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IWLAN in the automotive industry

High availability and personal safety

Efficient production is essential

Automotive manufacturing is among the most innovative and fastest-moving industries worldwide. The huge production pressure makes it mandatory to avoid plant downtimes that can result in significant losses. Production in the automotive industry is also strongly influenced by automation. Robots handle many of the work steps, a lot more than in most other industries. The smooth collaboration between humans and machines therefore places especially high demands on personal safety.

Reliable processes are critical for success

Wireless data communication via Industrial Wireless LAN (IWLAN) plays an important role in many areas of the automotive industry in supporting reliable and safe operations – such as in controlling robots in the production cells where body, engine, and drivetrain are brought together or through wireless networking of heavy-load overhead monorails in logistics. Safety of the personnel is ensured at all times – thanks to real-time communication in PROFINET or EtherNet/IP applications, the plant immediately performs an emergency stop in critical situations.

Wear-free system for higher efficiency

Overhead monorails as well as skillet conveyors can be networked wirelessly along the production line with RCoax radiating cables from Siemens. Laying of this cable-based antenna is a highly reliable and virtually wear-free solution. When using RCoax instead of a regular antenna, more reliable and permanently consistent signal quality is achieved, even in the case of complex conveyor and

Advantages of IWLAN in car manufacturing

- Failsafe, wireless communication for high performance and safety of people
- Cost reduction and minimized downtimes thanks to wear-free connection with RCoax
- Exact positioning of car parts with IWLAN and barcode readers along the overhead monorail
- Fast roaming times of less than 50 ms for uninterrupted communication
- In case of emergency: safe shut-down of automation components
- Based on the standards: connection to existing production networks

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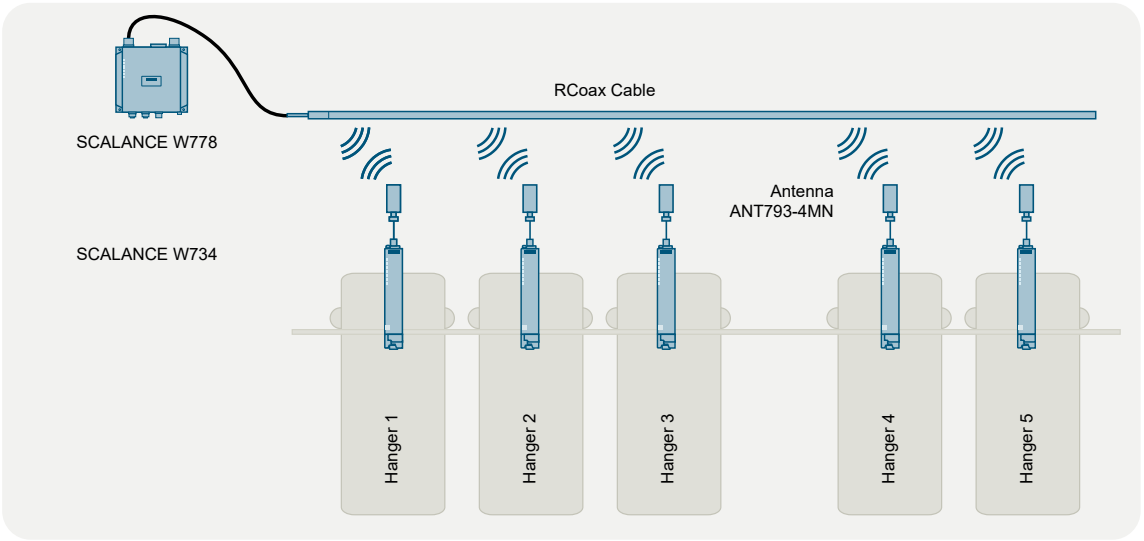

assembly lines. This provides high availability, minimizing additional maintenance costs.

Safe human-machine interaction

Humans and robots work hand in hand at the assembly lines of car manufacturers. Safety of people plays a crucial role in this interaction. If a failure occurs, the use of cyclic protocols such as PROFINET enables the plant to be stopped immediately via WLAN and PROFIsafe in order to avoid personnel injury or damage to property.

Real-time communication over WLAN – thanks to iPCF-2

Normally, PROFINET-based controllers and I/O systems do not work together reliably via the regular IEEE 802.11 WLAN standard. The clients communicate with each other randomly and decide about roaming processes just as randomly. Due to these random mechanisms, connection interruptions can occur. Only industrial add-on functions (iFeatures) provide the necessary reliability and fast roaming – a must for uninterrupted data exchange.

With iPCF-2, all clients in a radio cell can communicate reliably and in real time, thanks to prioritization of the automation data traffic, constant driver optimizations, and extensive tests under real conditions. iPCF-2 with TCP Event Roaming also enables the application-based and targeted control of roaming processes on the basis of command telegrams. This enables quick and reliable switching between two radio cells. With a reliability of 99.9%, constant roaming times of well below 50 ms can be ensured.

Even more advantages in other applications and markets

Full integration in PROFINET environments also offers advantages for commissioning and diagnostics in other applications, such as harbor cranes or passenger transport in amusement parks.
The iPCF-2 feature can be used in every industry that requires high availability through real-time communication and failsafe applications.

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