SIEMENS

Powerful wireless communication for industry and beyond

New options for reliable automation

Industrial Wireless Communication

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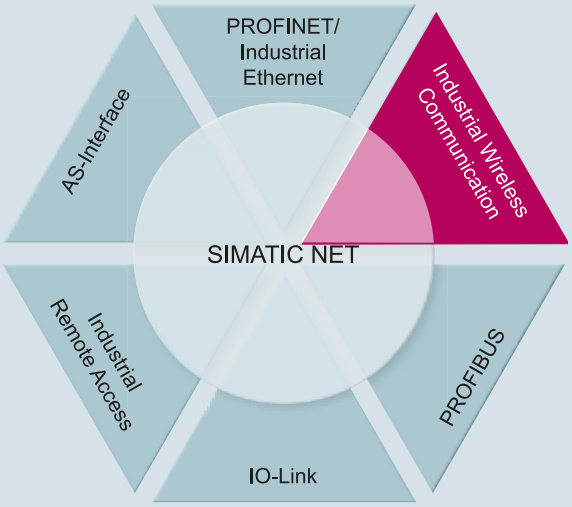


SIMATIC NET – Industrial communication from Siemens

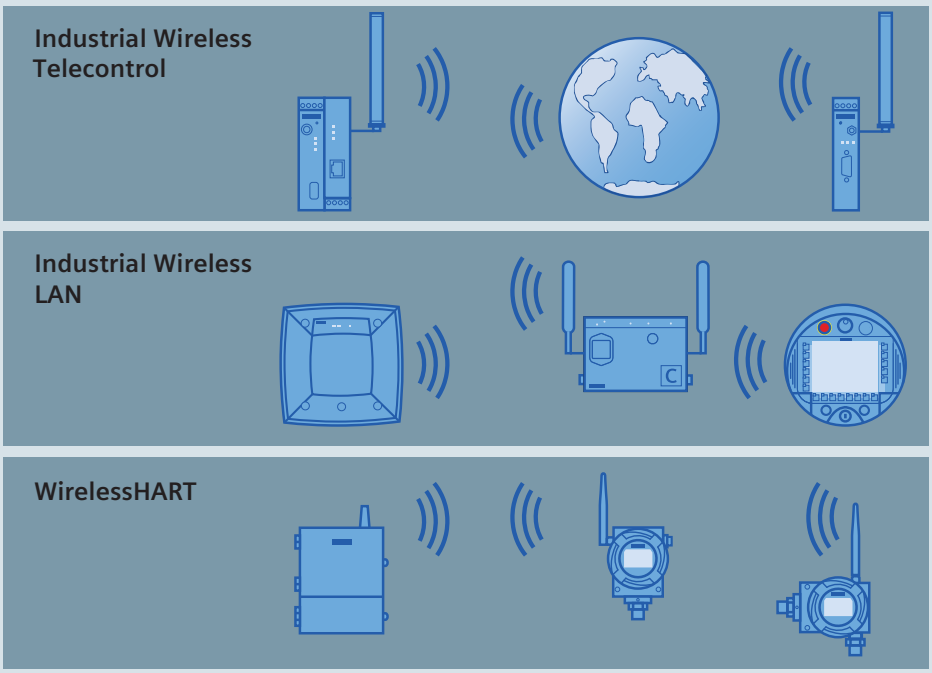
Industrial communication plays a central role in powerful automation applications. The variety of forms it can take is reflected in the wide range of industrial communications solutions from SIMATIC NET that transcends telecontrol and industrial wireless communication:
With PROFINET/Industrial Ethernet, PROFIBUS, AS-Interface and IO Link, all areas of industrial communication are covered. This means that there is always an ideal solution for every application and sector.

Industrial Wireless Communication opens up new opportunities

Future-oriented solutions for reliable automation

Industrial communication is one of the keys to increasing efficiency, reducing total cost of ownership and improving productivity. Here, the enormous potential of wireless communication in particular opens new perspectives - from partial plant modernization right through to the optimization of complex logistics or production processes.

