RFS

RADIO FREQUENCY SYSTEMS

Case Study Unlocking the Advantages of Private 5G with COCUS

Hannover, Germany

At RFS. we have been at the forefront of developing 5G-ready cable solutions. As we help customers around the globe realize their 5G ambition, we collaborated with COCUS to deploy a private 5G network RFS across the Hannover facility. The aim was to bring 5G connectivity to improve the operation of several functions across the site and gain a deep understanding of the end-to-end process of building a private 5G network.

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The challenges

To successfully roll out a private 5G network we, at RFS, needed to address several key areas:

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Find a partner to help with network infrastructure

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We needed a partner with expertise in establishing and managing private 5G networks. In particular, we needed a partner capable of configuring the radio equipment needed to support the deployment.

2 Navigate the complexities of 5G license applications

One of the challenges our private 5G customers face is dealing with the administrative aspect of applying for a 5G license. By working through these challenges from the ground up and understanding the process, we would be better placed to help our customers going forward.

3 Achieve uninterrupted connectivity despite possible interference

The location of the RFS site, close to Hannover Airport, adds to the number of potential interference concerns. We needed to ensure a system that would work consistently regardless of nearby disturbances.

Seamlessly integrate with existing systems

The solution needed to integrate quickly and easily with existing systems and cause minimal disruption when bringing new applications online including the testing range and a new burn chamber for testing the fire resistance of cable.

The solution

We worked with COCUS as a partner to successfully deploy a private 5G network to both showcase our cable-based 5G antenna systems and to enhance several aspects of RFS's operations with 5G connectivity.

Selected Partner: COCUS

At RFS, we needed a partner to provide that could assist with overcoming the regulatory and technical challenges unique to our Hannover environment. COCUS was chosen as the ideal partner for several key reasons.

- 1. Its expertise in taking an Open RAN (Radio Access Network) approach to the network to give maximum flexibility.
- 2. A scalable system that could adapt as site needs evolved
- 3. Experience securing and meeting the regulatory constraints associated with private 5G licenses.



Private 5G system set-up to meet requirements at RFS Hannover site

Technical details

The process of implementing the underlying infrastructure to support RFS's private 5G network can split into three stages:

1. Network Design

Network design was required at the outset as this is needed as part of the private 5G license application. RFS worked with COCUS to determine the infrastructure configuration, including the location, height, and tilt of each antenna. It was crucial that the design demonstrated that the deployment of the network would not impact RFS's neighbors. The system is also scalable and able to expand as the number of use cases relying on 5G increases.

2. License Application

The requirements for the license application included submitting the complete network design with a full list of all devices being used in the deployment. A key

The result

The deployment with COCUS meets all the needs outlined at the start of the project and is therefore able to support a wide range of current and future use cases that would not have been possible previously due to the limitations of existing connectivity options.

CURRENT APPLICATIONS

Test and Measurement Site

An outside area used to test cable struggled with interference from multiple WiFi networks and radar from the nearby Airport. This impact was interruptions to the measured data stream, necessitating the need for retesting to ensure accuracy. Using the private 5G's lower latency and undisturbed connection eliminated this problem, reducing measurement time and removing the need for repeat testing.

Burn Chamber

A new burn chamber was installed in an area with no pre-existing data connection. Rather than lay a fiber connection, we were able to use the 5G coverage to get the connection up and running in one day. This allowed for a huge saving in both time and resources and allowed the burn chamber to be used immediately.

FUTURE APPLICATIONS

Raw Materials Warehouse

Building on the existing success of 5G-connected

part of the application is demonstrating the required expertise needed to effectively run a private 5G network without negative impact beyond the RFS site border. Working with COCUS not only helped RFS with the technical aspects of the application but, as a recognized and respected name within the industry, added weight to the application.

3. Network Deployment

Once the network design and 5G license approval had been granted. RFS was able to roll out the network. COCUS focused on the configuration of the core network, while RFS, as an RF specialist, took care of the RF front-end. Some of the biggest challenges arose as a result of IP addressing and determining how devices would connect to the network. RFS's IT department was able to work through the challenges. However, it highlighted that launching a private 5G network is a significant and long-term IT project and the importance of working with expert partners to deliver success efficiently.

operations, we are setting up our new raw material warehouse with an active SAP Warehouse Management System (WMS). The nature of the building and its use makes it difficult to operate using WiFI and therefore, we will instead leverage 5G to ensure continuous connectivity.

In addition, environmental sensor data will be transmitted through the LoRa network which COCUS installed as part of the private 5G architecture to give maximum flexibility for future connected applications. It allows RFS to enable IoT use cases like heating and occupancy management.

PROFINET closed control via 5G

We are also conducting a trial to use 5G instead of the bus cables that currently connect centrally controlled machines. For this use case, a reliable, consistent roundtrip time for data packets is crucial—something not achievable with standard Wi-Fi due to its variable packet transit times. 5G's core architecture enables the bus manager to control round-trip timing, making closed-loop control applications possible. This switch to 5G will give us flexibility in how we position machinery, allowing us to rearrange machines for different product configurations.

We look forward to continuing to build on the success of the partnership with COCUS both at the RFS site and for customers looking to overcome similar connectivity challenges.

ABOUT COCUS

COCUS is a solution provider dedicated to connecting industries and empowering innovation worldwide through scalable, high-performance, and sustainable digital solutions and services with over 20 years of cross-industry experience. <u>www.cocus.com</u>







Lifetime Connectivity

At RFS we specialize in the design and manufacture of premium, future-ready cable solutions for customers across the globe. With over 120 years of heritage in the industry, we build reliable and long service life connectivity systems. **Because we care about our collective future.**

- We design innovative cable solutions that deliver best-in-class connectivity while tackling network pain points and offering a lower Total Cost of Ownership.
- We bring passion and expertise at every stage, from R&D to installation, to meet our business partners' expectations.
- We deliver the communications foundation for digital transformation across a range of industries including oil & gas, mining, and rail.
- We are changing the perception that all cable is created equal and demonstrating the potential of premium solutions.
- We offer a dynamic and stimulating working environmentthat promotes diversity and fosters personal and collective accomplishments.
- We are committed to sustainability with greener manufacturing processes and designing longlife equipment with low-energy consumption to support our customers' climate goals.