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Airport Asset Monitoring and Tracking Using LoRaWAN™ Connectivity

April, 2018 | Version 1.0

Large airports are highly complex and tightly regulated operations, and airport managers are always on the lookout for ways – procedures, technologies, and systems – to improve efficiency and maintain safety and security among a myriad of moving parts. The Internet of Things provides them with multiple possibilities to strengthen operations, improve services for travelers and reduce operating costs.

Adveez, a French manufacturer of data-capture and hands-free-access control hardware and software, has deployed asset-tracking systems based on LoRa® IoT technology at airports in Europe and North America to enable enhanced location management of mobile assets, such as maintenance and service equipment, and to improve efficiency.

A deployment at the Lyon, France, airport features the company's IoT Asset-Tracking Module with embedded GPS and LoRa® connectivity to connect to Adveez's LoRa® network. LoRa-enabled sensors capture usage and GPS location data from equipment and transmit it wirelessly to a Kerlink Wirnet™ Station LoRaWAN gateway, which sends it to Adveez application servers. In addition to improving efficiency of equipment use, the data alerts airport authorities to perform maintenance based on actual usage, eliminates the need to collect usage data manually and reduces repair costs. The Adveez asset-tracking platform also is currently used by major airlines at airports across Europe and North America to support their ground operations.

ADVEEZ
ADVANCED & EASY

Company name: Adveez
Headquarters: Toulouse, France
Year founded: 2011
Industry sector: Safety Solution for people and assets

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Strict Security Requirements

Unlike common asset tracking systems used in sectors such as manufacturing and ground transport, airports must meet the strictest, international security regulations that control deployment of personnel and equipment and the location of communication infrastructure. The LoRaWAN™ native dual-security layer includes mutual authentication between the end-device and the network.

This is combined with an encrypted payload exchange between the end-device and the application server, contrary to cellular network (if the radio communication is encrypted, the data is transported in a clear way in the operator core network and through the internet, except if an additional VPN is deployed, adding costs).

In addition, the main constraint for airports is assuring tracking systems guarantee confidentiality in an environment where megabytes of data are collected, transmitted and processed around the clock. On top of that, the solution must offer a long battery life, and precise asset location in a robust, easy-to-install module on a wide variety of ground support equipment (GSE).

Adveez's LoRa® solution and Kerlink's carrier-grade LoRaWAN gateways help satisfy all those requirements.

Adveez also recently installed its GSE Speed Control System at Lyon airport, following rollouts in Marseille and Nice, using its own modules. The system solves the widespread issue airports face of reducing speed in baggage drop-off galleries, tunnels and other areas within speed-restricted areas. Adveez's cost-effective system for electric GSEs controls their speed via radio frequency (RF) detection.

Key Features of LoRa® Technology

• **Long Range:** A single base station enables deep indoor penetration for dense industrial environments and premises, while also providing extensive coverage up to 30-mile-wide areas. This is a key differentiator to collect GPS data from sensors scattered throughout an airport.

• **Low Power:** The LoRaWAN protocol was developed specifically for low-power sensors and enables unprecedented battery lifetime of up to 10 years, depending on the application.

• **Low Cost:** LoRaWAN Technology reduces up front infrastructure investments and operating costs, as well as end-node sensor costs, for industrial monitoring applications.

• **Open Standard:** LoRaWAN, a Low-Power Wide Area Networks (LPWAN) specification, ensures interoperability among applications, IoT solution providers and network operators to speed adoption and deployment.

Lower CAPEX, Faster ROI

For cargo handling, GPS tracking provides rapid and easy location of mobile ground equipment and containers and allows faster loading and unloading of airline cargo. This, in turn, reduces delays and improves service. In addition, analyzing the collected data helps airport authorities optimize fleet size and deployment through peak-usage reports, which can save airports up to 15 percent on CAPEX. LoRaWAN connectivity also speeds ROI by eliminating cellular/GSM fees.
At Lyon's St Exupery International Airport, modules used for airport applications provided immediate security and operations improvement in the designated LoRa® coverage areas. Functionalities, including LoRa® uplink performance and data flow through the web platform, proved the modules deliver relevant information with GPS tracking with an accuracy of five meters. Even with continuous transmission of location data from the sensors, the energy-efficient LoRaWAN protocol can enable battery lifetime of up to three years.

In addition to partnering on airport installations, Adveez and Kerlink expect to collaborate on systems for critical-asset monitoring in other industry sectors, such as construction and smart cities.

Read more:

Adveez: www.adveez.fr

More success stories: https://www.kerlink.com/customers-usecases/use-cases/