On the basis of Industrial Wireless Telecontrol, Industrial Wireless LAN and WirelessHART, Siemens provides solutions for reliable automation with Industrial Wireless Communication.



Industrial Wireless Communication

Industrial Wireless Telecontrol – economical and versatile wireless technology for greater distances

Continuous communication between widely distributed plant sections in the water/wastewater sector or fast remote maintenance access to machines and equipment at the other end of the world are only two of the innumerable options for utilizing the advantages of Industrial Wireless Telecontrol (IWT). Integration in the SINAUT telecontrol system or an HMI/SCADA system makes the process data transmitted by mobile wireless available at all times.

Industrial Wireless LAN – flexible, plant-wide wireless infrastructure

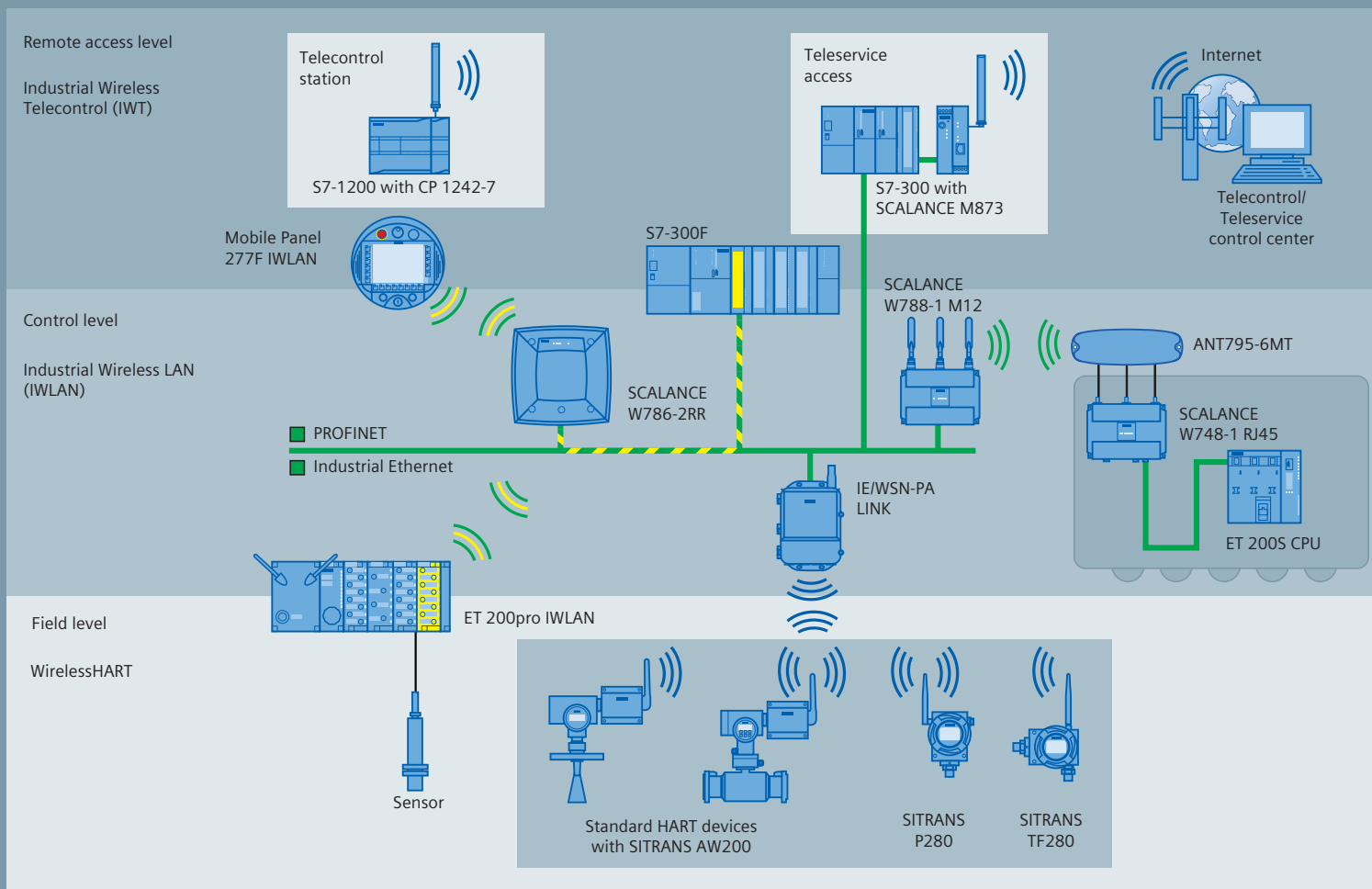
Wireless solutions are becoming increasingly integrated in machines and plants as a matter of course. In response to high requirements in terms of data communication, Industrial Wireless LAN (IWLAN) provides innovations such as deterministic wireless solutions and Industrial Ethernet standard PROFINET.

