# Digital Distribution and Warehouse

Thinking intralogistics further! – Digital Connectivity & Power





## Warehouse Overview

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New Technology Industrial 5G	Wireless Communication Automated Guided Vehicle (AGV)	RFID Systems In-/Outbound Logistics	RTLS Systems Automatic Finding	>	Power Supply Automated Guided Vehicle (AGV)	>	Weighing Systems Conveyor Systems	
OT/IT Network Integration	Wireless Communication Shuttle Systems	RFID Systems Conveyor Systems	RTLS Systems Yard Management	>	Power Supply Add-on modules	>		
Network Management	Wireless Communication Stacker Cranes	Optical Code Reading Conveyor Systems	RTLS Systems Safety & Access Control	>				
Cybersecurity for Industry	Wireless Communication Tray Sorter Systems	RFID Systems Pouch Sorter Systems	RTLS Systems Paperless Warehouse	>				
Remote Communication		Machine Access Control	Location Intelligence Software	>				
					Power			
Industrial Network Systems	Industrial Wireless LAN	Industrial Identification and Locating		>	Supply	>	Weighing Systems >	

## Industrial Network Systems

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DT/IT Network ntegration	Vehicle (AGV)			Vehicle (AGV)		
	Shuttle Systems	RFID Systems Conveyor Systems	RTLS Systems Yard Management	Power Supply Add-on modules	,	
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ybersecurity for idustry	Wireless Communication Tray Sorter Systems	RFID Systems Pouch Sorter Systems	RTLS Systems Paperless Warehouse			
emote ommunication		Machine Access Control	Location Intelligence			

#### **Industrial 5G**

Increased performance and efficiency

Reliable warehouse operation thanks to high performance wireless communication

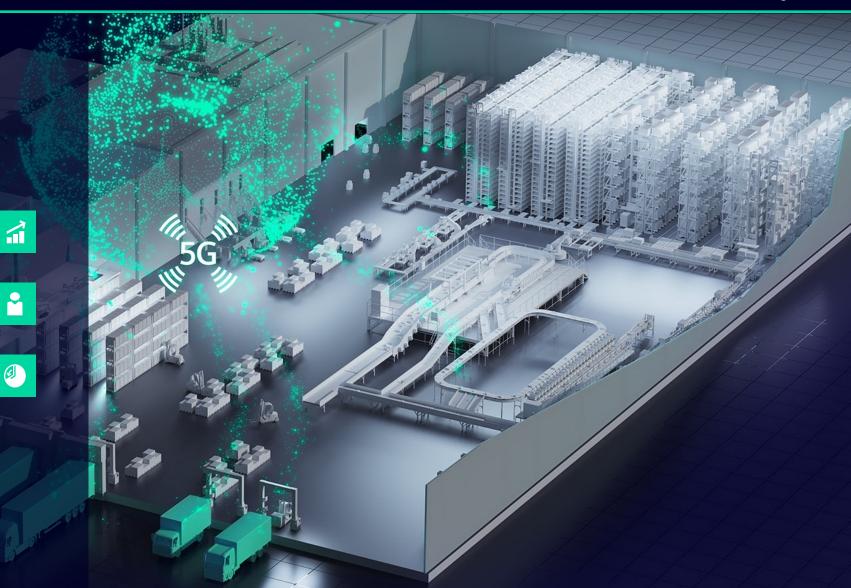
Network infrastructure is designed to be operated by own personal

Longer maturities of battery-powered mobile vehicles thanks to energy efficient communication

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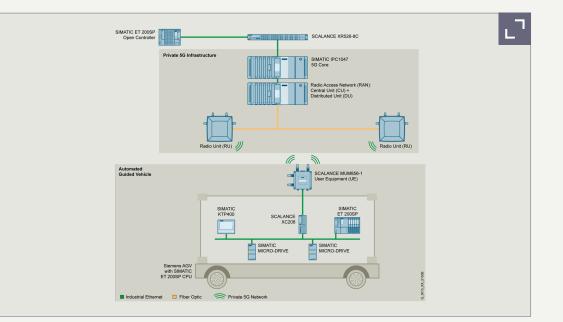
#### **Industrial 5G**

# Flexible and reliable wireless communication

System tested end-to-end wireless communication solution for mobile applications in distributionand warehouses

Connecting a large number of autonomous automated guided vehicles (AGVs) or automated mobile robots (AMRs) in a single network

Highest reliability with lowest latencies with Ultra-Reliable Low-Latency Communication



Industrial Network Systems

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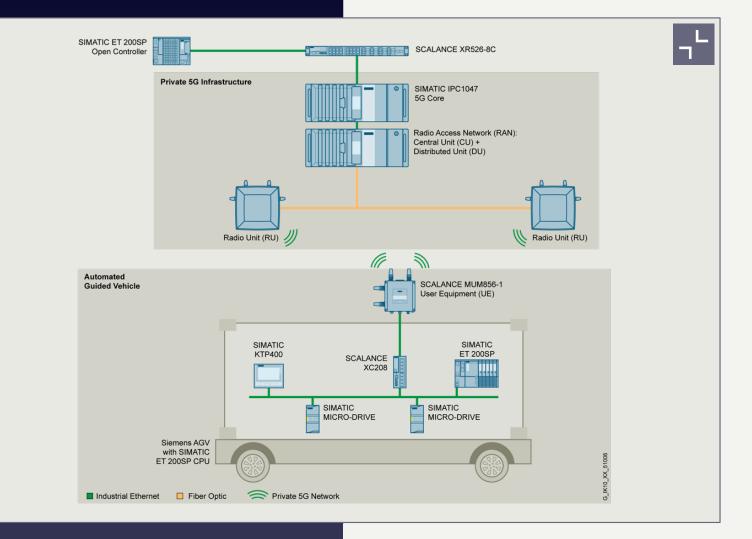
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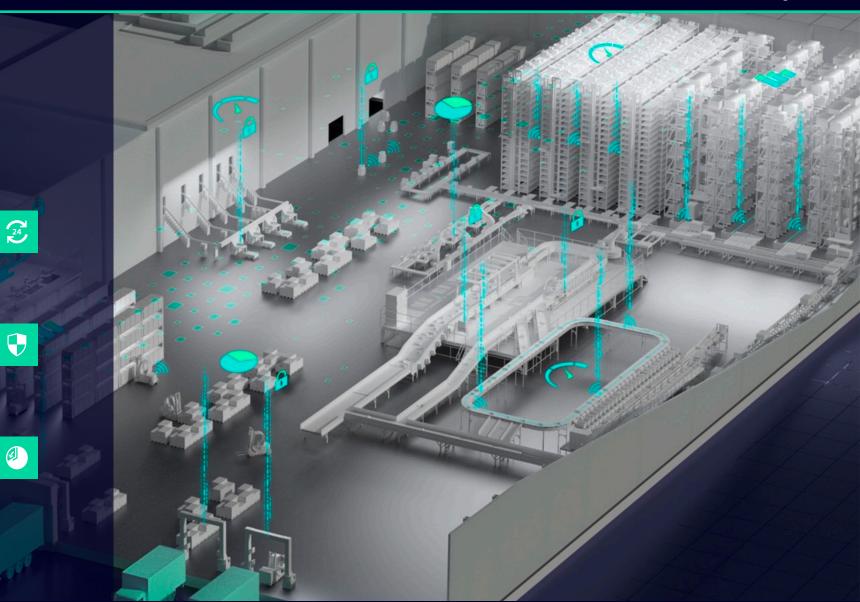
#### **OT/IT Integration**

#### Perfect interaction between OT and IT networks in logistics

Maximum availability guaranteed in a segmented and redundant network architecture from the machine to the cloud level with open standards for all major clouds

Highest security with multilevel protection concept using userbased and protocol-based access control to end systems of network cells

Minimal response times with cuttingedge network portfolio of robust hardware products with extended temperature range and different IP protection classes



