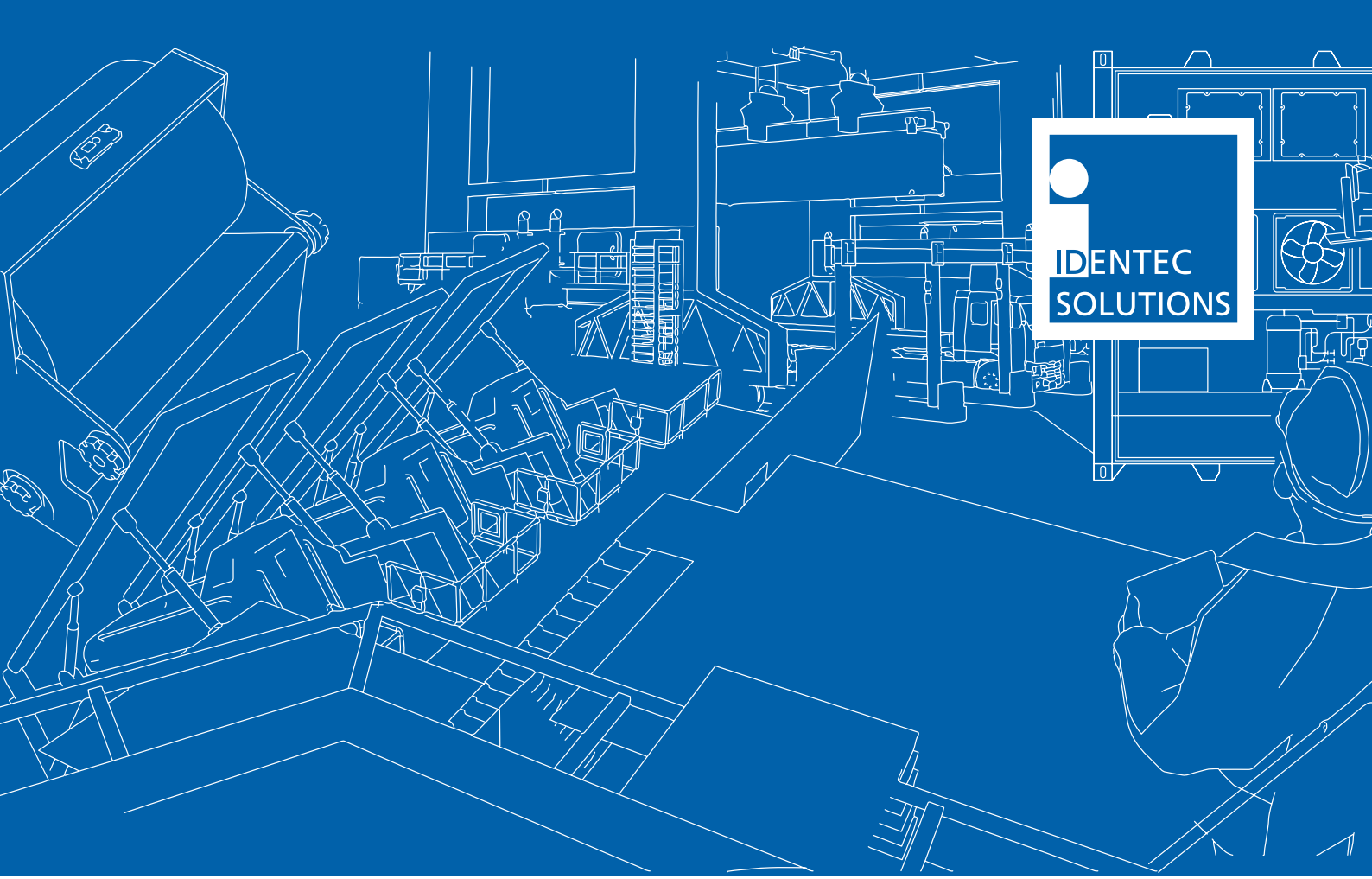


WATCHER**INDUSTRY** RTLS

General Information

Visibility Delivered.

Visibility Delivered.

IDENTEC SOLUTIONS AG is a global leader in wireless solutions that enable visibility of personnel and assets. Our solutions optimize safety and efficiency in industrial environments.

Production plants worldwide are implementing Real-Time Location Systems (RTLS) and close range communication technologies for the location and identification of materials during the production process.

