Inductive line charging



Travel time

Up to 3 hours



Load capacity

Max. 500 kg



Energy storage

Lithium battery



Speed

Max. speed 1.6 m/s (forward)
and 0.8 m/s (reverse)



Load handling device

Passive plate with mech.
adaptation and lifting system



Transport and production

For transporting Euro containers in electric motor production

The inbuilt sensor technology means the vehicle detects the transfer station and adapts the transfer height thanks to its incorporated lifting system. The special feature of this vehicle is that it is used for logistics tasks (distribution of load carriers) and also accompanies the motor assembly process.



Reference data



Dimensions

L = 1200 mm, W = 700 mm,
H = 850 - 950 mm (lifting)



Navigation

Laser contour navigation /
inductive / RFID



Drive concept

Center differential drive



Weight

700 kg



Power supply

Inductive line charging



Travel time

Up to 6 hours



Load capacity

Max. 2 × 100 kg



Energy storage

Lithium battery



Speed

Max. 1.6 m/s



Load handling device

2 × telescopic table



Vehicle body transport

For transporting vehicle bodies in the automotive industry

Omnidirectional operation makes this vehicle perfect for maneuvering in the area buffer. The mobile assistant picks up the vehicle bodies and takes them to the painting cell for finishing.



Reference data



Dimensions

L = 3800 mm, W = 1000 mm,
H = 350 mm



Navigation

Laser contour navigation /
optical / RFID



Drive concept

Omnidirectional drive



Weight

1425 kg



Power supply

Inductive point charging



Travel time

Up to 3 hours



Load capacity

Max. 1000 kg



Energy storage

Hybrid storage technology



Speed

Max. 1.2 m/s



Lifting height

Max. 350 mm



Final vehicle assembly

For the “marriage” in the automotive industry

This assistant handles the “marriage” of the drive train and the vehicle body on the fly, in parallel / in sync with the electrified monorail system.



Reference data

 Dimensions L = 5443 mm, W = 2493 mm, H = 435 mm	 Navigation Laser contour nav. / inductive/ data matrix code / RFID	 Drive concept Omnidirectional drive
 Weight 7500 kg	 Power supply Inductive line charging	 Travel time Permanent power supply
 Load capacity Max. 11 000 kg	 Energy storage Hybrid storage technology	
 Speed Max. 0.5 m/s	 Lifting height 3 independent lifting systems (max. 800 mm)	



Rack transport

For transporting a customized rack in the wood processing industry

This vehicle's omnidirectional travel means it can move large loads in the tightest of spaces. A particularly long powertrain was designed due to the considerable size of the load carrier.



Reference data

 <p>Dimensions L = 3800 mm, W = 1100 mm, H = 450 mm</p>	 <p>Navigation Laser contour navigation / optical / RFID</p>	 <p>Drive concept Omnidirectional drive</p>
 <p>Weight 1370 kg</p>	 <p>Power supply Inductive point charging</p>	 <p>Travel time Up to 3 hours</p>
 <p>Load capacity Max. 3000 kg</p>	 <p>Energy storage Hybrid storage technology</p>	
 <p>Speed Max.1.0 m/s (forward/reverse) and 0.5 m/s (transverse)</p>	 <p>Lifting height Max. 105 mm</p>	



