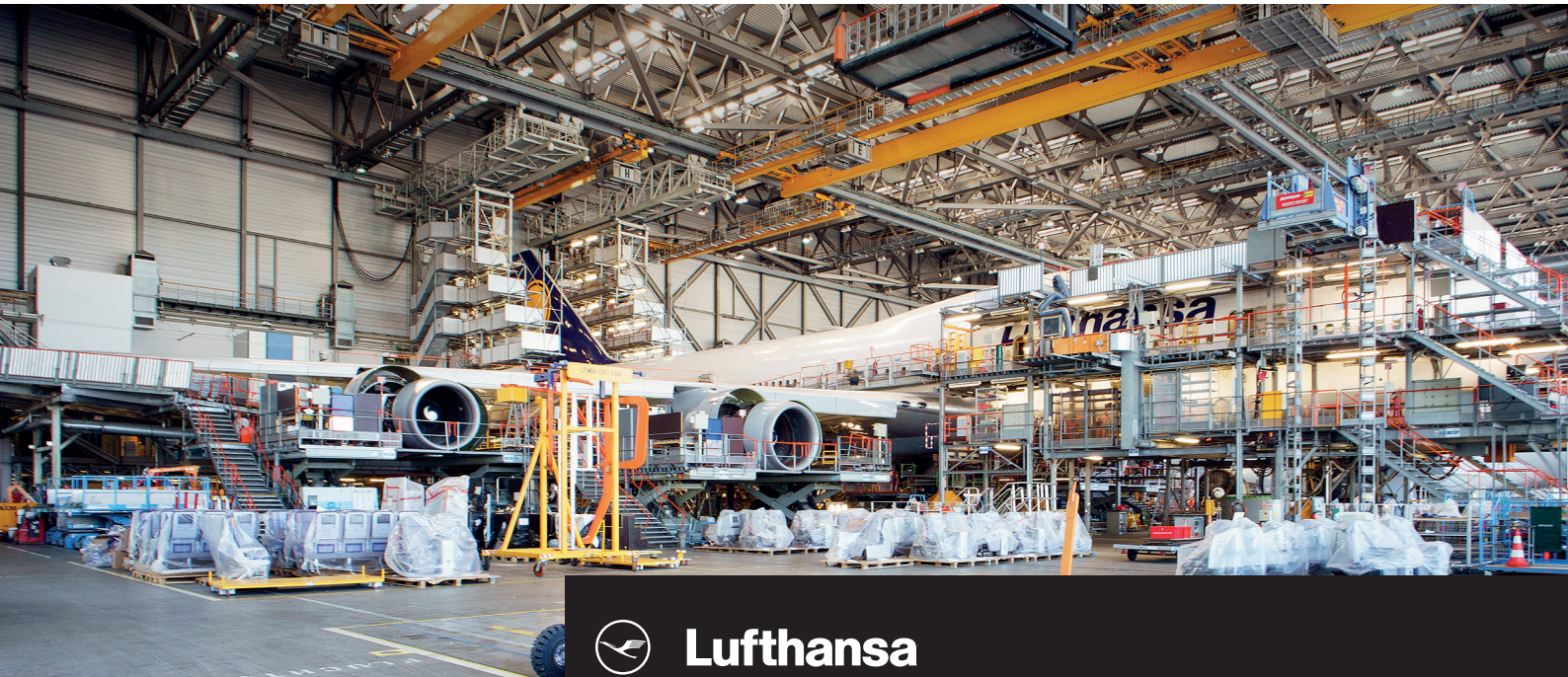


USE CASE - Lufthansa Industry Solutions



Lufthansa Industry Solutions

Intelligent assets. Intelligent resource management.
Close range localization

The real-time localization system was specifically developed for the accurate close range localization of objects. By attaching small Bluetooth beacons, assets become intelligent, localizable objects, which can provide arbitrary information, such as temperature or fill level, and even react to events such as keystroke, brightness, shock or positional change. Apart from the spatial information, additional information about local process parameters is transferred in real time.