Close range communication supports the quality control processes during manufacture, thus eliminating deviations, waste and the resulting costs. RTLS automates Extended Warehouse Management (EWM) during production. The core of these solutions is the IDENTEC SOLUTIONS' RFID (Radio Frequency Identification) technology.

1. Introduction

1.1 What is RTLS?

A Real-Time Location System (RTLS) refers to technology that detects the current location of assets.

The benefits of using the IDENTEC SOLUTIONS' RTLS include:

- Operational effectiveness
- Efficient information distribution enabling the quick location of assets
- Reduce error occurrence

The IDENTEC SOLUTIONS' RTLS is implemented on the shop floor and will accurately locate objects. These positions are then mapped to zones on the production site and can be fed into an ERP system in order to automate the booking of materials. Operators also have the ability to search for and identify materials on-site using the "Pick by Light"-feature.

1.2 What is close range communication?

Close range communication refers to a technology which can identify objects in close proximity. The information is collected and automatically mapped to an IT system.

The main goals of a close range communication system are to:

- Increase process efficiency
- Eliminate error in data entry
- Free up human resources to perform more valuable functions

2. System Components

2.1 Hardware

2.1.1 i-MARK S350-SR or ER

i-MARK S350-SR or ER devices enable close proximity object identification within an adjustable radius up to 1.5 meters (SR) or 3 meters (ER). Localization data is transmitted to any tags in the immediate vicinity. The device is stationary and only requires a power supply.

2.1.2 i-Q350L RTLS-AS

The i-Q350L RTLS-AS tag is mounted to a selected object. The tag calculates its position based on communication with at least three i-SAT 300 RTLS units and broadcasts the information to i-PORT M350 receivers. The tag can receive and transmit data, is equipped with a 3-color LED, a push button and a motion sensor. The tag is powered by exchangeable batteries.

2.1.3 i-SAT 300 RTLS

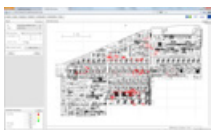
i-SAT 300 RTLS devices enable a high localization precision. An i-SAT 300 RTLS sends localization information to tags over a wide radius. The device is stationary and its location is mapped (XYZ) in a management software e.g. i-SHARE. It only requires a power supply.

2.1.4 i-PORT M 350-2 ETM or i-PORT M 350 RTLS ETM

An i-PORT M 350-2 ETM or i-PORT M 350 RTLS ETM device provides real-time data collection and communicates with tags wirelessly. The device is stationary and requires a power and cabled data connection.

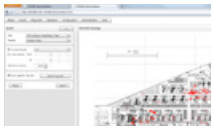
2.2 Software

2.2.1 i-SHARE



i-SHARE is a software which collects data from the IDENTEC SOLUTIONS' infrastructure. Equipped with a powerful positioning engine combined with an innovative filtering capability, i-SHARE delivers high level position data to 3rd party systems.