IWLAN is also widely used in applications associated with industry. The high data rates required here allow applications in conjunction with both video streaming as well as the transmission of visualization or speech data. High requirements in terms of determinism or redundant concepts can also be covered by the IWLAN infrastructure.

WirelessHART – wireless connection of the process instrumentation

WirelessHART is an open industrial standard developed for the particular requirements of wireless communication at the field level in the process industry. It consistently meets all the specific requirements for reliability, security, economics and user-friendliness. With more than 30 million devices installed worldwide, HART technology is the most commonly used communications protocol for intelligent process instrumentation at the field level. WirelessHART is backwards compatible with the wired HART technology and therefore provides the highest degree of investment security for hardware, software and know-how.

In Virovitica, Croatia the main focus is on economic aspects and self-sufficiency. This is why they decided on an Industrial Wireless Telecontrol solution from Siemens.



Industrial Wireless LAN

On the safe side with SCALANCE W and SINEMA E

Designed for industry – down to the last detail

Whether inside a building or outdoors: Ensuring smooth operation of a production plant or a container harbor demands detail that office devices cannot offer. This includes setup without ventilation, DIN-rail mounting, particularly rugged connectors, antenna diversity and the option of setting up redundant wireless links.

Industrial Wireless LAN from Siemens meets all these requirements and also provides functions that ensure deterministic wireless communication during cyclic data exchange. The complete solution includes access points, client modules and wireless operator control and IO devices as well as comprehensive accessories and software.

Reliability de luxe – exemplified by SCALANCE W

SCALANCE W is a complete product family for Industrial Wireless LAN with a variety of access points and client modules as well as extensive accessories. All the components feature exceptional ruggedness that sets standards for use both in a machine environment as well as in hostile outdoor areas. The high degree of protection IP65, resistance to vibrations and permitted use at temperatures of -40 to +70 °C are essential characteristics of our offer. Even with condensation, you can expect problem-free operation.

Software SINEMA E – reliable planning for Industrial Wireless LAN

Siemens developed SINEMA E to be able to plan IWLAN based on IEEE 802.11a/b/g both quickly and reliably. This is a software with which you are fully in control of your IWLAN from planning right through to commissioning and operation.

Realistic detailed simulation – the fast lane to the operational phase

SINEMA E creates entire topographies and three-dimensional scenarios, even for buildings with several floors. The realistic simulation allows determination of the perfect interplay of all wireless network subscribers, and the detection of potential barriers and sources of interference in advance.
From the preliminary investigation and detailed planning including simulation, right through to support of commissioning, including security settings: SINEMA E is an efficient means of avoiding experiments and planning errors and getting to the operating phase faster. This profits both users and investors.

