Technology today
Regular maintenance costs and scheduled downtime associated with trailing cables and power rail boosters on the plant floor have become a competitive disadvantage.

Leading monorail manufacturers are evolving to wireless communications which enable added design freedom and increased uptime with a wireless solution that utilizes innovative RCoax and IPCF technology.

With advanced wireless technology, today’s overhead monorails are part of a new generation of systems that no longer require physical connections to control. Gone are the trailing cables and physical limitations.

The new RCoax technology combined with our proprietary Industrial Point Coordination Function (IPCF) technology gives you the flexibility and design freedom you need to revolutionize the design of your Overhead Monorail applications.

usa.siemens.com/monorail
RCoax and overhead monorails

RCoax is a long, flexible antenna with a special radiating characteristic. This unique antenna design allows the RCoax cable to be laid in the rails of an overhead monorail track. This gives you design freedom and ensures a reliable radio link in areas where standard antenna technology can only be installed at a great cost. This makes RCoax a great fit for use in monorail applications.

RCoax – How does it work?

Openings in the outer conductor of the RCoax cable allow the penetration and emission of radio waves. This allows a defined signal strength along the entire length of the cable, thus ensuring high signal quality required for automation (up to 140m per SCALANCE W780 Access Point series using a Power Splitter) and an appropriate distance from the mobile station (SCALANCE W740 series).

Two RCoax versions are available for use in the Industrial Wireless LAN sector with frequency bands of 2.4 GHz and 5 GHz. However, today’s industrial applications are mostly done in the 5GHz frequency band.

Industrial Point Coordination Function (IPCF)

Siemens proprietary IPCF is made for Industrial Wireless real-time applications. So what is the difference between a standard wireless system and IPCF? IPCF is an enhancement to the 802.11 standard that Siemens developed to improve the usability of 802.11 Wireless LAN systems for real-time communications.

Using IPCF, the Access Point works as a traffic coordinator and polls the clients for their IO data in short cycles. This allows PROFINET cycle times as low as 16ms over Wireless, and roaming times below 50ms. No other wireless system on the market is capable of this.

IPCF performance in combination with RCoax gives you nearly unlimited design freedom for all your upcoming Overhead Monorail applications.

Applications

RCoax and IPCF can help make many applications much more cost-effective and provide a reliable, wear-free wireless connection. Such applications include:

- Suspended monorail
- Stacker cranes
- Automated storage and retrieval system (ASRS)
- Transfer lines
- Tool-changing trolleys
- Tunnels
- Lifts

Features and benefits

Using RCoax and IPCF in Overhead Monorail systems can eliminate the headaches caused by wired technology used today and can provide a variety of benefits:

- RCoax and IPCF open the door for use of Wireless LAN for real-time control applications, allowing PROFINET update rates as low as 16ms.
- RCoax, in conjunction with IPCF, allow for roaming between several Access Points with roaming times below 50ms.
- RCoax provides maximum reliability due to a controlled and defined radio signal distribution while reaching up to 140 meters per access point.
- Contact-free data transmission reduces wear, requires low maintenance, and produces cost savings through replacement of contact conductors and trailing cables.