2.2.2 WATCHER**INDUSTRY**



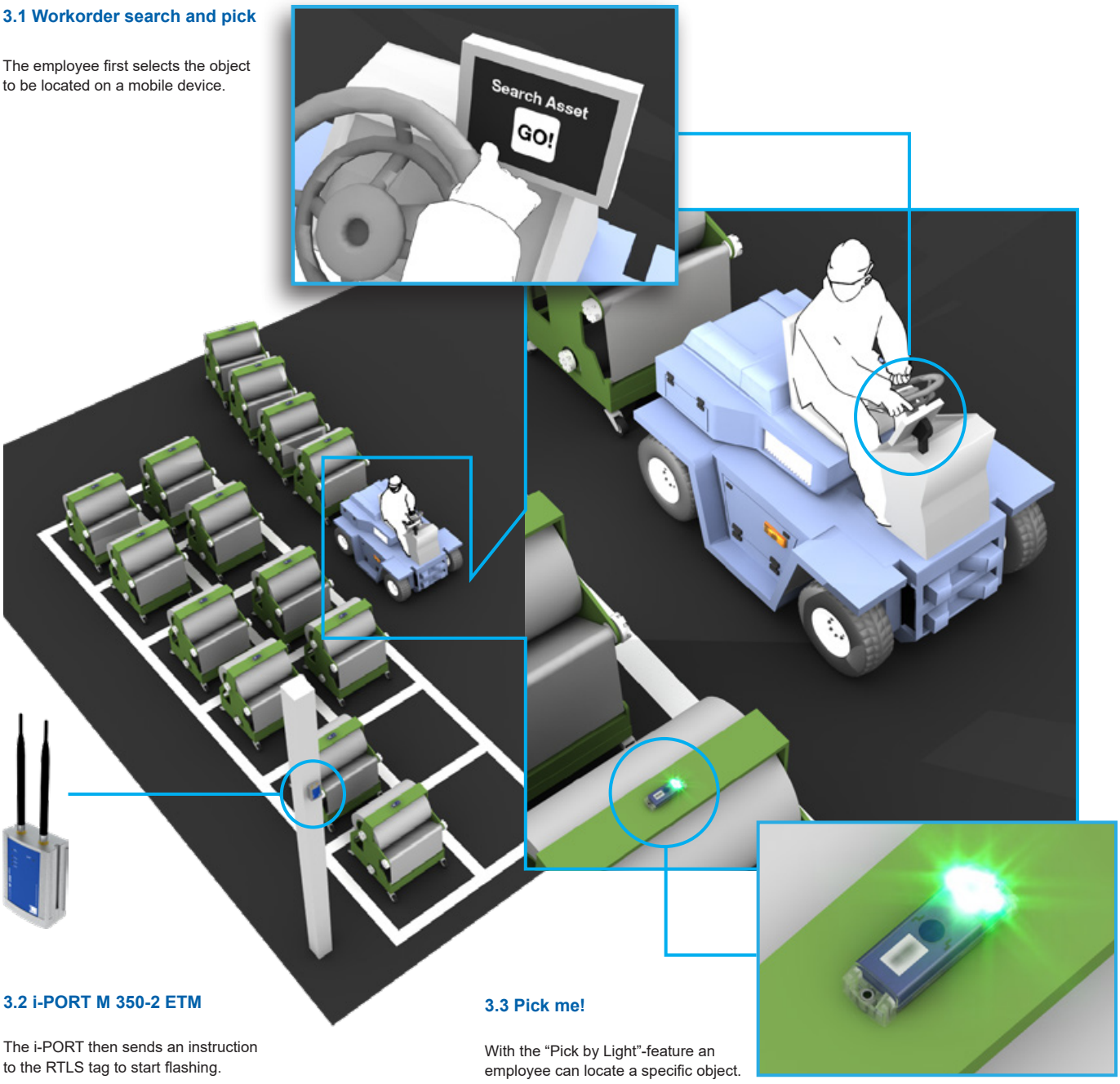
WATCHER**INDUSTRY** is a software that helps visualize the tracking of objects which are equipped with an IDENTEC SOLUTIONS' RTLS tag. The IDENTEC SOLUTIONS' system recognises events triggered within pre-defined site zones. As for example when objects enter or leave zones. Location and routing data can be sent from WATCHER**INDUSTRY** to a 3rd party ERP system.

3. Search and Pick by Light

In areas with a high accumulation of tagged objects, locating the correct object can be difficult and time consuming. With the “Pick by Light”-feature, an employee can activate a flashing LED on the tag from a mobile device for fast localization.

3.1 Workorder search and pick

The employee first selects the object to be located on a mobile device.



3.2 i-PORT M 350-2 ETM

The i-PORT then sends an instruction to the RTLS tag to start flashing.