Deterministics and real time – process data transfer with IWLAN

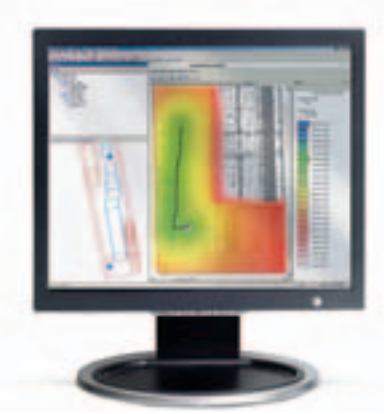
In industry, one major factor is being able to handle the fastest, cyclic sequences along with the shortest reaction times. To achieve this, Siemens has forced its PROFINET development. With additional functions known as iFeatures, data exchange in IWLAN has been made deterministic to an extent that even time-critical process data as required in automation can be transferred by wireless.

Wireless und Safety Integrated – renowned reliability

Industrial Wireless LAN and PROFINET with the PROFIsafe profile allow safety-related communication even via wireless (Safety Integrated). The Siemens applications tested by TÜV (German Technical Inspectorate) and IFA (German Institute for Occupational Safety) show that safety and cost saving are not mutually exclusive.

RCoax – the antenna with a difference

Anywhere where maintenance-intensive collector wires, expensive trailing cables or inflexible data like barriers are used, the radiating cable RCoax provides a reliable and economic alternative. It has proved itself in suspended monorails as well as in storage and retrieval systems, automated guided vehicles and in crane systems.



The Bergrohr company relies on Industrial Wireless LAN for intra-logistics which allows it to achieve maximum flexibility in controlling its automated guided vehicle system.