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Industrial Network Systems

Industrial Wireless LAN

Industrial Identification and Locating Power Supply Weighing Systems

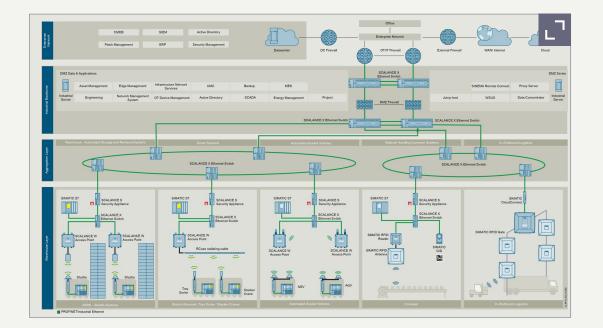
### **OT/IT Integration**

#### Perfect interaction between OT and IT networks in logistics

SCALANCE products are part of Totally Integrated Automation, the industrial automation solution from Siemens stands for efficient interoperability of all automation and network related components

Complete tested and approved automation solution including industrial Ethernet from a single source

Investment protection by tested functional compatibility of successor products



Industrial Network Systems

Industrial Wireless LAN Industrial Identification and Locating

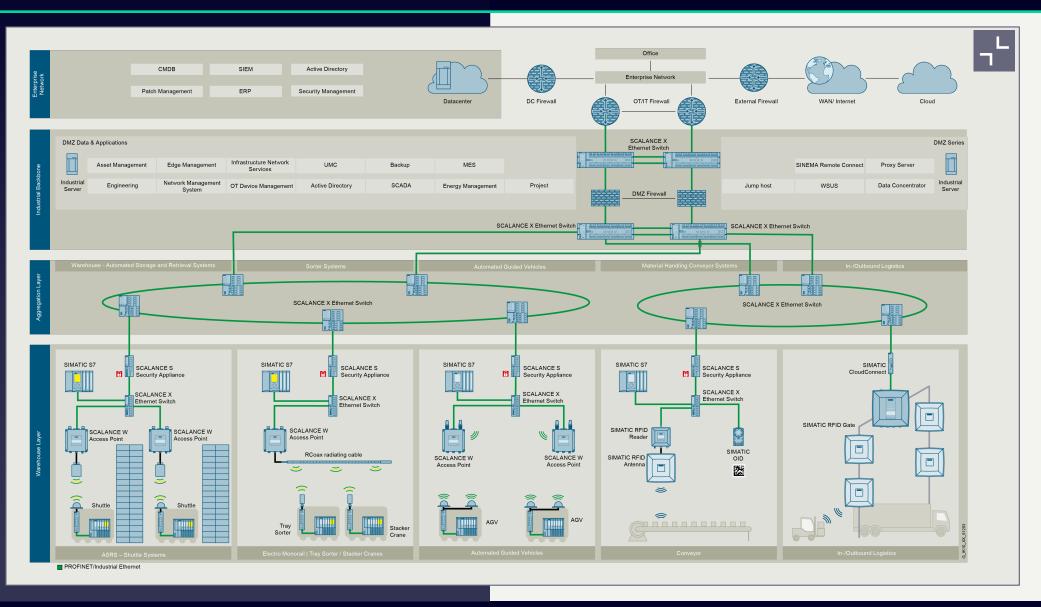
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#### SINEC NMS

#### Maximum transparency for your warehouse network

Easy monitoring and diagnostic with graphical representation and topological recognition of the network (24/7 visibility of network status)

Maximum transparency for industrial network systems with automatic documentation of the whole network

SINEC NMS manages efficiently large-scale networks following IEC 62443 security guidelines





Website Brochure/video

Industrial Network **Systems** 

Wireless LAN

Industrial Identification and Locating

Power Supply

Weighing **Systems** 

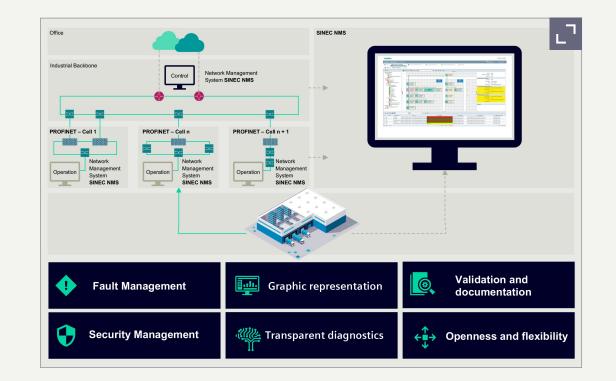
#### SINEC NMS

# Time-saving management for warehouse network

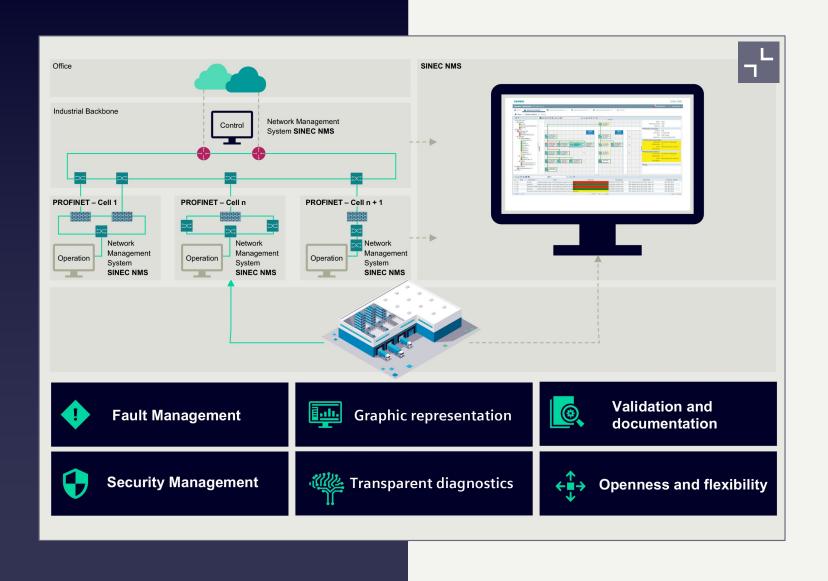
Central policy based management ensures secure configuration backup and firmware updates

Manages entire network infrastructures for Siemens, partner and third-party devices at ease, onsite or remotely

Excellent scalability for any size of networks due to distributed architecture



Industrial Network								
Systems	Industrial Wireless LAN	>	Industrial Identification and Locating	>	Power Supply	>	Weighing Systems	>



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## Cybersecurity for Industry

Industrial Cybersecurity is essential for secure logistic processes

**High Availability** – Avoiding disturbances caused by attacks



**Integrity** – Reduction of malfunctions, production errors and downtimes

**Confidentiality** – Protection of confidential data, information and intellectual property







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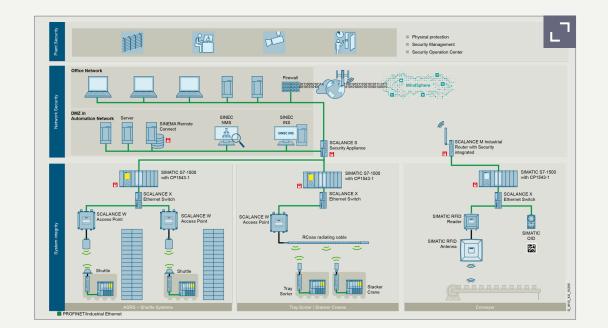
## Cybersecurity for Industry

# Protect the productivity and availability of your plant

High transparency via security threats in daily operation published / tracked by Siemens CERT over the lifecycle

High investment security through certified secure development Siemens products according to IEC 62443-4-1

Increased security level by comprehensive product and service offerings for secure OT network architectures for large distribution- und warehouses