Assembly assistant

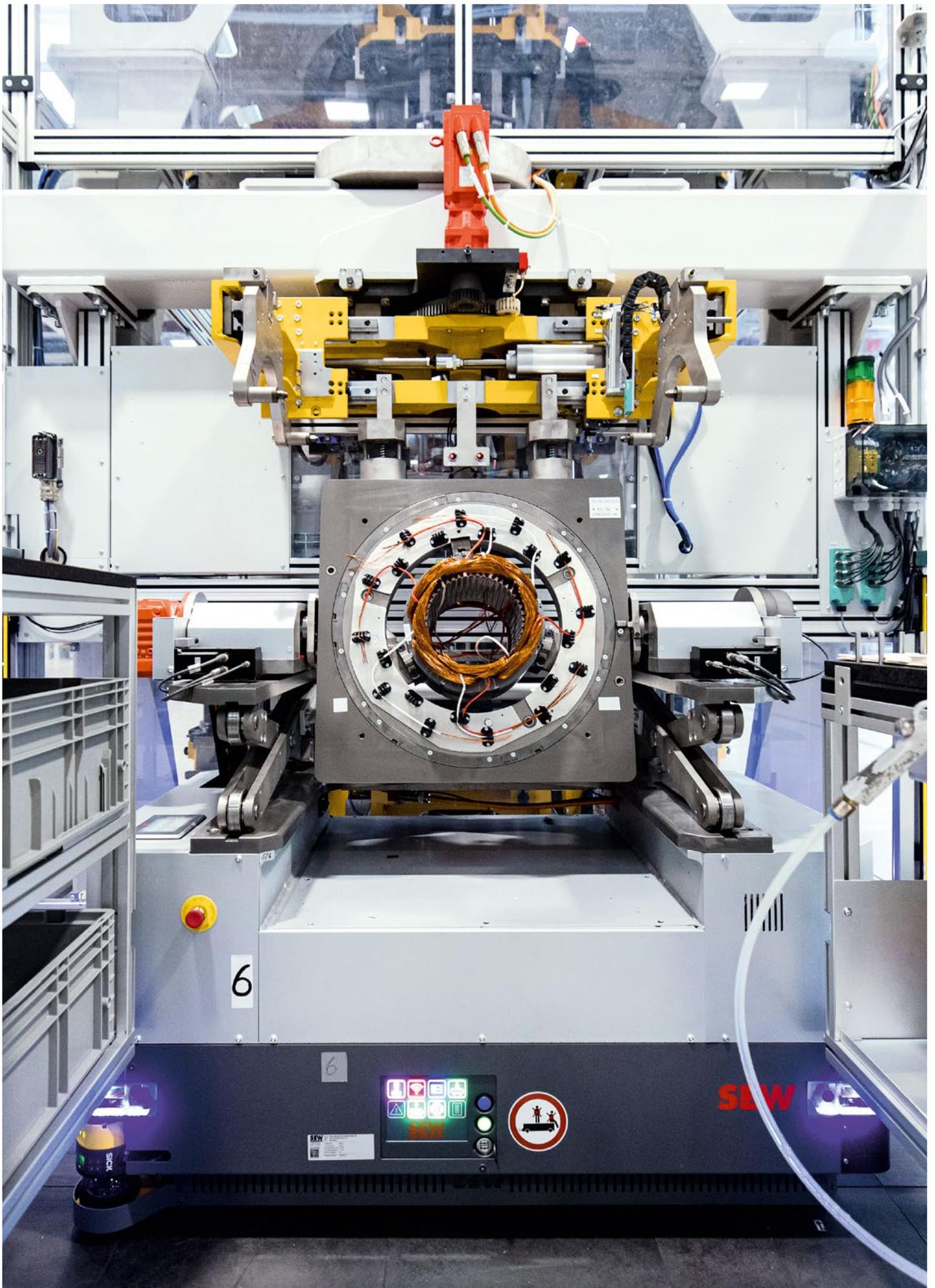
For process interlinking in electric motor production

Thanks to the maximum flexibility of the load handling device and the inbuilt sensor technology in this application, the vehicle moves to various production steps and thus accompanies the product from the first production stage to the last.



Reference data

 Dimensions L = 1400 mm, W = 870 mm, H = 650 mm	 Navigation Laser contour navigation / inductive / RFID	 Drive concept Center differential drive
 Weight 420 kg	 Power supply Inductive line charging	 Travel time Permanent power supply
 Load capacity Max. 700 kg	 Energy storage Double-layer capacitor	
 Speed Max. speed 1.5 m/s (forward) and 0.3 m/s (reverse)	 Load handling device Customized load handling devices	



Handling assistant

For mobile robotics

This handling assistant uses a mobile and autonomous cobot to support the work being done by employees. The integrated articulated arm robot relieves the strain on staff by helping them with pick-and-place, order-picking, assembly, and joining work.