CONFIGURABLE, VERSATILE APPLICABILITY

It is possible to locate a large variety of moving objects in real time by attaching Bluetooth Low Energy (BLE) beacons. These beacons are characterized by their small size and are easy to install due to our intelligently designed, versatile mounting plate. The localization is possible with all devices featuring a BLE module, such as current Android smartphones. This makes it possible to easily integrate BLE devices (or BLE beacons) that are currently in use into the localization setup.

With ecom's Loc 01 and Loc-Ex® 01 we have a catalog with a sensible number of different beacons, which we can configure specifically for your demands – even in hazardous areas. The Bluetooth beacons can control devices through the built-in back channel or act as a signaling device, so the object you are looking for can be more easily identified when you are nearby.

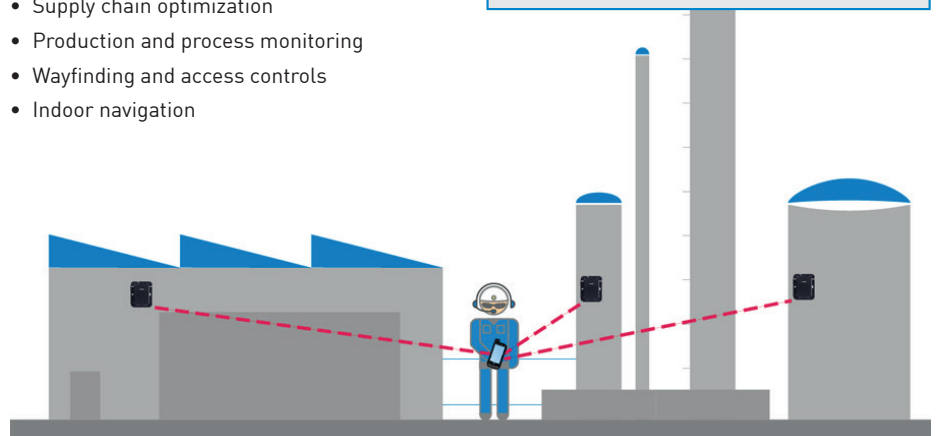
Lufthansa Industry Solutions and ecom has expertise in the field of indoor and outdoor localization. Many of our solutions are currently in use within and outside of the Lufthansa Group.

USE CASES EXCERPT

- Indoor and outdoor asset localization
- Worker monitoring in hazardous areas
- Asset tracking in the healthcare sector
- Supply chain optimization
- Production and process monitoring
- Wayfinding and access controls
- Indoor navigation

Your advantages at a glance

- Cost reduction through intelligent resource management
- Real-time localization in 2D or 3D space
- Localization accuracy up to 10 cm
- Long range up to 300 m
- Configurable beacons
- Wide temperature range
- UV resistant beacon housing
- Industrial grade beacons



USE CASE - Lufthansa Industry Solutions



Bluetooth Low Energy devices

STATE-OF-THE-ART TECHNOLOGY

The Quuppa Intelligent Locating System™ uses the angle-of-arrival technology. The horizontal and vertical angles between the locators and the beacon are determined simultaneously. In a two-dimensional space, a localization with an accuracy within a few centimeters is possible with only one locator. At least two locators are required for a localization in 3D space. In addition, the insensitivity to signal strength fluctuations is a significant advantage over conventional Bluetooth-based localization technologies.