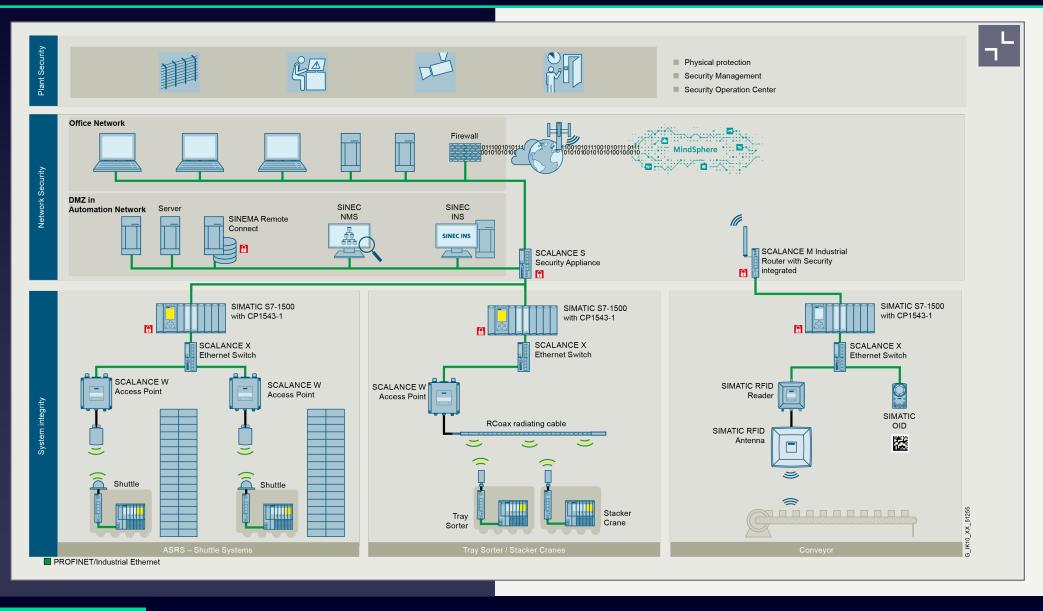


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## SINEMA Remote Connect

Easy and secure remote access for material handling systems

Cost saving thanks to easy integration and connection of different machines and plants using the central management platform SINEMA Remote Connect



Time saving via fast remote access without any special IT Knowledge

Highest security thanks to VPNs for secured remote communications



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Industrial Network Systems

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## SINEMA Remote Connect

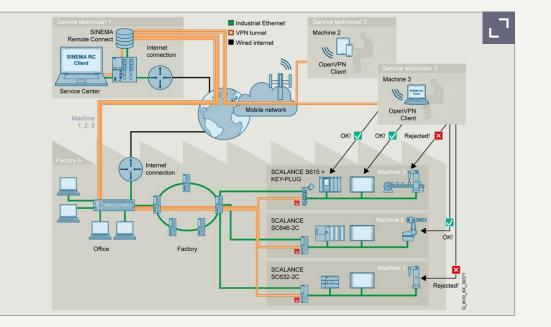
# Flexible and secure remote access for material handling systems

Secured access to remote automation cell via web-based management or TIA Portal

Flexible media access from mobile wireless networks up to private lines – for every requirement the right device

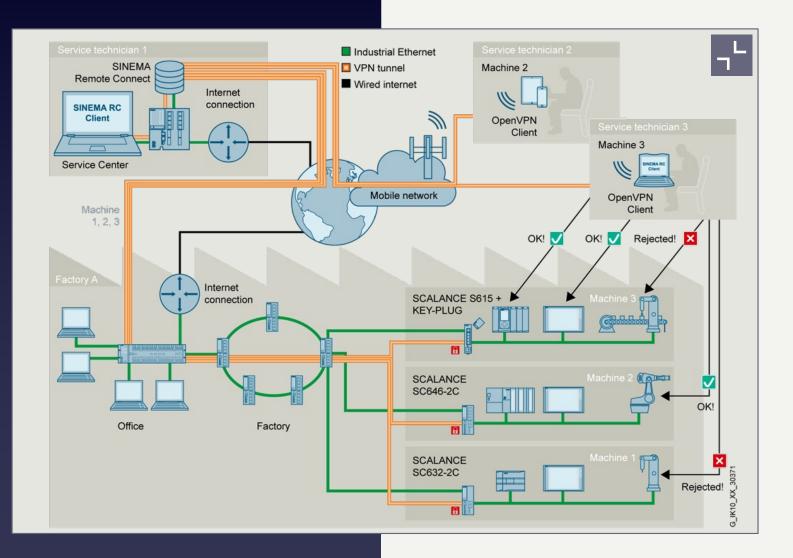
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High transparency thanks to central administration of all user and device connections



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## Industrial Wireless LAN

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Wireless Communication Automated Guided Vehicle (AGV)

Wireless Communication Shuttle Systems

Wireless Communication Stacker Cranes

Wireless Communication Tray Sorter Systems

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**RFID Systems** 

**Conveyor Systems** 

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In-/Outbound Logistics

Pouch Sorter Systems Control

**RTLS Systems** Yard Management

Safety & Access Control

**RTLS Systems** Paperless Warehouse

Location Intelligence

**Power Supply** Automated Guided Vehicle (AGV)

Weighing Systems Conveyor Systems

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New Technolog Industrial 5G

Industrial Network

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Industrial Identification and Locating

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# Future-Proof Industrial Network solutions enable efficiency

Save energy costs thanks to energyoptimized operations via digital output to remotely switch off all automation components

Fewer charging stations required in the warehouse by activating the sleep mode to eliminate energy consumption

Highest availability thanks to easy-to-use diagnostic functions e.g. integrated signal recorder

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# Future-Proof Industrial Network solutions enable efficiency

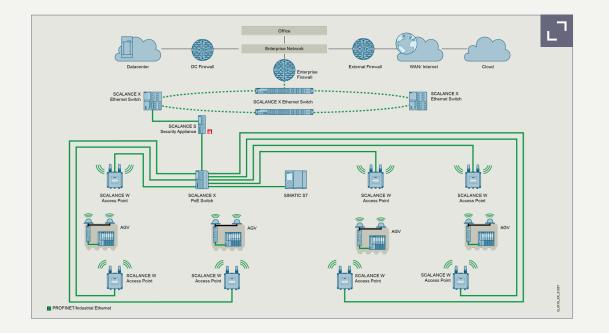
High flexibility in fulfilling customers wireless technology demands (**Wi-Fi 6/5G**) by leveraging same form factor and operating systems of SCALANCE W and SCALANCE M

Fast serviceability by non-specialized maintenance personnel with configurations saved on Configuration Plugs

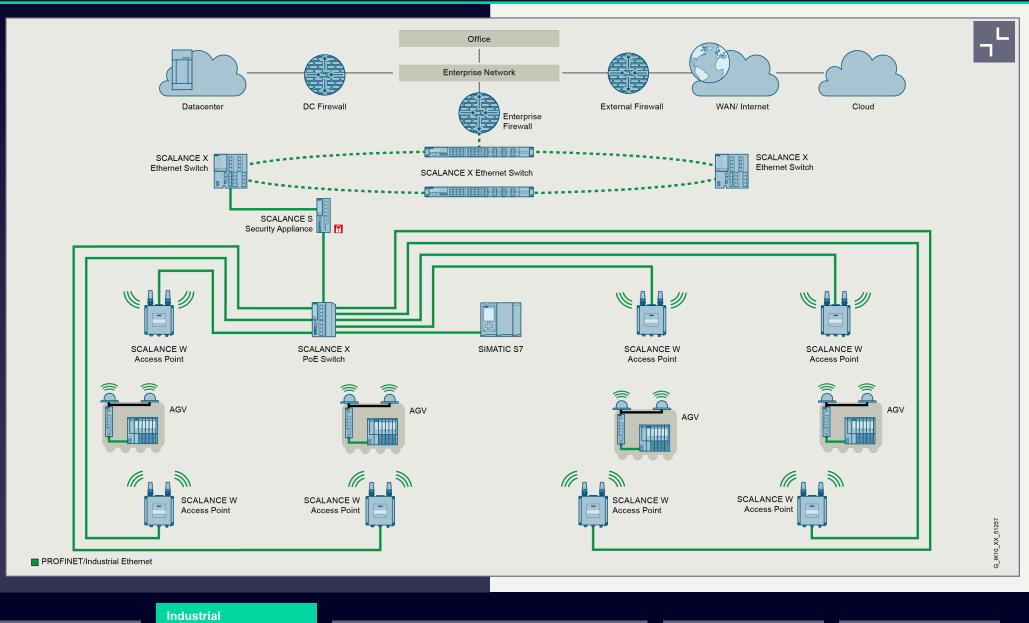
**Industrial Network** 

**Systems** 

Easy configuration and scalable commissioning thanks to a powerful toolbox (PRESET PLUG, TIA Portal, SINEC NMS, NAT functionality)



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>	Wireless LAN	Industrial Identification and Locating	>	Power Supply	>	Weighing Systems	>



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#### Industrial Network Systems

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#### Flexible Industrial Wireless LAN solution for every shuttle concept

Higher throughput in storage and retrieval systems based on real-time communication thanks to Siemens iFeatures

Cost-effective and maintenance-free IWLAN solution as opposed to systems with contact conductors

Maximum availability due to smaller impact of maintenance with selective downtime of aisles or levels thanks to dedicated safety concepts based on **i**Features