Reference data



Dimensions

L = 1000 mm, W = 780 mm,
H = 850 mm



Navigation

Laser contour navigation /
inductive / RFID



Drive concept

Powertrain for mobile
robotics



Weight

700 kg



Power supply

Inductive line charging



Travel time

Up to 3 hours



Load capacity

Max. 400 kg (vehicle) and
max. 11 kg (robot)



Energy storage

Hybrid storage technology



Speed

Max. speed 1.5 m/s (forward)
and 0.3 m/s (reverse)



Outdoor logistics assistant

For urban logistics

Thanks to this vehicle's special outdoor powertrain and weather-resistant sensor technology, SEW-EURODRIVE is implementing completely new processes and applications. The interlinking of multiple processes, even in outdoor applications, is becoming increasingly important, particularly due to the growth of end-to-end production strategies.



Reference data



Dimensions
L = 941 mm, W = 618 mm,
H = 504 mm



Navigation
GNS / stereo camera / laser
contour navig. / QR code



Drive concept
Outdoor all-wheel drive



Weight
150 kg



Power supply
Inductive point charging



Travel time
Up to 2 hours



Load capacity
Max. 100 kg



Energy storage
Lithium battery



Speed
Max. 1.4 m/s



Load handling device
Transport box



Rack transport

Standard vehicle for transporting racks

Its flat design and omnidirectional operation make this vehicle ideal for transporting frames. The fact that the vehicle is standardized means it can transport various types of frames.



Reference data



Dimensions

L = 1500 mm, W = 620 mm,
H = 250 mm



Navigation

Laser contour navigation /
RFID



Drive concept

Omnidirectional drive



Weight

300 kg



Power supply

Contact charging



Travel time

Up to 6 hours



Load capacity

Max. 700 kg



Energy storage

Lithium battery



Speed

Max. 2.0 m/s



Lifting height

Max. 50 mm



Concept study

Mobile assistance systems powered by hydrogen

In the future, assistance systems powered by hydrogen will help boost the productivity of systems. As an alternative to the battery storage solutions being used at present, hydrogen offers many advantages, such as faster charging/refueling and less maintenance work on the batteries.



Reference data



Dimensions

L = 1200 mm, W = 600 mm,
H = 872 mm



Navigation

Laser contour navig. / inductive / RFID / data matrix code



Drive concept

Center differential drive



Weight

450 kg



Power supply

Inductive line charging



Travel time

Up to 3 hours



Load capacity

Max. 150 kg



Energy storage

Lithium battery with fuel cell module



Speed

Max. 1.6 m/s



Load handling device

Passive load handling device



Software

MAXOLUTION® offers a wide-ranging portfolio of software solutions (MAXOLUTION® connected) and ensures agile factory processes. You can obtain an overview of the modular software system for our automated guided vehicle systems (AGV systems).

SEW-EURODRIVE's software solution for AGV systems includes startup and parameterization software, modular vehicle software, an intelligent fleet manager, and standardized interfaces to higher-level and peripheral systems.

Communication takes place via the simple and lightweight MQTT network protocol. The MQTT broker manages and administers all data traffic and makes it easy to connect all participating systems.