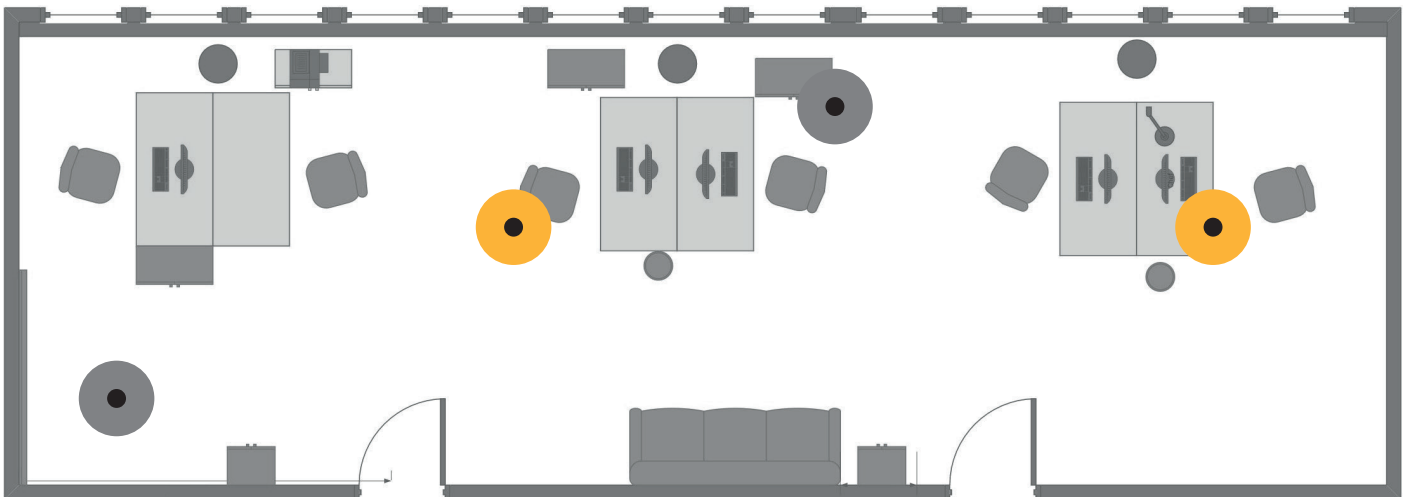
LONG RANGE

The costs for monitoring large areas can be kept low due to the long range of up to 300m, which opens up new possibilities for Bluetooth-based localization. For example, localization in a potentially explosive environment is possible without the locator itself having to be approved for this environment – simply because it can be mounted outside this area.

Furthermore, the desired localization accuracy can be varied by the number of locators installed.

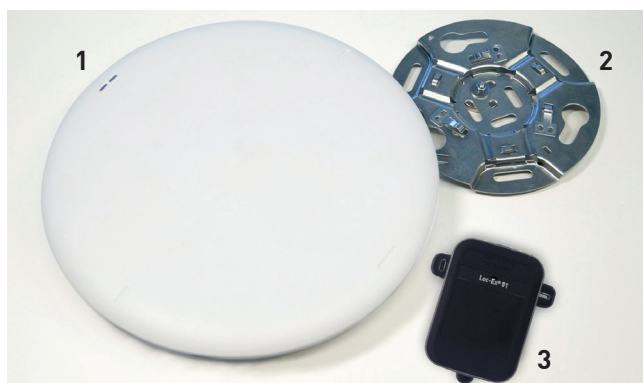
Specifications

- Wireless data transfer via Bluetooth Low Energy
- Very long battery life due to intelligent power saving modes
- Protection class IP64 according to ATEX standard
- Range up to 300m
- Built-in back channel
- Wide hardware support
- Real time localization (up to 100Hz)
- Wide temperature range from -20°C up to +55°C for Loc (-Ex®) 01
- Variety of beacons available and configurable concerning:
 - Battery life
 - Signal strength
 - Signal interval
- Loc (-Ex®) 01 is designed for harsh environments
- Support of UDP streaming protocol and REST interface



Exemplary illustration for indoor localization

● Person ● Equipment



Locator (1), mounting plate (2) and Bluetooth Low Energy beacon (3)

FOR MORE INFORMATION PLEASE CONTACT

Christian Uhl
christian.uhl@ecom-ex.com

ecom instruments GmbH
Industriestraße 2
97959 Assamstadt
Germany

www.ecom-ex.com