Brochure/video Website

**Systems** 



**Industrial Network** 

Industrial Wireless LAN

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# Flexible Industrial Wireless LAN solution for every shuttle concept

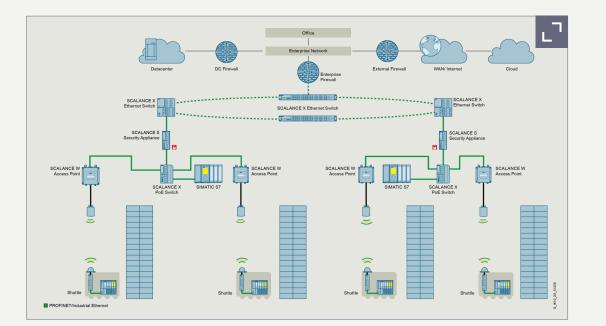
Highest stability of the wireless communication in challenging high bay storage environments thanks to Siemens iFeatures

Safe and selective maintenance of shuttles thanks to PROFIsafe applications enabled through real-time communication via iPCF

Policy based network configuration und central firmware management as well as diagnosis enabled by the network management system SINEC NMS

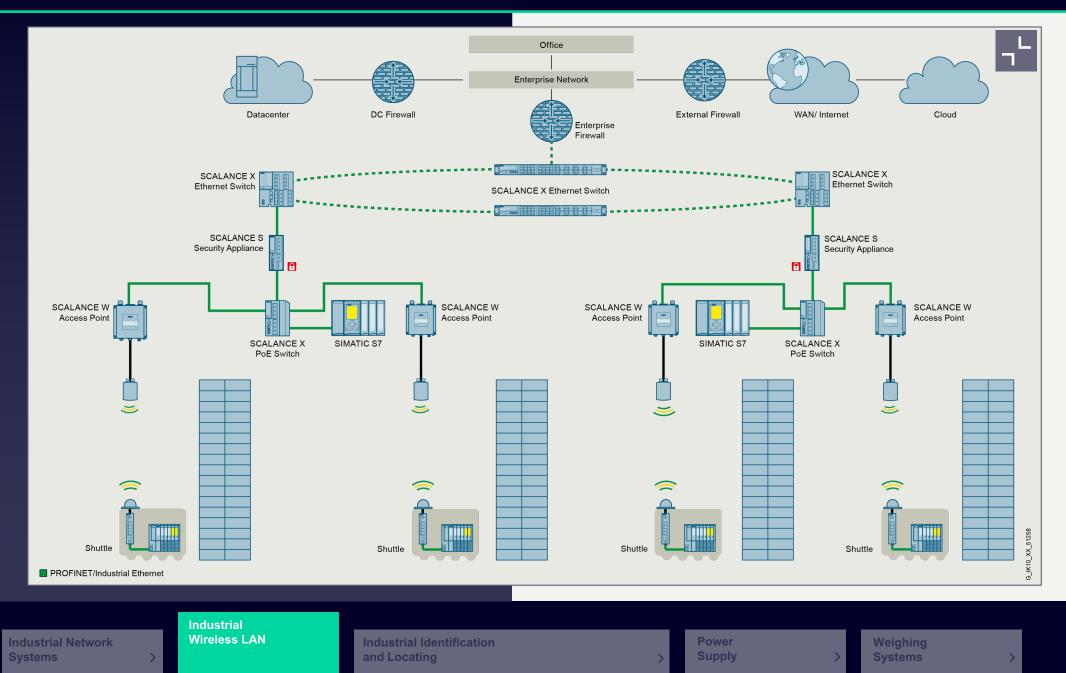
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#### Industrial Wireless LAN for safe and reliable crane operation

High availability thanks to wear-free and robust contactless communication with a controlled and defined radio field along its route

Maintenance-free operation as opposed to optical systems or conductor lines

Highest availability thanks to easy-to-use diagnostic functions e.g. integrated signal recorder

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# Industrial Wireless LAN for safe and reliable crane operation

Remote operation and remote diagnostics available thanks to high data rates over the newest wireless technology standard

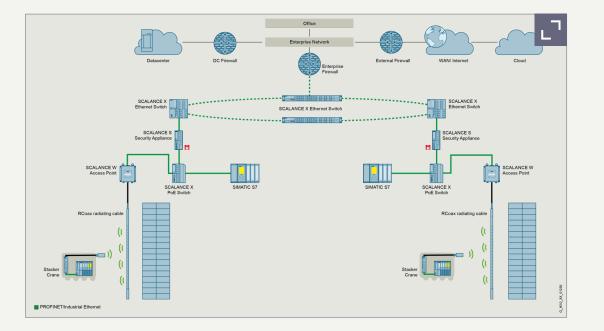
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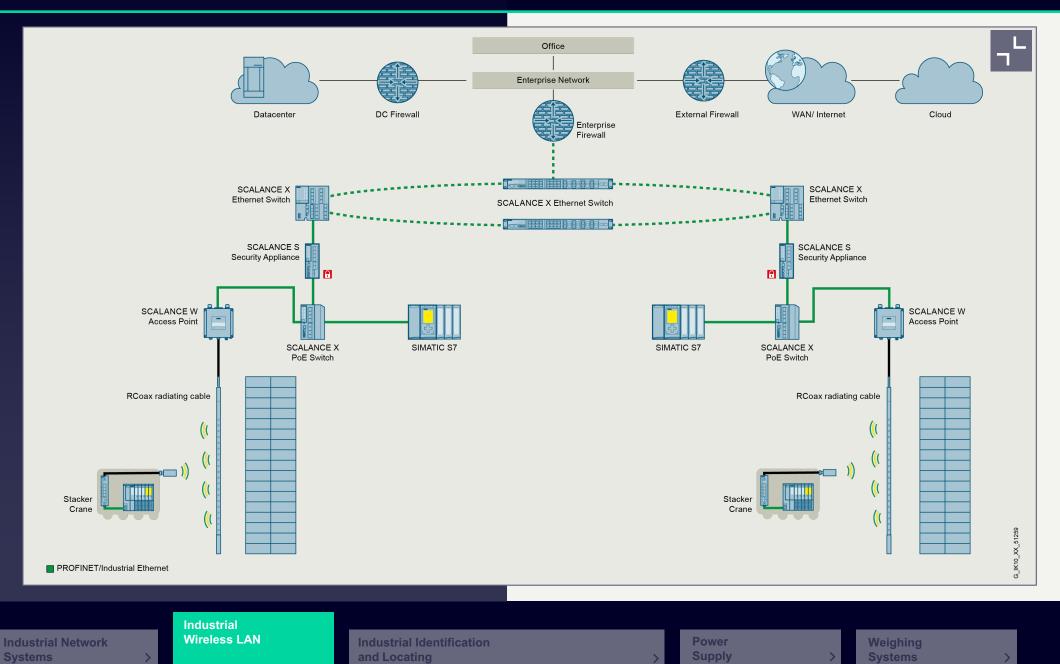
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#### Maintenance-free industrial wireless LAN solutions with RCoax

Less errors in sorting due to fast and reliable industrial wireless communication

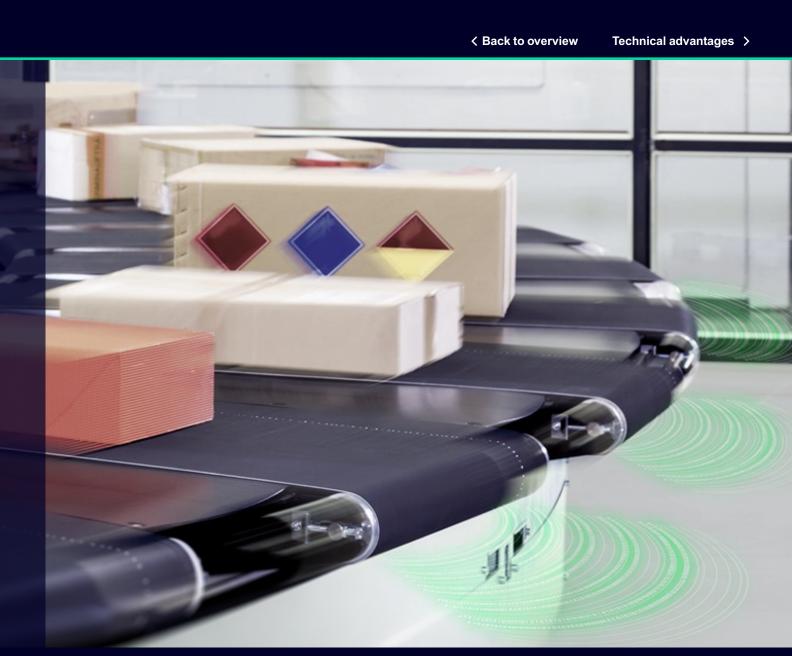
Increased performance thanks to unique Siemens iFeatures securing real-time communication