➤ **MAXOLUTION® connected**
Software portfolio
for the factory of the future

1

Fleet manager

Guidance control system and transport order management

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2

Track designer

Parameterization of travel sections and transfer scenarios

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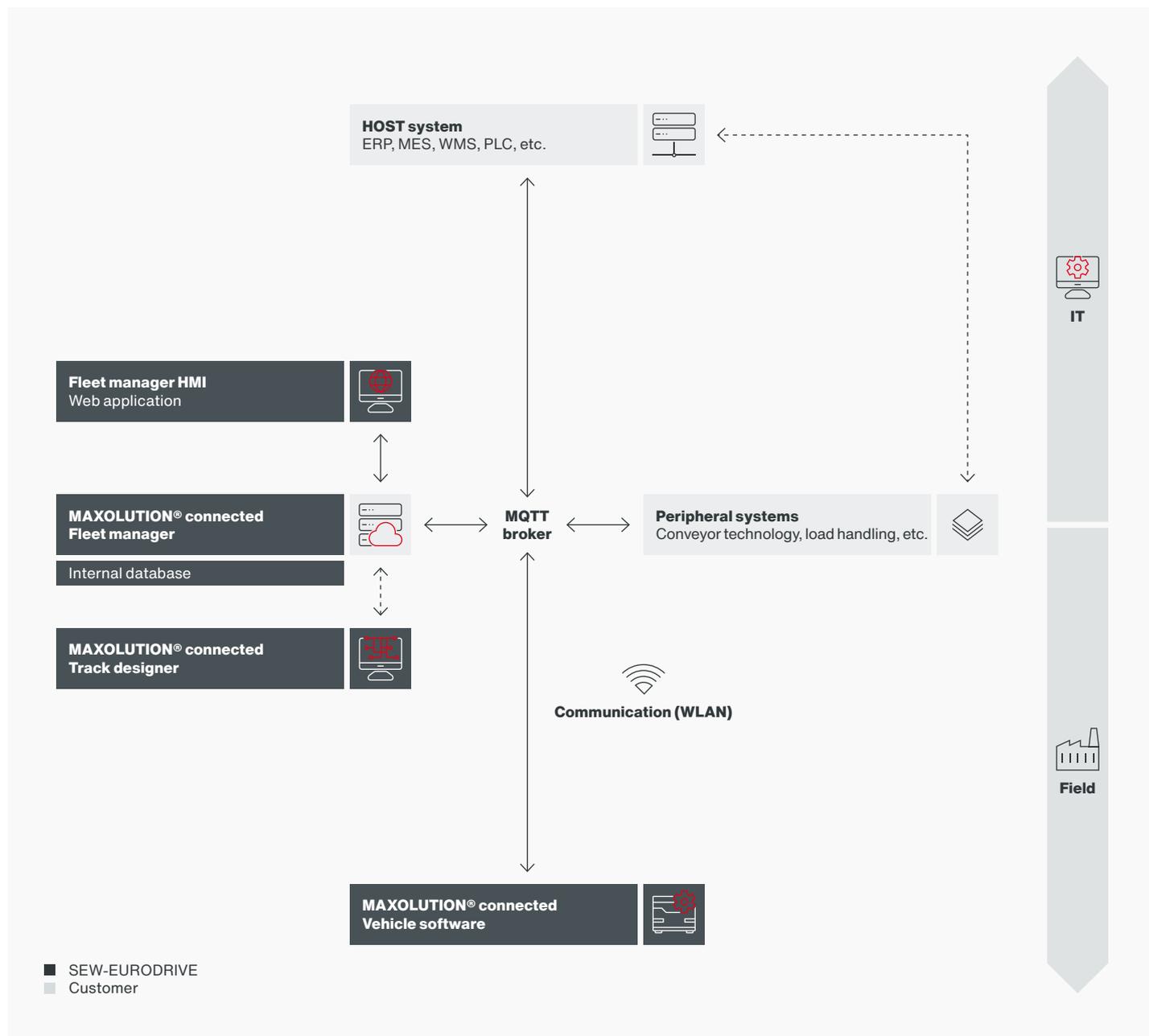
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Vehicle software

