Solution Brief

ProSoft Technology

What You Need to Consider for Your Wireless Network

> Wireless communications have been on the industrial automation scene for a while but the perception of the unknown still lingers around the concept, making some people wary. It's human nature to be reassured when you can actually see the equipment that's making your facility hum, keeping production lines moving. You can see that Cable A is where it's supposed to be, and you plugged in Cable B and now things are running swimmingly.

But as in any area of life, operator error is unavoidable. What happens when a cable is damaged by a mistake on the plant floor? Or slip rings break as they're wont to do?

The thought of wireless might make you a little squirmy. Know what definitely will? Production downtime.

Whether you're just starting to consider wireless or already have some wireless connectivity in place, there is plenty to consider depending on your application. Read on to find out how you can boost reliability, ensure secure connections, and gain some peace of mind when it comes to your industrial communications.

Why should you use wireless solutions?

That's a good question, and one that can vary depending on the application. In most settings, a wireless setup can help you avoid the time involved in laying wires – and if you're outside, you've got the added hassles of obtaining permits and trenching to deal with. Wireless solutions, when placed with care, can also cover a wider range, and are an expandable option – for example, as your multi-well pad site grows, you can add wireless radios with strong signals rather than digging (and hoping you don't hit any cables).

Wireless industrial radios supporting access point switchover times of less than 10 milliseconds are available to ensure your application (sometimes literally) stays on track.

Wireless radios are especially key in automated material handling applications, in which real-time monitoring is essential to ensure all the moving parts are where they need to be. Automated guided vehicles are a major investment that can pay dividends in saved labor costs, but failing to also research and implement a reliable wireless system to help monitor the equipment could cancel out the savings the AGV would achieve. Industrial radios can be placed throughout your facility, serving as communication points for the AGV as it travels throughout the plant, with no need for a master wireless controller.

Another solution that can be used in conjunction with AGVs to ensure clear communications is a radiating cable. This type of solution is primarily used in an environment with many criss-crossing signals where there is a higher likelihood of interference. The radiating cable is designed to radiate RF signals in a flexible solution that can bring wireless communications to tough spots.

The radiating cable serves a similar purpose in skillet line applications in the automotive industry. It can also be used as a replacement for slip rings, which are prone to breaking and causing a delay in production. Wireless Ethernet solutions provide a reliability that traditional wired options can't necessarily match.

Clever Machines, an Italian manufacturer of sleeving machines for beverage bottles, used radiating cable on one of its clients' machines. The end user had noted that maintaining the machine's slip rings was becoming an issue. Each time one failed,

production had to cease – and since the machine was wrapping sleeves on five bottles per second, each damaged slip ring was proving to be costly.

The company paired a radiating cable with wireless radios designed to support applications involving moving machinery. The combination allowed the end user to have reliable communications – and significantly less downtime due to damaged slip rings.

Preparing for your wireless network

If you're getting started on building a wireless network, early preparation is key.

Even if you think you know what your application will look like a year, five years, or 10 years from now, it's a good idea to select equipment with an eye to how your operation may expand in the future. When evaluating solutions, find out from potential suppliers and system integrators what they would recommend in terms of design, placement, and type of solution – you may go into a project with an idea of what radio or gateway would work best, but your resident expert may have another direction that may make more sense in your operation.

Before you start supplier discussions, it's a good idea to internally discuss the basic needs and connections. For some of these you may need assistance from the supplier(s), but it's a good idea to have a checklist noting what you need to consider. This includes determining what types and the number of devices you will be connecting, or can project you will need to in the future; your data transfer rates; and the amount of data that will be sent. You may also want to consider the environment in which you will be communicating – if you're dealing with extreme temperatures, for instance, you may need a more robust wireless solution that can withstand the harsh status of your location.

As an example, consider the recent implementation of industrial wireless radios in an Italian facility for the eco-ethical firm Gruppo Mauro Saviola. The company modernized its control system, and found that in doing so the need for a more robust communications network emerged. Various vendors were considered for the wireless work. The end user opted for the company that helped them in forming a detailed layout of the application, as well as provided assistance in planning the best antenna spots for the master and repeater radios they'd be using.

Other aspects to consider include antenna type and location. When you're planning your wireless network, you should take note of any obstructions or line-of-sight issues – you can use that information to determine with your wireless expert where antennas would benefit you most. The distance data needs to travel and the frequency needed will also help inform your plans. (For more information about all of these factors, check out this ***educational video on antenna selection and installation.***)

Space within the application can also be a factor when it comes to selecting antennas. Mirage Ltd., an AGV manufacturer in England, worked on a project for a major vehicle manufacturer that was looking to drop its practice of having dollies moved by workers throughout its plant. The new solution would feature the AGV driving under the dolly that contained parts. The parts would be delivered to the assembly line before the AGV returned to the collection point to drop off the empty dolly and retrieve a new one before heading back to the assembly line.

At issue was the tight squeeze of the dolly with the AGV – Mirage needed to bring the AGV lower to accommodate the dolly, while retaining reliable communications. The radio supplier offered its support and had Mirage try out a lower-profile OMNI antenna with MIMO to see if that provided adequate communications in the tight space. That did the trick!

Secure remote access via cellular

Need to remotely monitor your equipment and not a big fan of business travel? There are wireless solutions for that, too.

With some cellular solutions, you can monitor your remote equipment, accessing diagnostics and doing some troubleshooting from wherever you are. Be sure to opt for a solution that supports 4G LTE rather than just 3G – ***as the latter becomes more and more outdated***, it's in your company's best interest to use broadband technology that will support longevity for your application.