Cost-effective due to maintenance-free RCoax cable solution as opposed to systems with conductor lines



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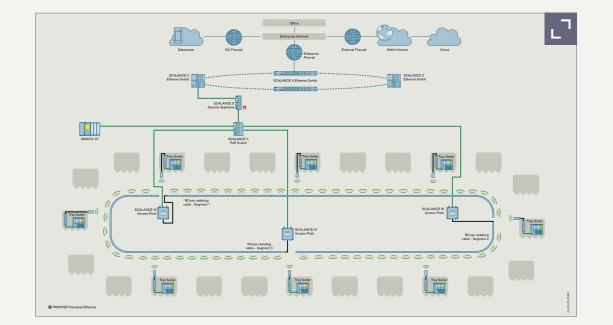
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# Maintenance-free industrial wireless LAN solutions with RCoax

Flexible installation with no need for long term preparation and time expensive infrastructure design

RCoax cable solutions are considerably more cost-effective compared to systems with high maintenance contact conductors and trailing cables

Real-time wireless communication with iPCF is fulfilling the requirements of the automation protocols (e.g. PROFINET or Ethernet/IP) in the sorting system



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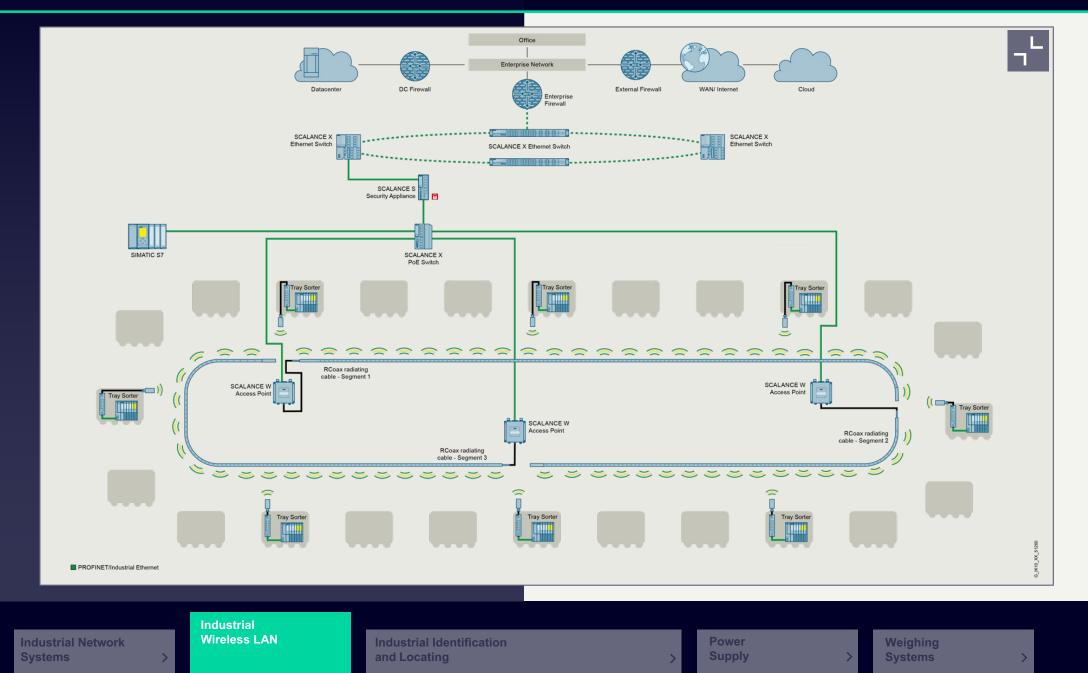
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## **Industrial Identification and Locating**

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Cybersecurity for

Remote Communication

**Systems** 

Wireless Communication Automated Guided Vehicle (AGV)

Wireless Communication Shuttle Systems

Wireless Communication Stacker Cranes

Wireless Communication Tray Sorter Systems

**RFID Systems** In-/Outbound Logistics

**RFID Systems RTLS Systems Conveyor Systems** Yard Management > **Optical Code Reading RTLS Systems Conveyor Systems** Safety & Access Control > **RFID Systems RTLS Systems** Pouch Sorter Systems Paperless Warehouse > Machine Access Location Intelligence Control Software >

**RTLS Systems** 

Automatic Finding

Automated Guided Vehicle (AGV)

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Industrial Identification and Locating

Power Weighing Supply **Systems** 

#### Scalable identification system for supply-chain solutions

Optimized material flow and automated data acquisition with comprehensive and scalable industrial identification portfolio

Maximum transparency from shop floor to cloud thanks to seamless integrated communication and security solutions

Future-proofed portfolio of robust hardware - products and efficient software tools ensure highest efficiency

Brochure/video Website

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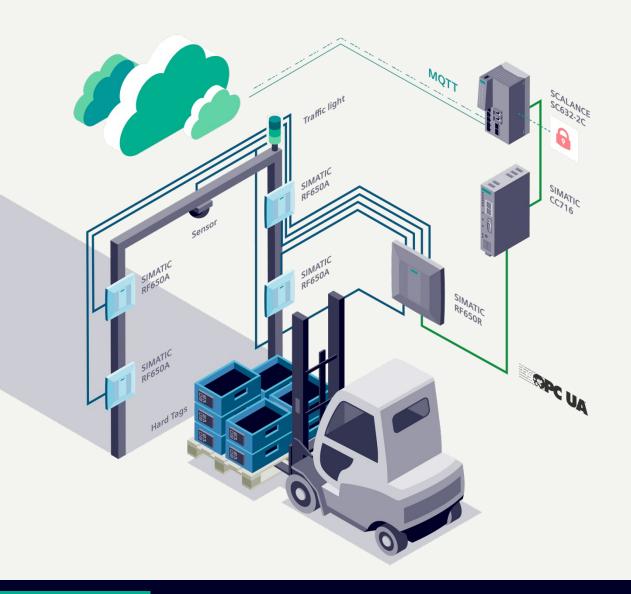
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# Improved visibility of product and item information

RFID technology enhance the effortless and seamless tracking of moving products and items along the supply chain significantly

Accelerated material flow, forecasts and schedules with real-time data information about assets and item movements

High failure prevention due to automatic detection which ensure instant visibility and end-to-end traceability



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Industrial Network Systems Industrial Wireless LAN Industrial Identification and Locating

Power Weighing Supply > Systems

#### Innovative identification system for optimized material flow

Proven "UHF for Industry" algorithms ensure reliable identification of products and assets at all stages in your material handling process

Cost-efficient and scalable reader portfolio, modular antennas and large transponder selection

Maximum efficiency in integration thanks to simple cloud connection via OPC UA

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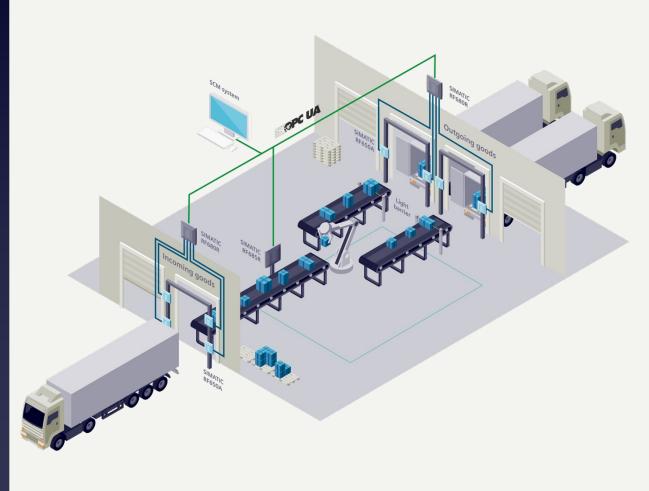
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#### Enhanced productivity and optimized routing of deliveries