Control of automated guided vehicle systems

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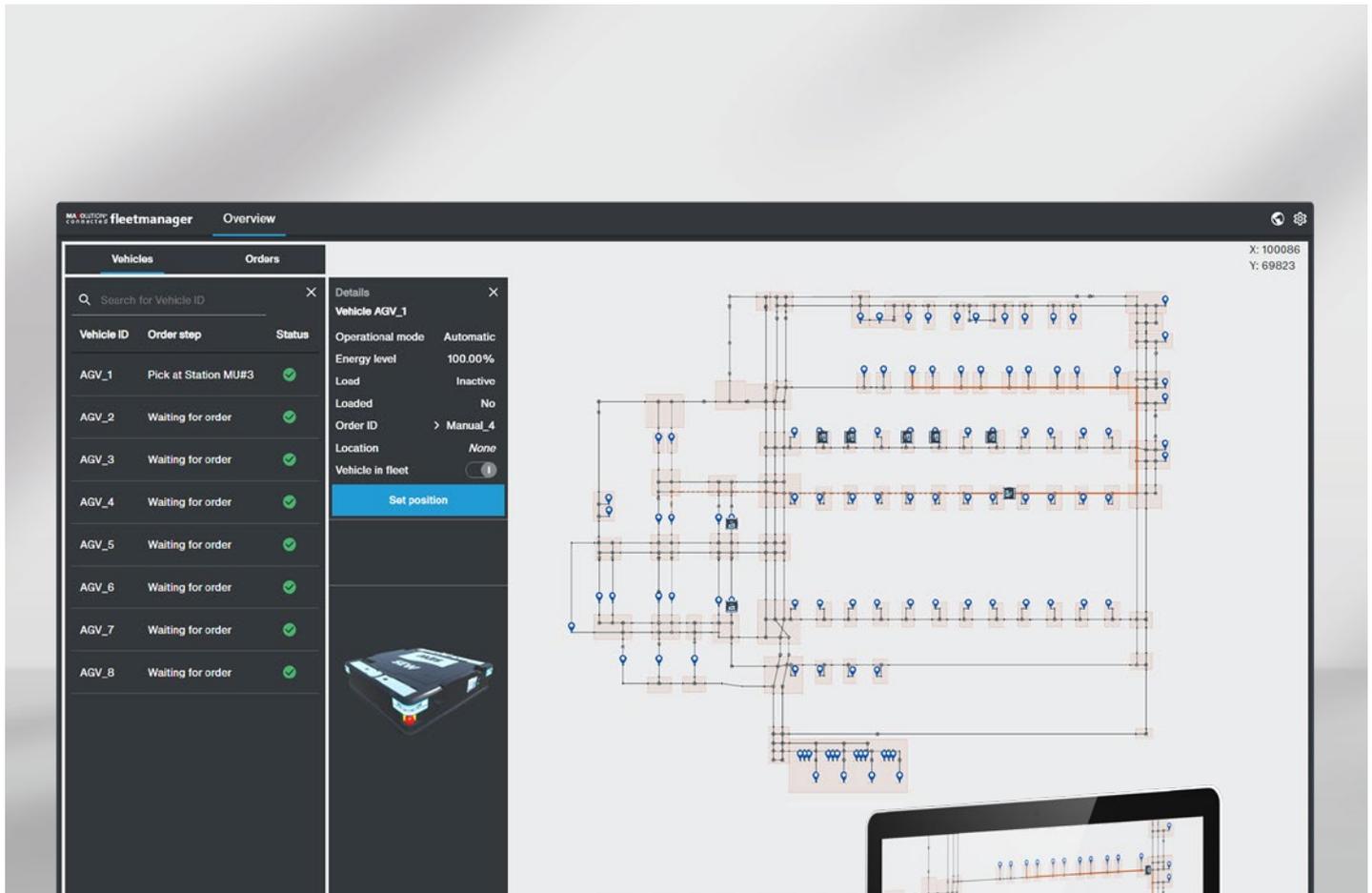
The modular software system



How is the modular software system structured?
The software architecture of MAXOLUTION® connected

Fleet manager

MAXOLUTION® connected



The fleet manager uses the standardized interface for this purpose. VDA 5050 is a standardized interface between automated guided vehicle systems and a guidance control system. This standard was defined in cooperation with the German Association of the Automotive Industry (VDA) and the VDMA Materials Handling and Intralogistics Association.