One way you can monitor your cellular solution and thus your remote equipment is through a cloud-native platform that you can access from anywhere in the world. When assessing your options for remote access, consider the security concern carefully: Given the sophistication of hacking efforts in recent years, take extra measures to ensure your data and information about your equipment's locations are kept private to avoid tampering.

With that in mind, here are some security features that can indicate a more secure platform :

- No need for user-installed software and the security patches/updates that may come through for it – this is one avenue that hackers can use to gain access. This will also save workers' time.
- Additional authentication when adding equipment and authenticating users
- Use of HTTPS within the platform

A primary benefit to being able to remotely access and troubleshoot equipment is the likely reduction of the time and costs involved in business travel. An Oregon city whose wastewater department implemented a system involving cellular gateways and a cloud-native remote access platform saw decreased transportation and maintenance costs, as well as reduced engineering time.

What will you use wireless for?

As you've read, there are many functions that wireless communications may be preferable for. What's important is choosing what's best for your application now and in the near future. Solutions vary depending on your need, so take stock of your environment and business goals before implementing wireless products on your network. Suppliers are available to help you determine the layout that will help you meet your objectives, so seek out their expertise.

Wireless communications can open up a new world of data for your business – and new benefits as a result.

Learn more about Industrial Wireless Solutions here.

Worldwide Offices

Asia Pacific

Regional Office
Phone: +60.3.7941.2888
asiapc@prosoft-technology.com
Languages spoken: Bahasa, Chinese, English, Japanese, Korean

▶ **REGIONAL TECH SUPPORT**
support.ap@prosoft-technology.com

North Asia (China, Hong Kong)
Phone: +86.21.5187.7337
china@prosoft-technology.com
Languages spoken: Chinese, English

▶ **REGIONAL TECH SUPPORT**
support.ap@prosoft-technology.com

Southwest Asia (India, Pakistan)
Phone: +91.98.1063.7873
india@prosoft-technology.com
Languages spoken: English, Hindi, Urdu

Australasia (Australia, New Zealand)
Phone: +60.3.7941.2888
pacific@prosoft-technology.com
Language spoken: English

Southeast Asia (Singapore, Indonesia, Philippines)
Phone: +60.3.7941.2888
seasia@prosoft-technology.com
Languages spoken: English, Bahasa, Tamil

Northeast & Southeast Asia (Japan, Taiwan, Thailand, Vietnam, Malaysia)
Phone: +60.3.7941.2888
neasia@prosoft-technology.com
Languages spoken: English, Chinese, Japanese

Korea
Phone: +60.3.7941.2888
korea@prosoft-technology.com
Languages spoken: English, Korean

Europe / Middle East / Africa

Regional Office
Phone: +33.(0)5.34.36.87.20
europe@prosoft-technology.com
Languages spoken: French, English

▶ **REGIONAL TECH SUPPORT**
support.emea@prosoft-technology.com

Middle East & Africa
Phone: +971.4.214.6911
mea@prosoft-technology.com
Languages spoken: Hindi, English

▶ **REGIONAL TECH SUPPORT**
support.emea@prosoft-technology.com

North Western Europe (UK, IE, IS, DK, NO, SE)
Phone: +44.(0)7415.864.902
nweurope@prosoft-technology.com
Language spoken: English

Central & Eastern Europe, Finland
Phone: +48.22.250.2546
centraleurope@prosoft-technology.com
Languages spoken: Polish, English

Russia & CIS
Phone: +7.499.704.53.46
russia@prosoft-technology.com
Languages spoken: Russian, English

Austria, Germany, Switzerland
Phone: +49.(0)1511.465.4200
germany@prosoft-technology.com
Languages spoken: German, English

BeNeLux, France, North Africa
Phone: +33.(0)5.34.36.87.20
france@prosoft-technology.com
Languages spoken: French, English

Mediterranean Countries
Phone: +39.342.8651.595
italy@prosoft-technology.com
Languages spoken: Italian, English, Spanish

Latin America

Regional Office
Phone: +52.222.264.1814
latinam@prosoft-technology.com
Languages spoken: Spanish, English

▶ **REGIONAL TECH SUPPORT**
support.la@prosoft-technology.com

Brazil
Phone: +55.11.5084.5178
brasil@prosoft-technology.com
Languages spoken: Portuguese, English

▶ **REGIONAL TECH SUPPORT**
support.la@prosoft-technology.com

Mexico
Phone: +52.222.264.1814
mexico@prosoft-technology.com
Languages spoken: Spanish, English

▶ **REGIONAL TECH SUPPORT**
support.la@prosoft-technology.com

Andean Countries, Central America & Caribbean
Phone: +507.6427.48.38
andean@prosoft-technology.com
Languages spoken: Spanish, English

Southern Cone (Argentina, Bolivia, Chile, Paraguay & Uruguay)
Phone: +52.222.264.1814
scone@prosoft-technology.com
Languages spoken: Spanish, English

North America

Regional Office
Phone: +1.661.716.5100
info@prosoft-technology.com
Languages spoken: English, Spanish

▶ **REGIONAL TECH SUPPORT**
support@prosoft-technology.com

▶ Tech Support

ProSoft Technology's technical support is unparalleled in the industrial automation industry. To continue our world-class technical support, we have opened offices in most time zones in an effort to support our customers at a local level. See Regional Tech Support contact information above.

ProSoft® TECHNOLOGY

www.prosoft-technology.com