Sorting processes can be optimized faster and more ease without higher-level systems thanks to the directly stored information on the RFID-transponders

Improvement of sorting processes by RFID technology increasing material flow performance thanks to minimum no-reads

Simplified outbound processes enable the capture of errors at the carton level in-time before the assembling and shipping process of pallets



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### **SIMATIC MV500**

### Powerful code reading system for transparent logistic processes

Best-in-class reading results in dynamic read distances with electronic focus and automated, switchable light segments

Secure and reliable connection to cloud applications thanks to TIA integration

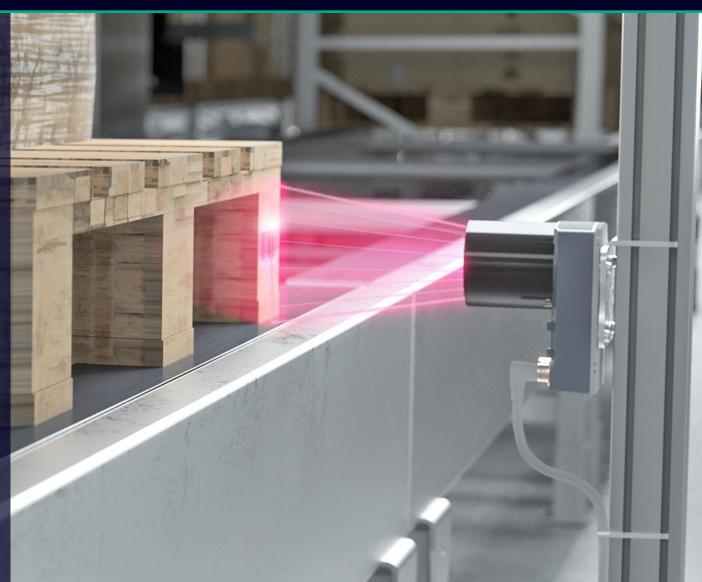
Easy-to-use with one-click configuration for network connection and code reading parametrization



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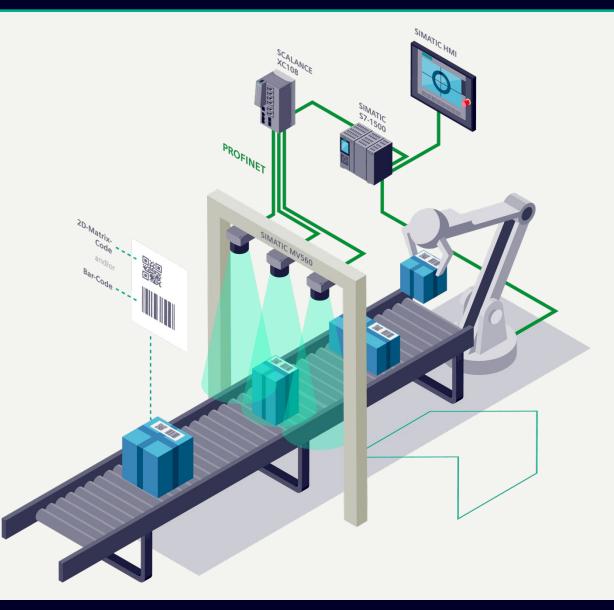
## SIMATIC MV500

# Standardized and integrated industrial proven components

Increased performance and flow-rate through imagebased readers which are decoding challenging 1D and 2D codes accurately and quickly in distribution centers

Reliable operation thanks to powerful code reading systems with industrial proven protection factor

High efficiency in reduction of maintenance costs thanks to intelligent and secured remote support and services



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### Industrial identification system ensures maximum transparency

High economic efficiency with scalable, robust and compact readers ensure seamless tracking of logistics processes

Seamless integration from the field and control levels up to cloud-based solutions by using scalable interface modules

Highly efficient configuration, commissioning and diagnostics by using the unique "IDENT" technology object in TIA Portal

Brochure/video Website

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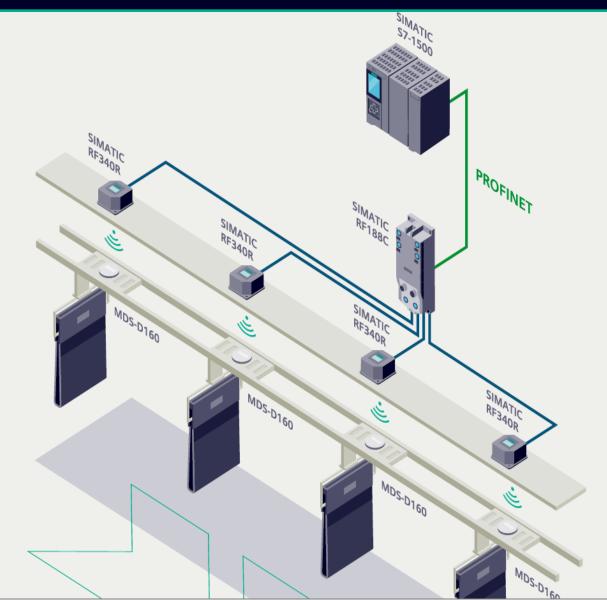
Power Weighing Supply **Systems** 

### Efficient sorting through automatic mapping

Sorting processes can be optimized faster and more ease without higher-level systems thanks to the directly stored information on the RFID-transponders

Maintenance-free and reliable operation thanks to robust contactless RFID identification system without visual contact

Highly efficient identification system to store, transport, sort and sequence items in pouches and hooks



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Industrial Identification and Locating

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### Electronic access control for secured machine operations

Controlled machine access: Traceability of access and changes

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Individual control of access rights enable a definition of any number of user groups with different access rights

User-friendly operation integrated in the company-wide industrial security concept

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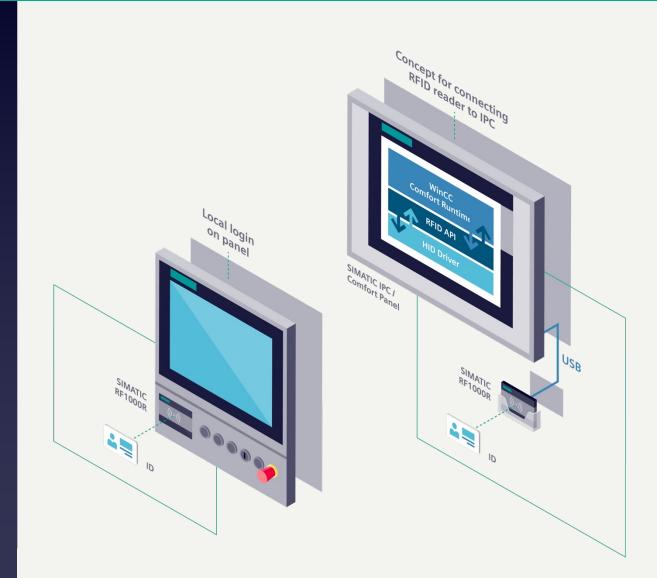
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### Efficient and secured access control to process areas

Individual control of access rights using existing employee ID cards

Secured and documented access to material handling systems prevents operating errors

Enables documentation of processes and storage of user-specific instructions



**Systems** 

Industrial Identification and Locating

Power Weighing Supply Systems

# SIMATIC RTLS

Full product tracking in real-time leads to maximized productivity

Increased efficiency due to reduction of search times with high accuracy of realtime locating data within centimeters

Identification of bottlenecks enables an optimization of material flows and individual orders

High transparency ensures seamless tracking In- and Outdoor

Website Brochure/video



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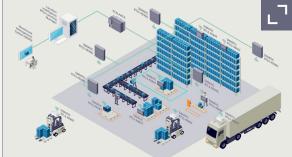
# SIMATIC RTLS

### Optimized and automated processes in the warehouse

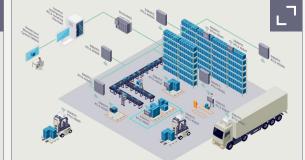
Efficient productivity due to reduced search times enabled by real-time locating data and the integration of search functions in the location intelligence software

High automation rate due to fast implementation of automized processes possible by virtual geofencebased events

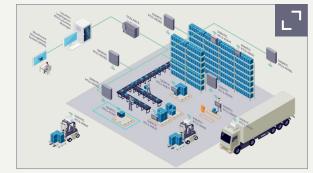
Fast improvement of quality management on the base of geofences enabled by automization of error messages in case of wrong assignments of partial orders



