

New ways of networking.  
**For more flexibility and efficiency –**  
with Industrial Wireless Communication

# industrial wireless COMMUNICATION



**SIEMENS**

# flexibility

More potential in all areas –  
**with Industrial Wireless Communication**





### **Communication – the key to success for your organization**

Markets can change quickly. To be successful, processes must be implemented faster or adapted to new requirements – a challenge for your communication systems, because communication is the key to your corporate success, whether this is communication between people or for the control of automatic processes. Siemens offers a wide range of products, systems and solutions for this.

#### **SIMATIC NET – networks designed for industry**

An increasingly holistic view is taken of networking the communication system, whether in the production area or the office area. The need everywhere is to provide information at the right time and the right place. Reliable mastery of time-critical processes and a high level of operating safety – even under demanding environmental conditions – are typical of the high requirements in the industrial area.

With SIMATIC NET, Siemens Automation and Drives offers everything you need for reliable industrial communication today and tomorrow. SIMATIC NET is a part of Totally Integrated Automation, the range for open and integrated automation in your company.

#### **More flexibility with Industrial Wireless Communication**

Making automation fit for the future involves reconciling frequently contradictory requirements like availability, performance and cost effectiveness. Scalable networks that can be efficiently and safely managed at all times point the way to the future. Through SIMATIC NET, Industrial Wireless Communication has become an obvious component part of these networks. This opens up undreamt-of possibilities for you, allowing new potential for availability to be tapped within existing automation systems. Previously inaccessible isolated groups can also be integrated into the automation network. The decisive benefit is that you will become more flexible, from the design phase right up to day-to-day operation when the aim is to boost your productivity.

### **More security for your data and investments**

Security is an important issue – particularly with wireless solutions. In our developments, we therefore take account not only of the security of your data, but also the security of your investments. All our solutions are based on international standards. The innovations build on each other and take place in compatible steps. In order to guarantee the security even of the most sensitive data – and thus the security of your operations –, we back industrial security and the most up-to-date encryption technologies.

#### **Protection of personnel and plant – now also possible wirelessly**

With Industrial Wireless Communication from Siemens, safety-related applications can also be integrated, maintaining efficiency and flexibility when it comes to protecting personnel and plant too.

# reliability

## Reliable and secure wireless communication – even under demanding conditions

### Extra reliability – SCALANCE W example

SCALANCE W is a complete product family for Industrial Wireless LAN with different access points and client modules, and extensive accessories. All components have one thing in common: outstanding ruggedness that sets standards for wireless products and is proved daily at the machine level or in harsh outdoor use. Our products stand out for their high degree of protection IP65 and permissible use at temperatures of –20 to +60 °C. You can count on them working undisturbed even under condensation.

### Designed for Industry – right down to the smallest detail

Whether inside a building or in the open air: the fault-free operation of a production plant or a container port demands certain details that office devices don't offer.

Examples: fan-free design, DIN-rail installation, especially rugged connectors, antenna diversity and the facility for setting up redundant wireless systems.

### Rapid roaming – for high-speed transition to the next wireless cell

The designation „RR“ on the relevant SCALANCE access points indicates one of their outstanding abilities: lightning fast changeover from one wireless cell to the next. The great benefit for users is that the automation process continues to operate without interruption. The benefit for investors is that they have new possibilities for highly cost-effective solutions. Electric suspension monorails in assembly lines, for example, can thus be designed to be wear-free.

### Determinism and real time – transfer of process data on the IWLAN

In contrast to office networking, the important thing in industry is safe control of the most high-speed, cyclic sequences with the shortest possible response times. Siemens has pushed its PROFINET developments for this purpose. The „Reserve data rate“ facility makes it possible to determine data traffic on the

IWLAN in such a way that even time-critical process data, as demanded by automation, can be transmitted wirelessly.

### Wireless and Safety Integrated – acknowledged reliability

Rapid roaming and the PROFIsafe specifications of the IEEE 802.11 standard also enable Safety Integrated on IWLAN too. These Siemens applications tested by the German Technical Inspectorate (TÜV) and BG-Institute for Occupational Safety and Health (BGIA) show that safety and cost savings can be reliably harmonized with each other.

### RCoax innovation – the totally different antenna for new possibilities

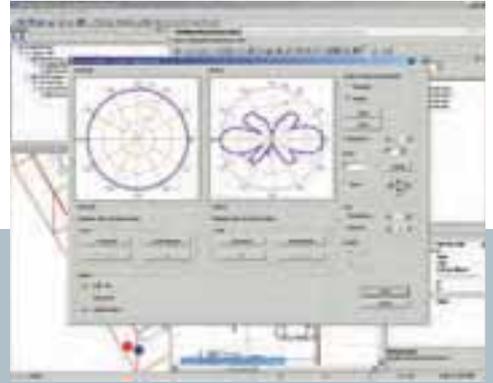
Examples: establishment of IWLAN within railroad trains, connection of mobile units in wastewater treatment plants, wear-free electric suspension monorails for assembling automobiles. Increased user-friendliness, optimized processes and reduced maintenance overhead are just some of the many RCoax benefits in conjunction with SCALANCE W access points.