New products for new applications

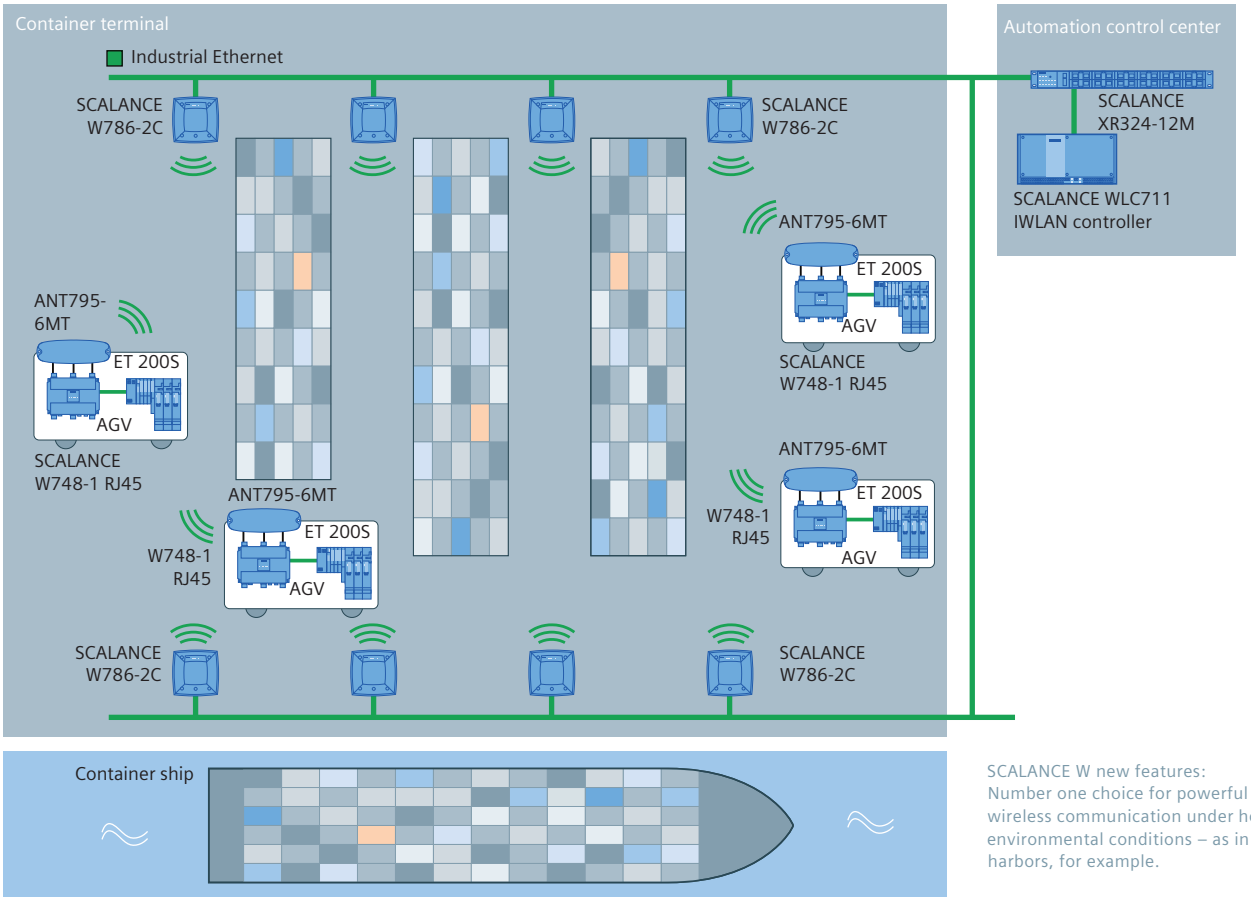
SCALANCE W access points

With its high data rates, the new SCALANCE W generation ensures high-performance data communication even in the most hostile industrial environments. The MIMO antenna technology used (multiple input, multiple output) provides not only a large bandwidth but also allows coverage over greater distances - the multipath propagation of the signals even increases the reliability of the transmission.

- SCALANCE W786 RJ45 with extended temperature range and extremely resistant housing for use outdoors
- SCALANCE W788 M12 for indoor use outside the control cabinet
- SCALANCE W788 RJ45 for operation in the control cabinet

SCALANCE WLC IWLAN controller

For larger installations with multiple access points, the use of the new controller-based SCALANCE W78xC access points in conjunction with the new IWLAN controller SCALANCE WLC711 is ideal. This central station based on the hardware of the SIMATIC Microbox supports up to 32 access points and configures, monitors and controls them from a central location. This greatly simplifies commissioning and operation, as well as saving costs. In redundant mode with two controllers, even 64 access points are supported per controller, further increasing network availability. With these innovations, IWLAN meets the requirements of constantly growing networks and ensures completely reliable communication.



SCALANCE W new features: Number one choice for powerful wireless communication under hostile environmental conditions – as in harbors, for example.

AGV = Automated Guided Vehicle

Discover new horizons – IWLAN for airports

Modern IWLAN technology in airports can play a major role in increasing passenger convenience and improving safety standards. The potential uses include luggage conveyors as well as so-called people movers for transporting people between terminals. The high data rate of our products according to WLAN standard IEEE 802.11n with up to 450 Mbit/s not only allows video transmission in real time but also facilitates other applications such as airport security (for example with video monitoring).
In conjunction with IP cameras that radio images to video management systems in the control center, monitoring is also possible in otherwise inaccessible locations.

The sky's the limit!

With the aid of IWLAN, even overhaul, development and logistics centers for the maintenance and repair of aircraft can be automated. Some airports already have specially designed facilities for painting aircraft utilizing this technology. Six working platforms suspended by matrix crane rails and that can be moved up and down like a telescopic hoist allow work on the outer hull of the planes, e.g. polishing, cleaning, painting. At the same time, the platforms can change from one crane rail to another.

IWLAN allows fast access to precise information and facilitates instantaneous reactions to special situations – throughout the airport.