Use Case 1: Reduction of Search and Downtimes



Use Case 2: Automation of Transport Processes



Use Case 3: Improving QM and Prevention

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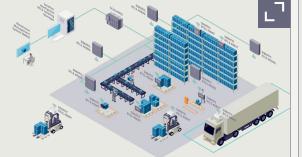
# SIMATIC RTLS

#### Real-time logistic management

High product box standard thanks to protection class IP65 of transponder and gateways enable an ease and seamless real-time tracking in- and outdoor

Ensuring a complete and transparent overview of the material flows on entire yard without any restriction

Optimized throughput and reduction of idle times by generating automated pickup notes based on geofence events





Use Case 4: Real-time Yard Management

Use Case 5: Real-time locating In- and Outdoor



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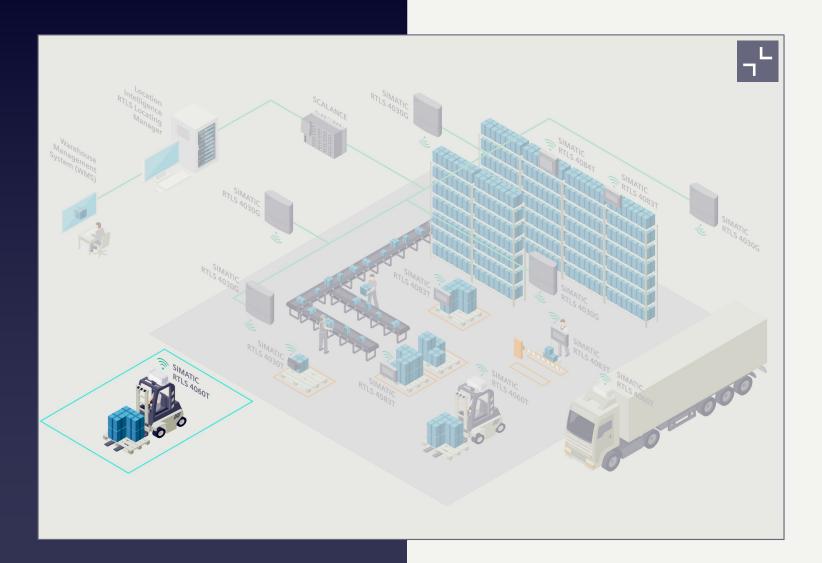
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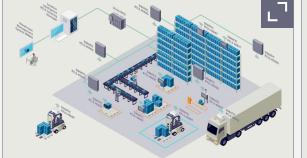
# SIMATIC RTLS

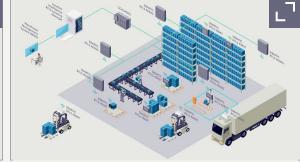
### Route optimization and automized access control

Optimization of routes and avoidance of bottlenecks by quick and strategic analyzation of movement data

Higher security standards by implementing defined access controls induced by connecting real-time location data and events of the locating intelligence software

Improvement of pedestrians or objects safety by initializing an alarm in case the distance of the forklift driver is below safety distance (zero harm culture)





Use Case 6: Route Optimization

Use Case 7: Safety and Access Control

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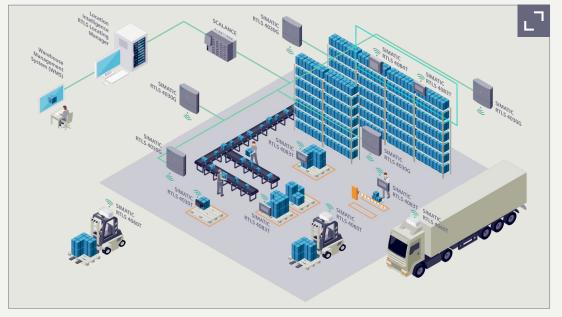
# SIMATIC RTLS

#### Paperless warehouse

Innovative e-paper transponders allow the reduction of paper consumption, foster sustainability and resource efficiency by replacing traditional, printed accompanying papers

High flexibility by customized and individual paperless work instructions that are directly displayed and updated on the e-Ink display depending on position and object

Reduced maintenance effort due to use case optimized battery management and according status notifications



Use Case 8: Paperless warehouse

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**Industrial Network** 

**Systems** 

Wireless LAN

Industrial Identification and Locating

Power Supply Weighing **Systems** 



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Systems

Industrial Wireless LAN Industrial Network >

Industrial Identification and Locating

Power Weighing Supply Systems  $\geq$ 



#### **Full transparency**

**Digital twin of performance:** Visualize what is already known

#### Anomaly detection

Real-time analytics: Understand the status and get aware of anomalies

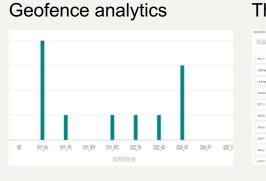
#### **Optimization**

#### **Optimization toolset:**

Optimize the processes to avoid future anomalies



#### Analytics Highlight Features



### Throughput analytics

#### Heatmap



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Industrial Network Systems IndustrialWireless LAN

Industrial Identification and Locating

Power Supply	>	Weighing Systems	

# **Power Supply**

NAME OF TAXABLE PARTY.

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New Technol Industrial 5G	bay	Wireless Communication Automated Guided	RFID Systems	RTLS Systems	Power Supply Automated Guided Vehicle (AGV)	>	Weighing Systems
		Vehicle (AGV)	In-/Outbound Logistics	Automatic Finding	Power Supply Add-on modules		Conveyor Systems
OT/IT Networ Integration	k >	Wireless Communication Shuttle Systems	RFID Systems Conveyor Systems	RTLS Systems Yard Management		>	
Network Management		Wireless Communication Stacker Cranes	Optical Code Reading Conveyor Systems	RTLS Systems Safety & Access Control			
Cybersecurity Industry	for	Wireless Communication Tray Sorter Systems	RFID Systems Pouch Sorter Systems	RTLS Systems Paperless Warehouse			
Remote Communicati	on >		Machine Access Control	Location Intelligence Software			
Industrial N	e face a la	Industrial	Industrial Identification		Power Supply		Weighing

# **SITOP Power Supply**

### For increasing system availability up to total all-round protection in warehouses

High availability due to 24 V all-round protection solution with redundancy, buffer or selectivity modules protects the material handling application

Full transparency is provided by the SITOP PSU6200 due to monitoring of important data like voltage, current, temperature and lifetime. Therefore predictive maintenance is possible to reduce downtimes

SITOP PSU6200 has an efficiency of up to 96.6% to save energy costs

Brochure/video

**Systems** 



Website

and Locating

Power Supply

Weighing **Systems** 

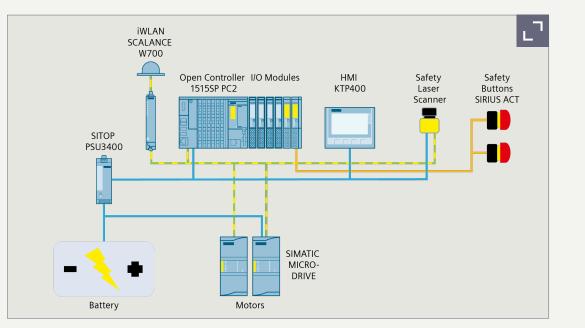
### **Power Supply**

# For increasing system availability up to total all-round protection for AGV's

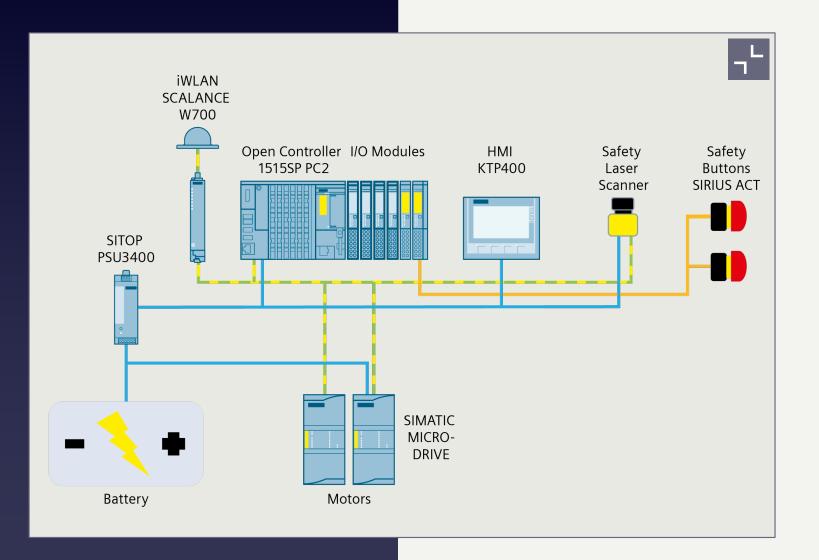
Use of DC-DC converter SITOP PSU3400 to provide a power supply from batteries that powers different control products in automated guided vehicles