# efficiency

Purposeful planning, fast installation, safe operation –  
**with powerful tools and standards**





### Wireless – efficiency with safety

Looking for alternatives for more efficiency, and want to achieve your goal quickly and safely? To be able to plan wireless LAN networks efficiently and thereby with as few errors as possible, Siemens has developed the SINEMA E diagnostics tool: software that confers great benefits on your WLAN across all phases of the life cycle.

### Innovative software for your individual WLAN solution

How many access points are really required? Where do they have to be located? Which antenna type should be used? With SINEMA E, these questions can be answered quickly by creating complete topographical and three-dimensional scenarios; even for multi-storey buildings, if necessary. The perfect interaction of all wireless network nodes is worked out using detailed simulation, and potential barriers and sources of interference can be detected in good time. From preliminary technical clarification, through detailed planning with simulation, right up to startup support – including safety settings,

SINEMA E is the efficient aid for avoiding experiments and planning errors and for reaching the operating phase faster – to the profit of both users and investors.

### Industrial Wireless Communication – challenges met efficiently

Whether you have to create wear-free solutions for connecting mobile units in industrial production, or provide cost-effective connection of distributed measuring stations to a control station for supply companies, or manage the vehicle fleet for a logistics company in a future-proof way, Industrial Wireless Communication from Siemens provides conclusive proof of its value in the most varied applications. The requirements of the application determine whether WLAN, the GSM/GPRS standard or other standardized procedures are used here. Common to all the solutions are the acquisition costs, a high level of cost effectiveness and enormous reliability – even under demanding conditions.

This is ensured by the relevant easily implemented mechanisms. Despite cost reductions, one property always has the highest priority: safety.

### Safety as standard results in success as standard

In SIMATIC NET developments, protection of your investments is a high priority, so Siemens consistently backs field-proven standards and expands them to be compatible with industrial and industry-related requirements. One proof of this is the successful introduction of PROFINET. Arising out of the Ethernet standard 802.3, PROFINET creates the optimal prerequisites for efficient, company-wide automation solutions. The vision has become reality: secure, wireless transmission even of critical data, and the fulfillment of requirements for protecting personnel and plant through the integration of PROFIsafe into Industrial Wireless LAN. PROFINET's special trump card is its acknowledged efficiency in engineering.

# connectivity

## Company-wide, integrated networks – for the best connections in all areas

Management, administration, production or logistics – every area of a company has specific requirements and marginal constraints that it imposes on communication. This is the particular challenge faced when creating company-wide, integrated communication solutions.

As one of the pioneers, Siemens contributes significantly here towards making open standards like Ethernet, WLAN or GSM/GPRS viable for use in the harsh processes of day-to-day industry. On this basis, Siemens offers a wide range of products and systems for cost-effective and powerful communication solutions – wired or wireless.

### **Industrial WLAN – part of Totally Integrated Automation**

Wireless solutions are increasingly taken for granted in automation networks. With high demands on data communication, SIMATIC NET backs innovations like deterministic wireless, rapid roaming and the PROFINET standard. PROFINET opens up totally new vistas, from efficient engineering, through real-time solutions, right up to mastery of safety-related tasks through the integration of IWLAN into PROFIsafe. SIMATIC NET also enables consistent integration of PROFINET-based configura-

tions into Industrial WLAN concepts. Siemens Automation and Drives offers an integrated range of products and systems for automation in all sectors – from incoming goods, through the production process, right up to outgoing goods, and from the field level to connection to the corporate management level. SIMATIC NET products for Industrial Wireless Communication are a fixed component in this range.

### **One for all – an integrated wireless network for voice and data**

Use of a shared infrastructure, toll-free networks and the facility for implementing protection mechanisms and technologies quickly, simply and reaction-free – all these are decisive cost benefits.

Solutions from Siemens have made uncomplicated scalability of the network and centralized management a reality. Thus, existing IP networks can be quickly and easily extended today using overlay wireless networks. Future-oriented, shared IT infrastructure for voice and data communication with Voice over IP, Voice over WLAN and HiPath wireless.

### **GSM/GPRS – cost-effective and versatile wireless technology for longer distances**

Two different examples show the potential of wireless technology: SINAUT, the modular and scalable telecontrol

system based on the field-proven SIMATIC standard components, is familiar and has proved its worth through use of the most varied transmission media, even in combination. Wireless data transmission is one of these. The introduction of GSM/GPRS has further increased the versatility of this system – and thus ensures more flexibility in the area of telecontrol and remote maintenance, with high cost effectiveness in plants of the most varied sizes. Wireless solutions have become a permanent feature of our lives: millions of people communicate wirelessly with each other today – via GSM/GPRS. In the meantime, machines of all kinds, from automatic vending machines to haulage trucks, will participate in wireless communication; made possible by Siemens Wireless Modules with GSM/GPRS and EDGE technology.



