

Solution Brief

stürmsfs ag 5G



Flexible, secure digital transformation for smart manufacturing with private 5G

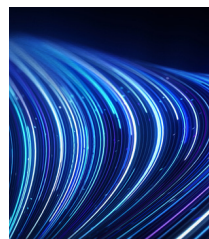
Build a future-ready 5G foundation for process optimization and innovation, battle-tested in rugged conditions.



Reliable private 5G networks are helping a growing number of small and medium-sized manufacturers (SMMs) to become more digitalized, flexible, and competitive. As SMMs strive to compete in challenging markets and to cope with the ongoing disruption to global supply chains, many want to digitally transform and embrace smart manufacturing, also referred to as Industry 4.0. At the foundation of Industry 4.0 is the ability to collect, exchange, and analyze data in real time. With decision making enhanced by real-time data insights, and real-time communications between machinery and facilities in various locations, SMMs who adopt Industry 4.0 can operate with greater agility and efficiency.

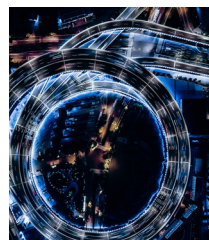
Addressing smart manufacturing challenges

The speed and security of private 5G can help smart manufacturers gain a competitive edge by addressing key challenges such as:



Having fast and reliable access to data

Manufacturing processes often need to run around the clock and generate huge amounts of data. Digitalization solutions must be able to collect all of this data in real time, reliably and without disrupting production.



Meeting changing needs with flexibility

As manufacturing facilities change and expand, digital systems must be flexible enough to change with them.



Keeping data private and secure

Manufacturing data may include trade secrets, confidential information, and customer information. Wireless network infrastructure may also be subject to local laws and regulations.

*“We can innovate in ways that weren’t possible before, thanks to the flexibility of 5G.”-
stürmsfs ag*

The Nokia Digital Automation Cloud (DAC) private wireless and Mission Critical Industrial Edge (MXIE), based on Intel® technologies, can enable a private 5G network for secure, intelligent control of systems across multiple production sites. By providing a completely independent network that is only accessible to the manufacturer, the solution offers a secure, fast, and low-latency data foundation for Industry 4.0. With compact Nokia 5G remote radio heads, it provides deep and wide coverage and can adapt flexibly to changes on the shop floor. Server infrastructure powered by Intel® Xeon® processors delivers high performance to process and analyze growing volumes of data, and enables the planned use of Intel® Distribution of the OpenVINO™ toolkit for vision-based process optimization. Intel® components feature ruggedized designs suited to the tough conditions of the factory floor.

The solution has been deployed at stürmsfs ag, one of Switzerland's leading steel and metal service centers, in partnership with system integrator Datwyler IT Infra and using software and support from the Swiss federal IndustryFusion Foundation (IFF). stürmsfs ag wanted to transform its multisite facility into an intelligent and connected smart factory, where machines can rapidly communicate with each other and operations are easy to expand. With the Intel-based Nokia solution, stürmsfs ag can move from Ethernet and Wi-Fi 5 networking to a private 5G network that enables high data availability, logistical and production flexibility, and easy shop floor changes. The solution will also provide cost efficiency by reusing many of stürmsfs ag's existing technologies, alongside new Internet of Things (IoT) and edge computing systems.

