

UHF Antenna Technology

Passive UHF RFID Predominates Across Industries

Simpler deployment and more intelligent reader solutions ensure further market penetration

In many industries, UHF technology is on the rise. The reason for this is the increased efficiency of the systems. Long reading ranges, bulk reading, smart data filtering and data processing directly in the reader systems, in combination with powerful middleware device management, enable the deployment of applications that were only an idea a few years ago.

By Thomas Brunner, Head of Kathrein RFID division

Market Penetration is Increasing

A very high level of RFID penetration has already been achieved in industrial automation. Logistics has been an absolute boom industry for RFID in the past, and the impact of this will be seen in the coming years. Applications in vehicle identification fields, such as parking management and fleet management, have made a significant leap forward.

Gate-Sensitive Identification in Logistics

For a long time now, logistics have been an ideal application field for UHF RFID. In many projects, however, it has been noticed that the technology could not yet meet the requirements. Large number bulk reading at gates was difficult. In addition, modular gates are expensive and sometimes unreliable. Only with the development of RFID readers capable of

selectively reading transponders and intelligent filtering the reading results, has the number of applications in logistics increased continuously since 2012. In the next 24 months RFID in logistics will achieve the highest growth rate among all application areas. Besides the supplier industry, which has a high logistics volume, companies in postal logistics are testing RFID technology extensively.

Direction Recognition in the Automotive Industry

Logistics processes and the processes in the automotive and automotive supply industry are very similar in many ways. Value-added information, such as the direction of a moving object, play a major role in both industries. In order to know

Intelligent RFID Identification System ARU CSB ELC with 'out of the box direction recognition' receives award as 'Best Product LogiMAT 2015'

Modern RFID gate solutions must not only securely identify transponders. Additional information, like the position and the flow direction of the goods, must be established and provided to the ERP system, particularly in logistics applications. Smart antenna systems now offer a way of having a direct influence on the physical properties of the antenna and therefore responding in almost real time to the events in the goods flow. The High End CSB antenna with an integrated UHF reader has up to three different antenna sectors fields, and each of them can be queried by the reader. Based on the raw data, such as RSSI level, phase tag and timestamp, error-free positioning and direction recognition is established.



at all times whether components, assemblies or vehicles are in one or the other location, data with a high degree of relevance for planning and production is needed. Vehicle distribution within production facilities or the shipment of vehicles on freight trains or car carriers are processes in which direction determination in real time is a great advantage. Here UHF RFID data, added to with additional information, are making processes more efficient, more transparent and more cost-effective. As one of the first manufacturers, Kathrein RFID already supports the new RFID directive VDA 5500.

RFID in Vehicle Identification Picks Up Speed

A massive trend for Kathrein RFID, which is picking up speed, is the identification of cars, trucks, buses and trains using UHF RFID in order to set up and operate applications for toll collection, vehicle access control, parking management, fleet management and route control. Companies whose solutions have been based on active and in-part proprietary RFID systems are increasingly taking UHF solutions into their product development.

Applications

Automotive Industry: Bumper Tracking at Rehau

With a Kathrein RFID UHF reader based application, each bumper is continuously tracked and identified during the various process stages from injection moulding through to quality assurance in numerous Rehau plants. The Identification Software 'crosstalk' of the company noFilis is directly installed into the Kathrein RFID readers, which makes it possible to react constantly on different bumper types by modifying the transmission power or changing the reading profile.



UHF readers identify bumpers at different stages of the process.

Logistics: RFID in the Hellenic Railway Organisation



Kathrein RFID readers are installed along the railway line, which can identify trains at high speed

In order to keep track of freight and passenger trains in real time on the rail network in Greece and the adjacent regions, a large number of robust Kathrein RFID readers have been installed along the railway lines. The readers are fully operational within the hot climate and can identify trains even at high speeds, ensuring transparency throughout the rail network of the state railway 'Organismos Sidirodromon Ellados'. The registered data is used to optimise logistics and organisational planning as well as provide value-added services to freight traffic customers.

Vehicle Identification at the Airport for Parking Management

A new RFID UHF vehicle identification system was deployed at the central parking facilities at Munich Airport as an extension of the existing parking system infrastructure of the company Skidata. The latest generation of Kathrein RFID ARU4 series with © KRAI Technology now allows a swift and safe identification of vehicles for parking management. The RFID UHF AVI infrastructure is used specifically for fleet solutions like DriveNow, car2go and AlphaCity.



The latest generation of RFID Kathrein ARU4 series allows the rapid identification of vehicles

Medical Engineering: Smart Laboratory Work Stations with Integrated Antennas in Turkish Hospitals



RFID ensures the secure identification of patient-specific samples.

Since 2014, there are a number of systems running in several clinics in Turkey to identify patient-specific multiple-sample racks which enable selective identification based on special smart-shelf antennas from Kathrein RFID. With a special patented technology – the antenna reads within a semi-hemisphere with a radius of up to half a meter, directly above the base area of the antenna, measuring about 30 by 30 centimetres. The accuracy of the reading field is less than two centimetres. This ensures that only the rack in the reading field is directly recognised and not the one on the next table or the one being carried by a passing colleague.