Faster on its way – IWLAN for transportation systems

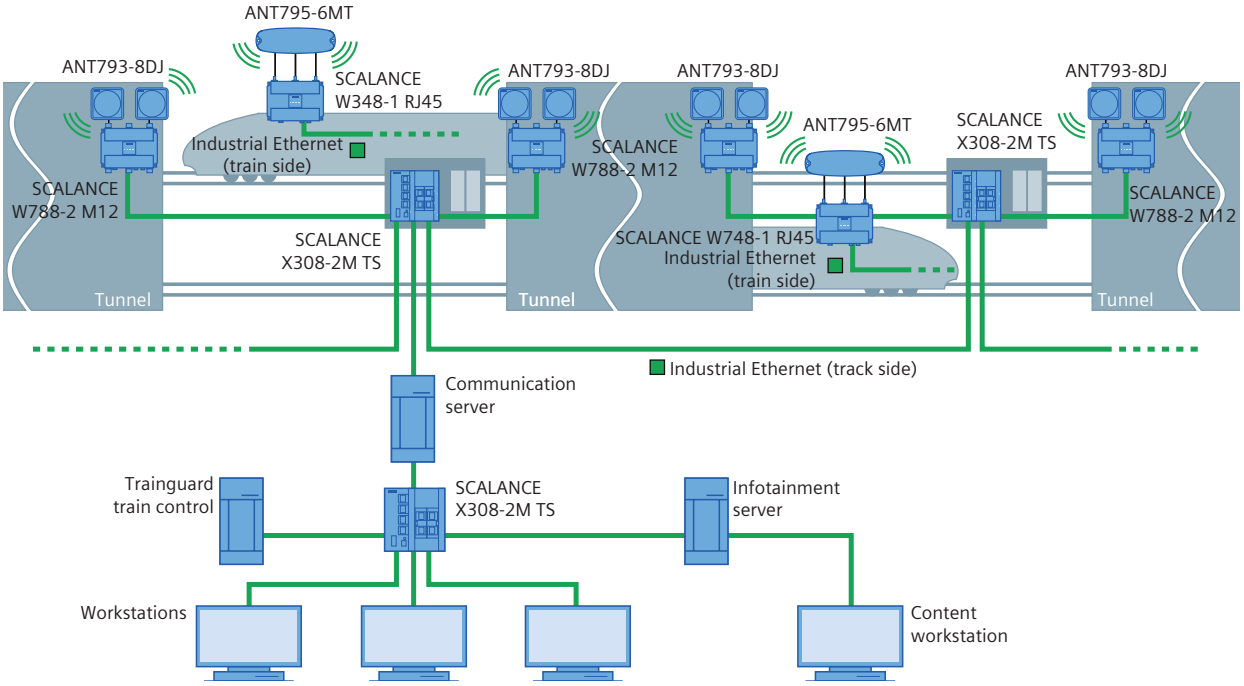
In public transportation systems, IWLAN communication increases convenience and provides a wide range of functions for making operation more efficient.

Wireless connections from a depot or station to a standing vehicle via IWLAN and Industrial Wireless Telecontrol (IWT) allow communication between the train and the control center. With an IWLAN connection along the track, it is possible to communicate with moving trains as well, and travelers also have access to wireless Internet. In addition, passengers benefit from greater safety due to video monitoring images that are transferred directly from trains on the tracks to the control center.

Our portfolio for indoors and outdoors has the same user interface and simplifies the application. Rugged products with a long working life mean security of investment. Extensive support and short delivery times, also for spare parts, are further arguments for our tried-and-tested solutions which are easy to integrate into the operator network.

Advantages right down the line

Operators also profit from IWLAN:
The high degree of automation simplifies data management and passenger information systems (PIS) ensure advertising income.
Further advantages: The networking of ticket systems and lower costs for printing timetables. Above all, operators working with IWLAN know they can rely on largely problem-free and efficient operation.



Arenas with thousands of enthusiastic visitors also always entail an element of risk. Modern technology for conflict prevention and enhanced safety is therefore an absolute necessity in and around stadiums.
With CCTV operator stations in the control room, every corner of the stadium can be monitored. By connecting video monitoring systems with automatic ticket controls, fans soon find their seats, while known hooligans are, however, refused admittance.

