Industry Perspective: What are the Three Top Reasons that Factories are Now Using Wireless on their Assembly Lines?

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Over the last several years, rapid evolution in industrial wireless networking has led to a monumental shift in the thinking of facility managers and design engineers, as they realize that using wireless in an industrial environment is safe, secure and reliable.

The industry is moving toward wireless for many factory floor applications, and there are a variety of wireless technologies to choose from. The most common are technologies based upon the IEEE 802.15.4 standard. Similar to the IEEE 802.11 Wi-Fi radio used for homes and enterprise, 802.15.4 is a highly robust technology targeted for low data rate, low power applications.

So why do factories and assembly lines often prefer using wireless instead of cabling? Here are three interesting industrial applications:

1. One of the most common reasons for the rapid adaption of industrial wireless is flexibility for the factory floor design and layout. Many factories and assembly lines experience semi-regular reconfigurations. Lines sometimes need a redesign to make room for a new product or the line is fine-tuned to make the same product more efficiently. The ability to simply move a wireless switch or controller makes the entire system reconfiguration much more efficient and quick. The facility manager can just rig the controller or switch where it is most effective, without having to worry about re-routing power and communication cables. In addition, whenever a new assembly line first goes into operation, there is a period where the line manager could realize that the controller or switch doesn't quite belong in one spot, but ought to be located in another instead, or, that I/O points need to be added or subtracted. Wireless makes that fine tuning possible and relatively painless.

In addition, on many assembly lines, buttons and switches control various functions

as well as notifications. The ability to locate a wireless switch or button close to where the operators are, rather than adjacent to power and communication cables, can save many minutes of walking every day.

2. Many heavy industrial and automated assembly lines rely on machines that hold, turn, twist, cut and move materials. Many of these machines also have sensors attached to their moving components that monitor and help control the assembly line's performance. Unfortunately, wires and cable assemblies do not last when they're continually twisting and turning, or where metal chips abrade traditional wire sheathing. In some factories, these wires need to be repaired or replaced every three or four months. In addition to the expense of troubleshooting and repairing, the assembly line is down and not producing product during that time. In contrast, battery operated wireless sensors and switches are extremely rugged and are designed to handle the nonstop motion required on an assembly line.

3. Finally, cables and wires are often splashed by corrosive chemicals, grease, dust and paint. Factories can be dirty places, with lots of different liquids used for dipping, spraying or coatings products, which can easily destroy the insulation around nearby control wires. Once again, a battery operated wireless sensor or switch, with suitable rugged packaging, can withstand and function safely in the most inhospitable, rugged factory environment.

As 802.15.4 wireless suitability for industrial environments has become well-established, the questions are now around the manufacturer and supplier for the equipment itself, i.e., how long have you been in operation, how long will you support this product, how will you handle software upgrades. It's not whether or not wireless will work, but who will develop, install and maintain it. Product support, forward/backward compatibility, expanded product offerings, replacement parts, the ability to package product to accommodate current and future electronics and software, are now the key concerns expressed by factory managers and assembly line designers.

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