Stable 24 V supply despite fluctuating DC voltage of batteries due to wide input voltage range

Additionally the SITOP selectivity module can split the DC 24 V output voltage in up to eight channels with their own respective load. Each channel is protected and monitored individually







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Systems

Industrial Identification and Locating

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Power Supply

Weighing Systems

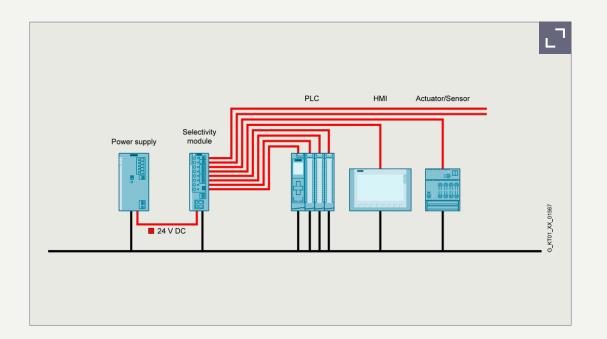
# **Power supply add-on** modules and DC UPS

Individual configuration possible up to complete all-round protection

Failure of power supply units: Redundant setup of power supply with SITOP redundancy modules

Against overload or short circuit in 24 V circuit: Selective protection of 24 V branches with SITOP selectivity modules

For power failures on the input side: SITOP buffer module (up to seconds), SITOP DC UPS with capacitors (minutes range), SITOP DC UPS with batteries (hours range)





**Industrial Network** 

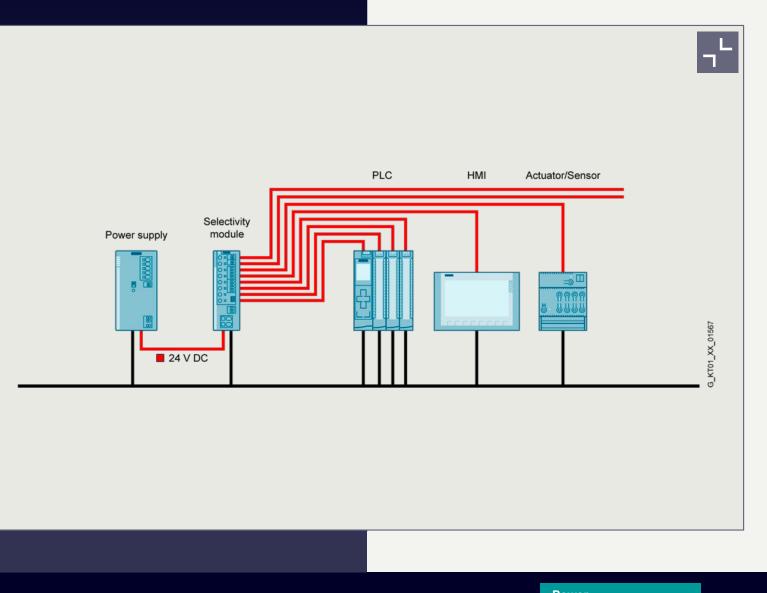
Wireless LAN

**Systems** 

Industrial Identification and Locating

Power Supply

Weighing Systems



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Industrial Network Systems Industrial Wireless LAN

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Industrial Identification and Locating Power Supply

Weighing Systems

# Weighing Systems

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New Technology Industrial 5G	Wireless Communication Automated Guided Vehicle (AGV)	RFID Systems In-/Outbound Logistics	RTLS Systems Automatic Finding	Power Supply Automated Guided Vehicle (AGV)	Weighing Systems Conveyor Systems
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Cybersecurity for Industry	→ Wireless Communication Tray Sorter Systems	RFID Systems Pouch Sorter Systems	RTLS Systems Paperless Warehouse		
Remote Communication		Machine Access Control	Location Intelligence Software		
					Weighing
Industrial Network Systems	Industrial → Wireless LAN →	Industrial Identification and Locating	>	Power Supply >	Systems

# SIWAREX

Real integration of all weighing applications into the SIMATIC automation environment

Weighing technology as an integrated part of the automation environment – no separate black box

Flexible and open system without dependencies

Full diagnostics and maintenance across all SIMATIC controllers and HMIs

**Systems** 

**Industrial Network** 

Wireless LAN

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Industrial Identification and Locating

Power Supply Weighing Systems

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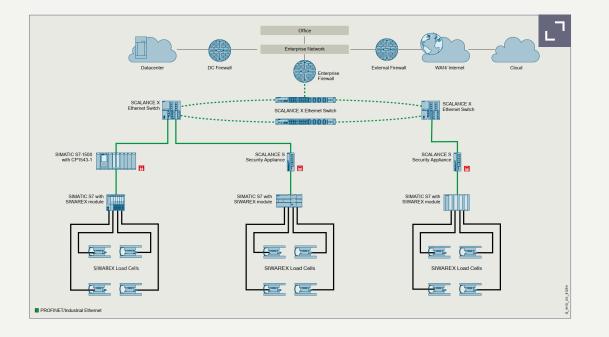
## SIWAREX

### Real integration of all weighing applications into the SIMATIC automation environment

Full integration of hardware and software into TIA Portal

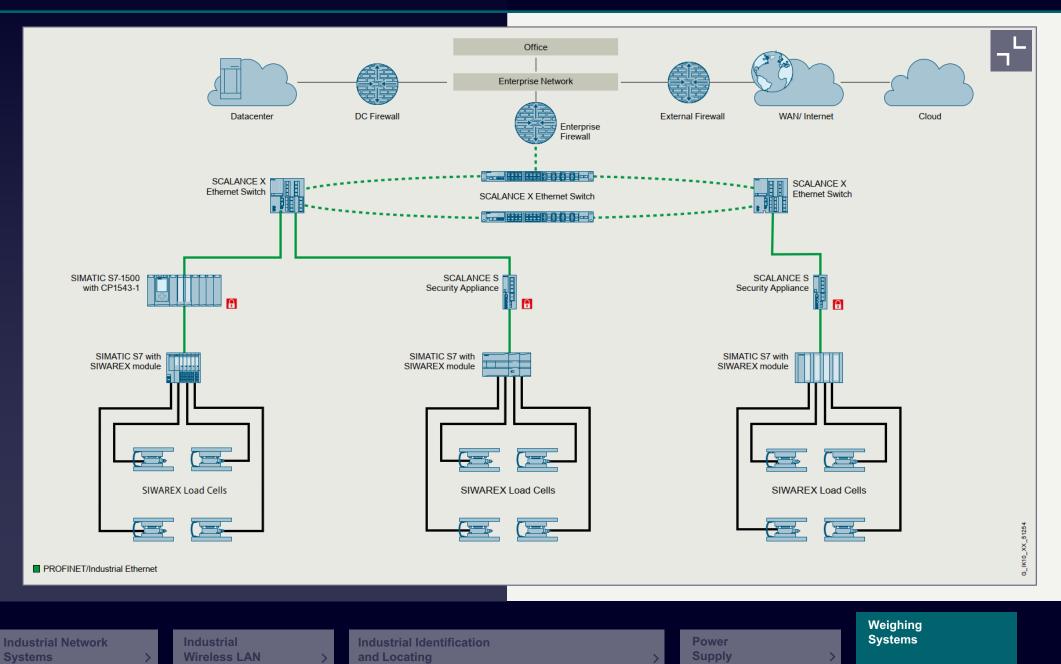
High scalability in combination with all other available SIMATIC components

Connectivity to PROFINET, Ethernet/IP and Modbus based controllers via SIMATIC ET 200SP Multi Field Bus IM. One hardware solution for all PLCs



					Weighing
$\sim$	Industrial Network	Industrial	Industrial Identification	Power	Systems
LTJ	Systems >	Wireless LAN >	and Locating >	Supply >	

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