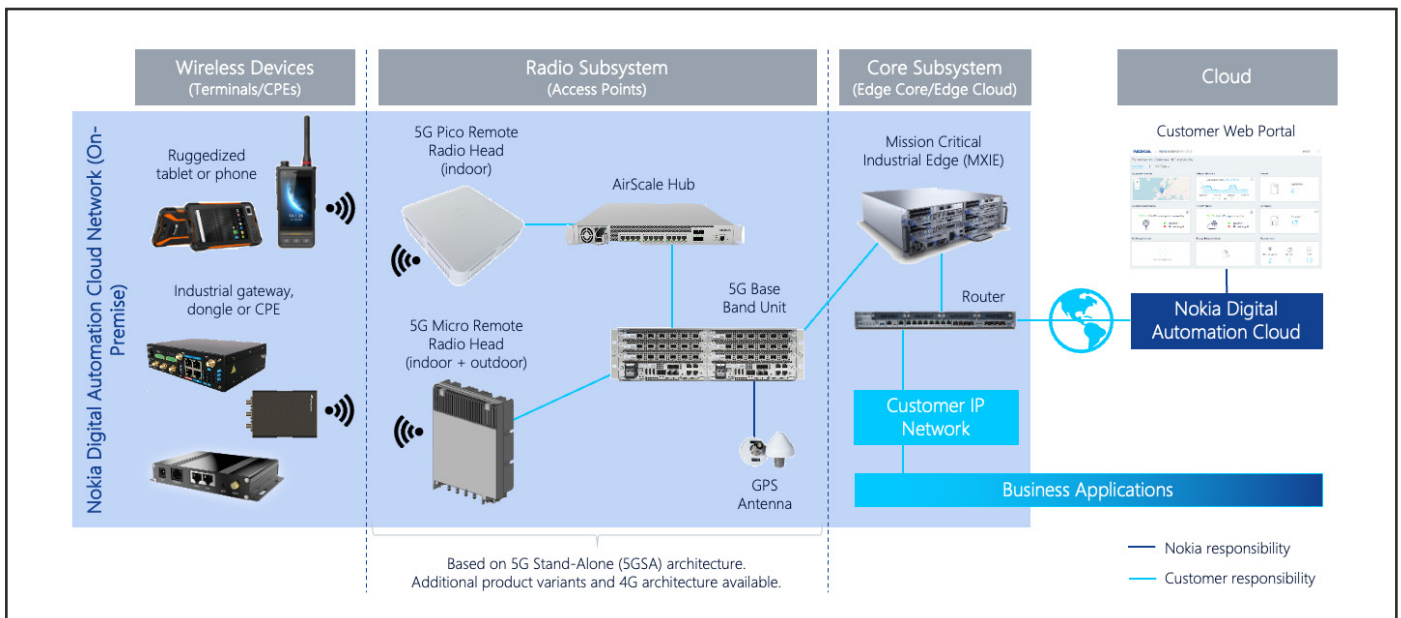
Transformational benefits of private 5G

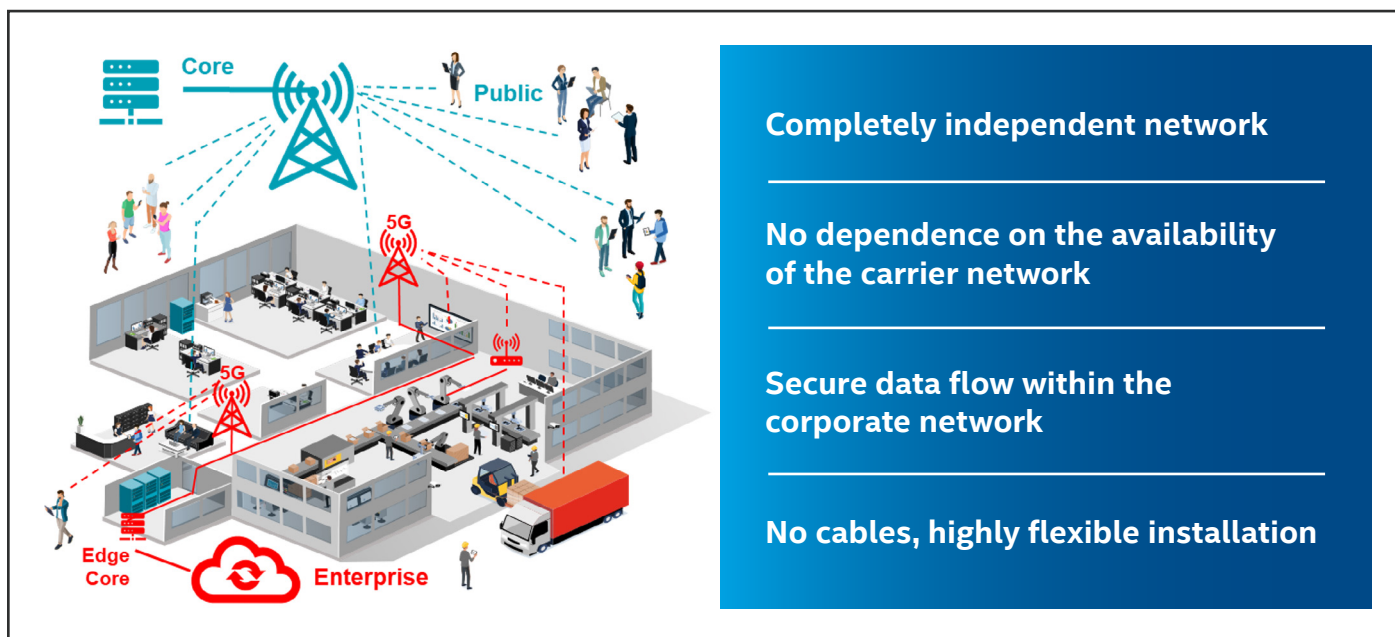
The Intel-based Nokia solution will be able to replace stürmsfs ag's traditional Ethernet and Wi-Fi networking with a private 5G network to deliver a wide range of benefits. 5G provides high data bandwidth and consistently low network latency, enabling a secure and powerful data flow that can support growing workloads such as artificial intelligence (AI). The implementation at stürmsfs ag's facility, where steel plasma cutting takes place in extremely dusty conditions, demonstrates that the solution is reliable in the most rugged environments.

Data transmission is **more reliable** and has a reduced liability of interference with 5G. Wi-Fi 6 connectivity has limited coverage and was not sufficient to connect all of stürmsfs ag's production halls. Wi-Fi radio signals also carry a risk of interference from other factory machinery, or from bad actors who want to intercept and infect data. The higher power output of 5G provides much larger coverage, as a result, stürmsfs ag now requires only five remote radio heads for the entire site; previously it used 48 wired Wi-Fi access points across its six halls. With a dedicated spectrum, there is no dependence on the availability of a carrier network.

