

DRIVERLESS, FAST, SAFE.



CUSTOMER BASF SE, Ludwigshafen

TASK

Increase efficiency in logistics through the use of Automated Guided Vehicles with the help of a private LTE network

CHALLENGE

Large number of metallic supply lines makes classic radio network planning impossible

TASK

BASF plans to significantly reduce logistics costs by introducing an integrated storage and transport concept. For this purpose, 150 production stations at the Ludwigshafen site will be logistically supplied by fully automated, driverless conveyor vehicles – so-called Automated Guided Vehicles (AGVs). The AGVs will be networked via a private LTE network.

CHALLENGE

The production site is characterized by a large number of metallic supply lines, which make classic radio network planning impossible. However, for the safe and trouble-free operation of the AGVs and to ensure a smooth production process, a continuous loss- and distortion-free transmission of HD camera signals for controlling and monitoring the AGVs is essential.

OVERVIEW

BASF, the world's largest chemical company, owns one of the largest contiguous chemical sites at its Ludwigshafen site, covering an area of ten square kilometers and employing around 39,000 people. BASF's main plant is also the cradle of the Verbund concept: production plants, energy flows and logistics are intelligently networked to use resources as efficiently as possible.

SOLUTION

Private LTE network enabled by GuardStack software RIDUX for highly mobile communication networks

OUTCOME

Cost savings through new, highly efficient logistics system

SOLUTION

To ensure trouble-free operation and smooth production flow, BASF relies on its own private LTE network, consisting of the GuardStack software RIDUX and base stations from Airspan. The BASF-owned private LTE network transmits control and video data from the AGVs and is operated by BASF as an AGV campus network integrated into the on-site network infrastructure. With this approach, BASF ensures that an upload data rate of 15Mbps can be provided to each AGV at a low latency of <50ms and that BASF retains sovereignty over all elements of the production process.

GuardStack implements the central LTE core components of the so-called „Evolved Packet Core (EPC)“ (MME, SAEGw), as well as the HSS software-based and forms the private LTE network together with LTE base stations (eNodeBs) from Airspan. GuardStack enables BASF to uniformly administer all components and users of the private LTE system via the intuitive management interface and allows easy integration into the existing network infrastructure.



INDUSTRY 4.0
CAMPUS NETWORKS



OUTCOME

By deploying the private LTE network at the Ludwigshafen site, BASF was not only able to introduce a modern, innovative and highly efficient logistics system, but also significantly reduce costs. The effort required to operate a private LTE network is very efficient:

- Low annual frequency usage fees
- Administration of the network by own trained personnel
- No additional costs due to SIM card management integrated in GuardStack
- End devices are available on the market and exist for a wide range of applications
- LTE technology is produced in high volumes and is therefore cost-optimized and future-proof

ABOUT GUARDSTACK

The GuardStack Compound is a network-oriented open transport infrastructure and enables the flexible integration of different access and transmission media. This creates an environment in which networks can be used independently of the available access technology.

This creates a highly secure, dynamic and self-organizing communication infrastructure with a simplified user interface that forms the basis for future-proof critical communication.

“IN THE CHEMICAL INDUSTRY, BASF WANTS TO BE A PIONEER IN DIGITALIZATION. AT OUR LARGEST SITE, PRIVATE LTE HAS CONTRIBUTED TO THE IMPLEMENTATION OF AN INNOVATIVE, SECURE AND COST-EFFICIENT SOLUTION.”

- GERD WOSIEN, INDUSTRIAL COMMUNICATION TECHNOLOGY, BASF SE