Latest technology – thought through to the last detail

Fire prevention and safety systems are controlled centrally. This also includes the public address system, the entrance gates and the ventilation facilities. Operators and authorities require reliable information about the situation in the stadium. The lighting and power supply systems are also included in modern building management.

Visitor management (including admission control and car park management) is based on clear guidelines and process steps and communicates via modern networks, including IWLAN, with selected individuals. Decisions are made based on digital data, audio/video sequences and situation analyses.
The IT infrastructure, sometimes offering visitors free hotspots during the event, is also a technological challenge. The variety of events being held requires maximum flexibility of all systems. This flexibility in network communication is provided by IWLAN.

Major events under control – IWLAN for sports venues

Powerful, reliable and secure: IWLAN networks for major events.

Whether in factory automation, the process industry or public infrastructure: Our extensive range of products, systems and solutions for telecontrol and teleservice allows reliable and economic remote access to distributed machines, equipment and applications from anywhere, regardless of their size.

Plant monitoring and control with telecontrol

Telecontrol means the monitoring and control of process stations distributed over a wide area from one or more central control systems. Communication is achieved using a variety of public or private networks, for example the mobile wireless network or an industrial wireless LAN. The exchange of process data (event-controlled or cyclic) takes place using special telecontrol protocols and the effective control of the overall process.

Whether for simple monitoring and control tasks or for extensive systems in which availability and data security are of paramount importance:
Our Telecontrol solutions allow reliable and efficient monitoring and control of your process stations - from a distance.

Our range includes a wide selection of harmonized system components and solutions for the control center, outstations and network. This means that configurations can be implemented that are perfectly tailored to your wishes and requirements. With our range, you can be sure of a high degree of investment security - not least because right from the development stage, we make sure that our products and systems will have a long working life with built-in migration capability.

Remote maintenance and diagnostics with teleservice

Teleservice is data exchange with spatially remote technical machines, plants, computers and so on for fault/error detection, diagnostics, maintenance, repair or optimization.

Our teleservice solutions come into their own when efficient, resource-friendly diagnostics of spatially distributed equipment is required. They are also used for the preventive planning and execution of maintenance measures. In addition they reduce the engineering effort during commissioning and allow significant savings both in time and traveling costs. Further advantages include: Reliable diagnostics should problems occur, the optimization of plant sections and controllers with remote programming and transfer of the latest program modules.

Industrial Wireless Telecontrol

Flender uses Wireless Telecontrol in wind farms for remote diagnostics and status monitoring.

In the process industry in particular, wireless transducers are a means of saving costs and improving diagnostics quality.

Industrial WirelessHART

Wireless sensors for the process industry

WirelessHART – innovation for the process industry

WirelessHART, an open industrial standard was developed for the particular requirements of wireless communication at the field level in process industries. With WirelessHART solutions, users profit not only from the lower TCO but also from significant improvements in security, reliability and productivity.

The WirelessHART product family – flexible, economic, maintenance-friendly

- Battery-operated WirelessHART field devices are ideally suitable for remote measurement, for use in a hostile environment, for temporary and ad-hoc measurement applications, or for the expansion and replacement of existing field devices.
- WirelessHART adapters allow wireless communication for existing wired HART devices.
- The WirelessHART gateway reliably acquires all field information, handles network management and provides the connection to the higher-level automation technology - for example to the SIMATIC process control system or to systems from third-party providers.

Practical tests passed with flying colors

Industrial Wireless Communication in use

Industrial Wireless LAN

High performance in the container terminal

Handling 6-7 000 standard containers per ship is nothing unusual at the HHLA Container Terminal Altenwerde (CTA) in the port of Hamburg. The CTA recipe for success: Optimum interaction between an experienced crew and innovative technology. A total of 84 perfectly coordinated automated guided vehicles (AGVs) belong to the future-oriented CTA concept. Industrial Wireless LAN ensures the best possible connections. Reliably. Day in, day out. Round-the-clock.