Security is enhanced with peer-to-peer connectivity and dedicated subscriber identification module (SIM) cards that prevent modems from connecting to any other 5G network. And each network layer and subnet is protected by a firewall. All data is stored on site and processed in real time, giving stürmsfs ag full control over its production processes and expertise.

5G adoption will also lead to **greater flexibility and cost efficiency**. Expensive and space-wasting physical cables can be eliminated from the factory floor. Once free of cables, stürmsfs ag can place each 5G remote radio head in the most optimal location. Devices are moved easily when changes are made to the shop floor.





Completely independent network

No dependence on the availability of the carrier network

Secure data flow within the corporate network

No cables, highly flexible installation

Private 5G network concept. (Source: Datwyler)

Business benefits for manufacturers

The Intel-based Nokia solution will enable stürmsfs ag to integrate its diverse array of modern and legacy systems in a single, unified data platform. stürmsfs ag is now using this real-time data access to analyze and optimize its processes. With its unified and flexible foundation, the company can easily scale out and add new technologies as they become available. The solution can enable business benefits such as:

- **Reducing operational costs** – For example, the 5G solution could reduce the cost of predictive maintenance systems by eliminating the need for a centralized operations center in the factory. With real-time communications between all of the systems in the facility, users can see a remote view of machinery and receive automated alerts and warnings when a repair or some other action is needed.
- **Optimizing production logistics** – Tracing of forklift paths can reveal bottlenecks and help to improve in-house logistics. The solution will also make it possible for stürmsfs ag to directly integrate its SAP HANA enterprise resource planning software with shop floor processes. This would create new efficiencies, such as paperless truck loading for customer deliveries.
- **Creating more sustainable practices** – Today, traditional manufacturing processes use almost one-third of the world's energy. With access to real-time data from across its facility, stürmsfs ag can develop insights to optimize production, reduce machinery wear and tear through predictive maintenance, and minimize both energy and material waste.¹

Overcoming transformation barriers

Digital transformation projects are challenging for manufacturers, especially when they involve replacing operational technologies that have been running reliably for years. Solutions need to be implemented as quickly and efficiently as possible, to minimize disruption.

With Datwyler IT Infra as the lead system integrator, and assistance from the IFF, the Intel-based Nokia solution enabled stürmsfs ag to overcome these barriers with:

- **Fast installation** – With standardized technologies and services, in a preconfigured solution, the entire installation was completed in only six days.
- **Readiness for strict 5G regulations** – The solution features Switzerland's first ever private 5G network. Switzerland's 5G safety regulations, designed to minimize risk to citizens, are among the most rigorous in Europe. The Intel-based Nokia solution was granted a preliminary license by the Swiss regulator BAKOM. It now serves as a blueprint for how to balance regulatory compliance with an effective implementation. Datwyler IT Infra is the operator of the private 5G network enabled by the Nokia Digital Automation Cloud (NDAC) solution.
- **Sharing of best practices** – stürmsfs ag is helping others to learn from its success by providing access to its factory floor, where organizations can see what 5G delivers in a rugged, real-life manufacturing environment. So far, this information sharing has supported more than 60 companies to investigate Industry 4.0 solutions.

An ideal foundation

Transforming with smart manufacturing or Industry 4.0 requires a fundamental shift in the technologies that power production. With high-speed data transfer, built-in security, and flexibility to expand and adapt to business changes, private 5G networks offer manufacturers an ideal foundation for digital transformation projects. With Intel®, Nokia, and our integration partners, small and medium-sized manufacturers can access a private 5G solution that has been battle-tested in the rugged and dusty conditions of stürmsfs ag's steel processing facility.

Through digital transformation with 5G, stürmsfs ag has started to optimize its processes for greater productivity, efficiency, and sustainability. The company has also become an industry enabler by creating a collaborative, open lab to develop and test new use cases in a real-world environment. Next, stürmsfs ag will expand its 5G solution with new capabilities.

"We can innovate in ways that weren't possible before, thanks to the flexibility of 5G," said Marcel Meier, Head of Procurement & Corporate Development, stürmsfs ag. "Now that all of our data sources can be unified in one source of insight, we are able to explore new approaches such as AI and computer vision to develop new process and quality inspection methods in the future."

Learn more

Intel and our technology and integration partners are ready to assist you as you explore ways to increase manufacturing productivity, innovation, and sustainability.

Learn more at:

<https://www.intel.com/content/www/us/en/wireless-network/private-networks.html>

<https://www.dac.nokia.com/>



Automatic pickup system for saw cell. (Source: stürmsfs ag)



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¹Deloitte (2021, October 1st). Sustainable Manufacturing: Fixing The Factory Floor. <https://www.forbes.com/sites/deloitte/2021/10/01/sustainable-manufacturing-fixing-the-factory-floor/>