- Acting as the AGVS guidance control system, the fleet manager handles transport order management, vehicle planning, and travel order processing.

Features and benefits

➤ **Transport order management**

Accepting and prioritizing transport orders from the higher-level system

➤ **Vehicle planning**

Determining the most suitable vehicle

➤ **Traffic management**

Ensuring a smooth flow of traffic, taking vehicle dimensions into account

➤ **Energy management**

Providing the vehicle fleet with a reliable, high-performance power supply

➤ **Routing management**

Calculating possible path combinations and selecting the optimal route

➤ **User-friendly**

Easy access via the web browser thanks to a web-based user interface

➤ **Interfaces**

VDA 5050 interfaces for communication with standardized interfaces to customer systems and to automated guided vehicle systems

➤ **Availability**

Flexible software installation on an industrial PC or a virtual machine

➤ **Uniform**

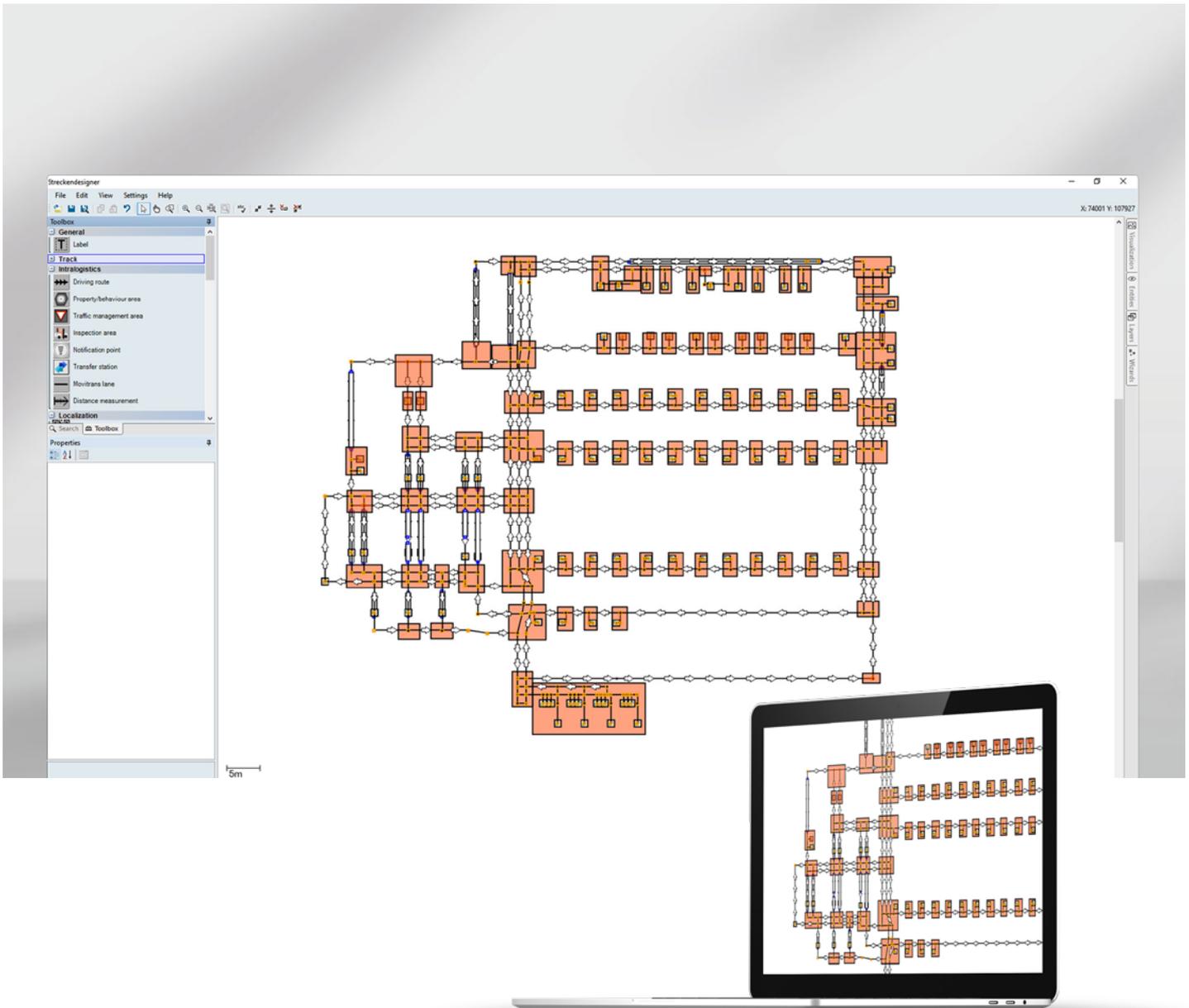
Uniform communication architecture with the vehicles