# experience

## Industrial Wireless Communication – field-proven in the most diverse applications



### Fast return on investment – with IWLAN in salt warehouse

The batching of the most diverse types of salt in a salt warehouse is handled with a bucket wheel excavator. On-board are a programmable controller and an integral weighing system. For this, rugged access points connected to Industrial Ethernet were installed in the hall. With corresponding savings in operating costs, the investment in SIMATIC and Industrial Wireless LAN quickly paid off. Optimized process sequences also make their contribution when it comes to satisfying the customer.

### Improved workflow in tile production – with IWLAN, PROFINET and PROFIBUS

One of the world's leading tile manufacturers required a new real-time controller for the automatic production of its tile and roofing tile products in automatic drying kilns and furnaces. The solution was based completely on PROFIBUS; RF modems were used for remote connection to two ET 200M stations. Two control panels for remote control were connected via two further RF modems.

### Manufacture of prefabricated components – highly productive thanks to IWLAN and PROFINET

Due to the harsh environmental conditions, a leading manufacturer of prefabricated components for the construction industry decided on a concept with wireless communication for automation purposes. The essential requirements were: easy expandability and low service costs. The PROFINET solution with mobile SCALANCE W fulfilled all expectations right from the start with high availability and clearly optimized machine service.

### Arriving safely – with IWLAN in steel production

The control of transport trolleys for stainless steel sheet has been modernized with up-to-date Industrial Wireless LAN. The SIMATIC NET application has been running fault-free since startup and thus contributes decisively to safe availability of the processing machinery served by the trolleys.



PROFINET I/O Controllers, SCALANCE W access points and client modules, as well as the IWLAN PB PN IO Link, were integrated into the PROFINET communication system.

#### **Seven-figure savings for food and beverages producers – with wireless control and monitoring in all areas**

A large American food and beverages producer is backing wireless communication for the most varied tasks in the office, the production plant, the warehouse and the outdoor area. The concept encompasses the use of RFID, IWLAN based on IEEE802.11 as well as an infrastructure adapted to the use of VoIP and PDA. Thirty-one SCALANCE W access points for harsh environments and 8 HiPath access points in the office area are controlled by a redundant HiPath controller. The result: clearly improved business processes, and the imminent prospect of huge cost reductions and short-term payoff.

#### **Fast and efficient fork-lift trucks – with IWLAN and improved coordination in production**

A cardboard packaging producer and a manufacturer of agricultural machinery – both leaders in their sectors – use mobile pads in their fork-lift trucks.

Rugged access points ensure stable wireless networks in the halls and outdoor areas. Direct and reliable connections between higher-level management systems and the on-site trucks are thus established via IWLAN.

#### **Always in the picture – with SCALANCE W and RCoax in safety systems**

A patented camera system moves on a rail along an RCoax antenna. Also on board is a SCALANCE W-700. The quality of the wireless connection, even when the camera bogey is moving at high speed, enables transmission of image data with ground-breaking quality and stability. Industrial Wireless Communication with SIMATIC NET components opens up new perspectives for monitoring and safety systems, for example, in monitoring company premises, road tunnels or shipping locks. Use of a mobile system instead of several stationary units increases effectiveness and efficiency.

#### **Increase productivity wirelessly – with wireless solutions in final assembly**

Our wireless solutions are also used in the automobile industry: screwing stations move on electric suspension monorails. They are supplied with power wirelessly. The data are transferred via IWLAN. SCALANCE W access point, clients and the RCoax antennas ensure transfer of data on a suitable torque, acknowledged work steps, etc. The SIMATIC NET solution offers many benefits: reduction in the number of screwdrivers, with a simultaneous increase in availability thanks to freedom from wear and tear. Clocking of the entire assembly line can also be adapted more flexibly. The result is increased productivity with further optimization in quality management.

#### **Wireless connection of devices and automatic vending machines – innovative modules save time and costs**

Siemens Wireless Modules based on GSM/GPRS and EDGE make it possible: machines for car-parking tickets, electricity meters or motor vehicles are networked using mobile wireless technology and exchange information with each other. The benefits are more efficient and secure processes and enhanced quality of life.

# Industrial Wireless Communication

## Like more information on the topic? No problem!

### Contacts in your vicinity:

[www.siemens.com/automation/partner](http://www.siemens.com/automation/partner)

### More information on the topic of industrial communication:

[www.siemens.com/simatic-net](http://www.siemens.com/simatic-net)

### Details of SCALANCE network components:

[www.siemens.com/scalance](http://www.siemens.com/scalance)

### The latest about PROFINET:

[www.siemens.com/profinet](http://www.siemens.com/profinet)

### The way to SINAUT Telecontrol:

[www.siemens.com/sinaut](http://www.siemens.com/sinaut)

### Information about Wireless Modules:

[www.siemens.com/wireless-modules](http://www.siemens.com/wireless-modules)

You can also find more information brochures and technical descriptions on our Internet pages under the navigation point Support.

Creating connections for all nodes, in all areas and sectors, using networks with tailor-made performance and a high degree of flexibility, availability and security. That's why Industrial Wireless Communication is part of future-oriented networks.

[www.siemens.com/simatic-net](http://www.siemens.com/simatic-net)

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