The advantage:

At the CTA, the AGVs learn intelligent movement: Instead of being guided in a fixed circle by a large induction loop as in previous applications, the 84 AGVs find the optimum route between the bridge and storage area via the terminal software. This locates and controls the AGVs with the aid of transponders and wireless communication via IWLAN.

Savings of millions for a food manufacturer

A major American food manufacturer relies on Industrial Wireless communication for a wide range of tasks in the office, in production, in the warehouse and surrounding areas. The concept involves the use of RFID, IWLAN based on IEEE 802.11 and an infrastructure adapted to the use of VoIP and PDA. A total of 31 SCALANCE W access points for hostile environments and 8 HiPath access points in the office area are operated with a redundant HiPath wireless controller.

The advantage:

Significantly improved business processes, enormous cost reductions and amortization in a very short time.

Increased productivity during final assembly

Our wireless solutions are also used in the automobile industry. Screwdriver stations are moved on overhead monorail systems. They are supplied with power without using wires. The data is transmitted via IWLAN. SCALANCE W access points, clients and the RCoax antennas ensure transfer of information about suitable torque, acknowledged work steps, etc.

The advantage:

With SIMATIC NET, the number of screwdrivers could be reduced, with a concurrent increase in availability due to the lack of wear and tear. The timing of the entire assembly line can also be adapted more flexibly.
The result: Increased productivity and further optimization of quality management.

Maximum reliability in steel production

To ensure the continuity and quality of production, the Swiss Steel AG in Emmenbrücke relies on automation technology and an IWLAN network from Siemens. Data such as the metal composition, weight and location of the tonnes of conveyor equipment is reported reliably by wireless to the control system and forwarded. The data is acquired at the point of origin and sent via SCALANCE W access points.

The advantage:

Despite the tough industrial environment, the wireless signals reach the receiver of the control system with such a quality that no redundant network is necessary. On top of this, wireless dead spots were avoided from the start thanks to SINEMA E.

Industrial Wireless Telecontrol

Safe and flexible remote maintenance of wind farms

Flender Service International who operate remote maintenance of wind farms, rely on SINAUT and SCALANCE S to establish stable and secure communications connections - without any use of telephone lines.
With the SCALANCE S612 security module and the EGPRS router MD741-1 a connection is established to the remote stations that is safe from espionage and manipulation. Here, Flender benefits from 100% online access without data loss and the options of bidirectional communication.

The advantage:

Optimum data security and connection stability coupled with maximum flexibility: No reliance on telephone lines, options for mobile use and free GPRS provider selection.

Self-sufficient and economic water supply using GPRS

In Virovitica in Croatia, the main focus is on the economic aspects of water supply, but independence in communication is also an important aspect. For this reason, they decided on communication via GPRS with the SINAUT MD720-3 modem, guaranteeing reliable communication and full independence from the telephone network.

The advantage:

"Economy" is the watchword of the project:
The investment rate is convincing, as is the communications system that leads to permanent savings and the required independence.

WirelessHART

More of everything – transparency, productivity and performance

In a wide range of applications across many different sectors, WirelessHART solutions show themselves at their best:

• Process monitoring and control

- Monitoring and control of non-critical processes
- Level measurement in containers
- Plant expansions and replacement of existing measurement technology

• Asset management

- Maintenance, calibration and logging
- Device diagnostics

• Safety and environmental monitoring

- Gas indicators
- Water drainage
- Gas emissions
- Overpressure valves
- Condensate traps
- Oil pressure
- Decontamination showers

• Short-term measurement applications

- Test measurements
- Ad-hoc measurements
- Redundancy measurements

The advantage:

The advantage for the user is a considerable improvement in plant transparency, productivity and performance.

Further information:
www.siemens.com/industrial-wireless

Contacts in your area:
www.siemens.com/automation/partner

You can find further informational brochures and technical descriptions on our Internet pages, under Support.

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