➤ **Monitoring**

Condition monitoring and data logging

Track designer

MAXOLUTION® connected



- The user-friendly track designer application software parameterizes travel sections and transfer scenarios.

Features and benefits

> **Creation**

Of travel sections – manually or automatically – by importing CAD data

> **Configuration**

Of directions of travel, speeds, and vehicle orientation

> **Definition**

Of traffic areas to avoid deadlocks and optimize the material flow

> **Positioning**

Positioning and configuration of transfer stations and charging stations

> **Transfer**

Simplified upload process for straightforward uploading of route files to the fleet manager

> **Effective**

Quick and easy integration of process logic

> **Simple**

No programming expertise required to start up processes

> **Monitoring**

Condition monitoring and data logging

> **Productivity**

User-friendly software operation for easier work processes

Vehicle software

MAXOLUTION® connected



- The modular vehicle software controls the automated guided vehicle and processes the VDA 5050 travel order.

Features and benefits

➤ **Modular**

Vehicle software for standardized and customized vehicles

➤ **Kinematics**

Compatible with all kinematic models – unidirectional, bidirectional, and omnidirectional

➤ **Navigation functions**

Supporting various types of navigation, such as laser navigation, inductive track guidance, and optical track guidance

➤ **VDA 5050**

Standardized and simple connection to a VDA 5050-compatible AGVS guidance control system by means of a VDA 5050 interface

➤ **Interface**

Predefined interfaces to standardized and customized load handling devices

➤ **Reliability**

Comprehensive self-diagnosis function for identifying and rectifying problems quickly

➤ **User-friendly operation**

Easy access via the web browser thanks to a web-based user interface

➤ **Monitoring**

Condition monitoring and data logging

➤ **Availability**

Platform-independent user interface, consistent display, and operation on multiple devices

Contactless energy transfer system

MOVITRANS® spot



Mobile components

- Charging power **up to 11 kW** per pick-up

Stationary components

- Decentralized supply up to **8 kW at 50 kHz**
- Magneto-resistor can be installed **in** or **on the ground**
- **Heavy-duty design** available

