PRIVATE WIRELESS

Pennsylvania steel manufacturer taps Celona for 5G LAN – Kerravala

By **Zeus Kerravala** - Aug 3, 2022 11:26am

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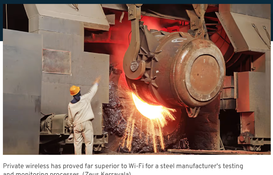

Private wireless has proved far superior to Wi-Fi for a steel manufacturer's testing and monitoring processes. (Zeus Kerravala)

Downtime, poor connectivity and spotty coverage are common problems companies run into when deploying large-scale Wi-Fi networks. For some industries, Wi-Fi's unreliability can put a significant strain on the IT staff and even translate into major financial losses. This was the case for one Pennsylvania-based steel manufacturer, which struggled with its Wi-Fi network until it switched to Celona's 5G local area network (LAN) system.

For years, the steel manufacturer and producer of forged steel wheels for railcars and locomotives relied on Wi-Fi to connect instrumentation and industrial tablets used by workers. The manufacturer tests and tracks everything it produces. On average, 300 wheels are produced out of an individual heap of steel. If one wheel in the entire heap fails, everything must be scrapped. Therefore, it's critical for the manufacturer to track the entire process until each wheel goes out the door, explained the company's senior IT director.

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The manufacturer's physical environment presents many challenges when it comes to reliable coverage. Its steel manufacturing plant sits in the middle of a town, which was built around it. All the buildings and machinery are metal — a material that's difficult for Wi-Fi signals to penetrate. This created interference for Wi-Fi devices that are running the manufacturer's enterprise resource planning (ERP) database.

User experience was generally far from user friendly since wireless coverage often hopped from one Wi-Fi access point to another. As a result, the manufacturer had trouble retrieving production data in real-time, translating to expensive unplanned "downtime."

In order to address these challenges, the manufacturer deployed Celona's 5G LAN solution, which utilizes private wireless radios and 3.55 to 3.7 gigahertz (GHz) Citizens Broadband Radio Service (CBRS) spectrum in the United States. Since Celona's private cellular network was able to operate at higher power levels outdoors and since cellular wireless capable devices have a much higher resiliency at lower signal strength, the deployment required much fewer access points to cover the same areas. With Celona's 5G LAN, the manufacturer could deploy up to 4 times fewer indoor and up to 6 times fewer outdoor access points throughout the plant.

The manufacturer began the rollout at its scrap yard, where the staff operates large mobile cranes to sort scrap steel into different buckets that eventually go into a melting pot. Operators rely on the wireless network to receive instruction "recipes" that specify where the steel must go. The private cellular network has helped the manufacturer reduce unplanned downtime in the scrap yard by approximately 70%. The scrap yard only uses one Celona private LTE outdoor access point, whereas in the past, it required six Wi-Fi access points.

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Now, the manufacturer is entering phase two and expanding the private cellular network to the melt shop, as well as other areas of the plant. These areas have their own set of challenges. In the melt shop, for instance, high energy electric furnaces throw off electromagnetic energy and create substantial interference. If a heat operation is disrupted for a long period of time, nearly $90,000 worth of material must be tossed and hours of manual labor is lost.

There are currently 27 Wi-Fi access points covering the melt shop. The goal in the second phase is to reduce the number of access points required with private cellular, reducing the total maintenance cost. Additionally, the manufacturer is deploying Zebra L10 series tablets with private LTE band 48 (aka. the CBRS spectrum in the U.S.) support in its cranes for more predictable performance and reliable user experience. From a usability standpoint, the total amount of time spent on managing the Wi-Fi network compared to Celona's cellular network has been reduced by 50%.

"We're willing to invest extra money in private cellular instead of hiring more people to handle all the issues we've had with Wi-Fi. We run a shoestring department here with four people that manage this entire plant. We're able to do that because we keep finding ways to streamline," according to the senior IT director.

This is a good lesson for other businesses that depend heavily on wireless networks. My research has found that some network engineers spend about 20% of their time, that's one full day a week, doing nothing but Wi-Fi troubleshooting. This is not tenable for many businesses as IT pros are already strained.

The security aspect of Celona's system was another key selling point for the manufacturer, which holds more than 300 different patents on train wheels. Private cellular ensures this proprietary information is protected because the manufacturer is able to maintain control over subscriber identity module (SIM) cards that are installed on each device – ensuring device level authorization for network access and centralized encryption for the data traffic. Unlike Wi-Fi networks, there is no concept of "open / guest SSIDs" or pre-shared keys. Every SIM card on the Celona cellular network is tracked and can be disabled remotely at any time.

The manufacturer still maintains Wi-Fi throughout the plant in areas where laptops remain stationary and are not part of the business process workflows. In areas where mobile access is needed to improve operations and business outcomes, the manufacturer will continue to roll out Celona's private cellular network. Next on the list after the melt shop is the machine shop, followed by the wheel mill and the forging mill.

Zeus Kerravala is the founder and principal analyst with ZK Research. He provides a mix of tactical advice to help his clients in the current business climate and long-term strategic advice. Kerravala provides research and advice to end-user IT and network managers, vendors of IT hardware, software and services and the financial community looking to invest in the companies that he covers. He can be reached at zeus@zkresearch.com, and follow him @zkerravala and on YouTube.

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