MOVITRANS® line

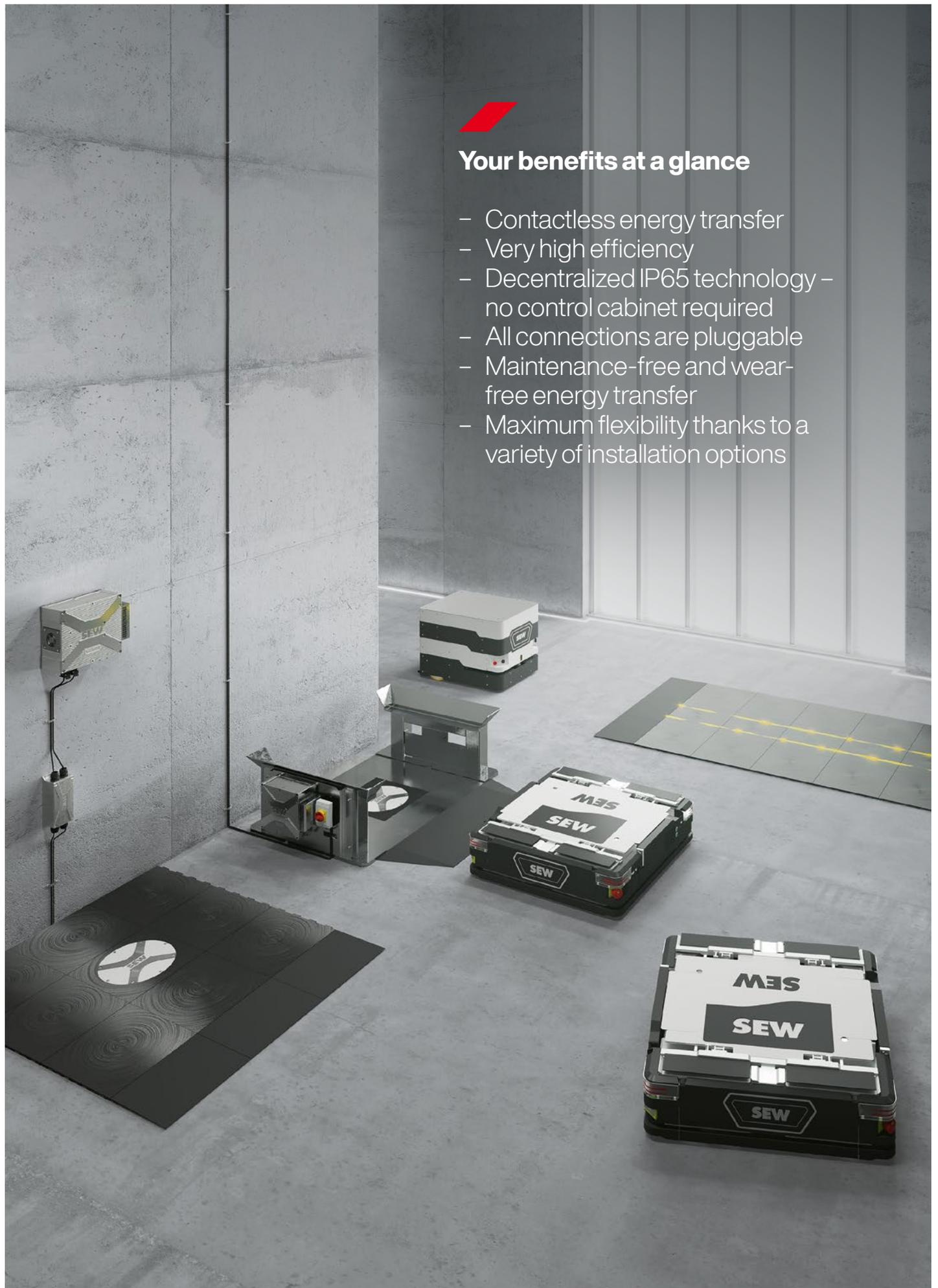


Mobile components

- Charging power **up to 1.5 kW** per pick-up

Stationary components

- Decentralized supply up to **14/16 kW at 50/25 kHz**, connected load up to **48 kW** possible (parallel connection of multiple devices)
- **Line cable** or **wedge-shaped cable solution**
- **Quick, easy, and open installation** of wedge-shaped cables
- Can be installed **in** or **on the ground**
- **Inductive conductor** can be used for both **charging** and **navigating** (measuring accuracy +/- 2 mm)



Your benefits at a glance

- Contactless energy transfer
- Very high efficiency
- Decentralized IP65 technology – no control cabinet required
- All connections are pluggable
- Maintenance-free and wear-free energy transfer
- Maximum flexibility thanks to a variety of installation options

Other topics that might
be of interest to you

**Automation bundles
for mobile assistance systems**

SEW
EURODRIVE

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