3.3 Pick me!

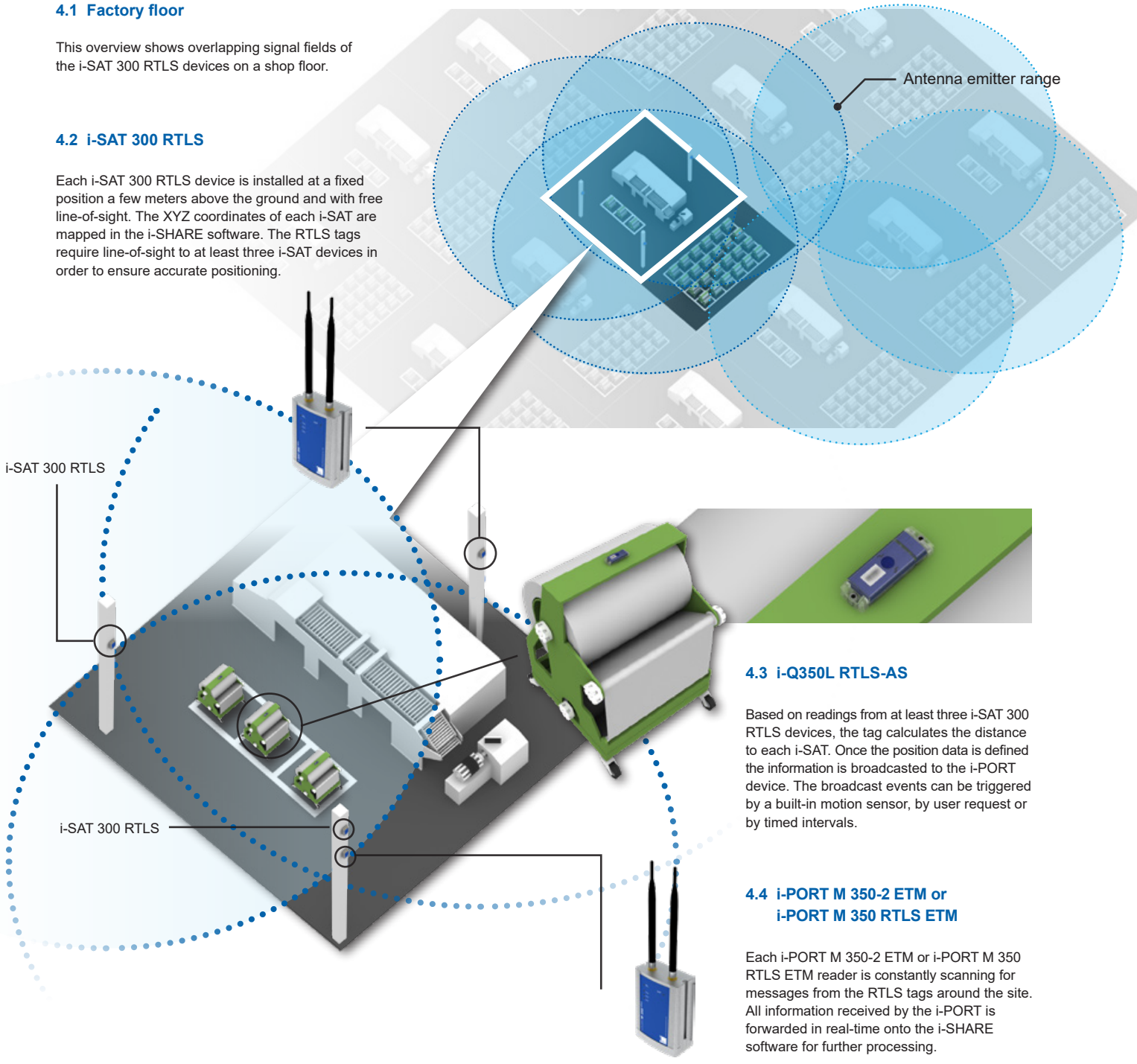
With the “Pick by Light”-feature an employee can locate a specific object.

4. RTLS

The IDENTEC SOLUTIONS' RTLS is installed on-site and will identify and position objects. These positions are then mapped to zones and utilized in ERP systems to automate the booking of materials in the production process. Workers also have the ability to search for materials using the additional "pick by Light"-feature.

4.1 Factory floor

This overview shows overlapping signal fields of the i-SAT 300 RTLS devices on a shop floor.



4.2 i-SAT 300 RTLS

Each i-SAT 300 RTLS device is installed at a fixed position a few meters above the ground and with free line-of-sight. The XYZ coordinates of each i-SAT are mapped in the i-SHARE software. The RTLS tags require line-of-sight to at least three i-SAT devices in order to ensure accurate positioning.

4.3 i-Q350L RTLS-AS

Based on readings from at least three i-SAT 300 RTLS devices, the tag calculates the distance to each i-SAT. Once the position data is defined the information is broadcasted to the i-PORT device. The broadcast events can be triggered by a built-in motion sensor, by user request or by timed intervals.

4.4 i-PORT M 350-2 ETM or i-PORT M 350 RTLS ETM

Each i-PORT M 350-2 ETM or i-PORT M 350 RTLS ETM reader is constantly scanning for messages from the RTLS tags around the site. All information received by the i-PORT is forwarded in real-time onto the i-SHARE software for further processing.

5. Close Range Communication

Close range communication systems can be easily incorporated into production machinery for identifying the type and expiry date of materials loaded into the feeder bay. Based on this data, a software service performs a verification and then sends a signal to the user confirming weather the material is correct or not.

5.1 i-MARK S350-SR

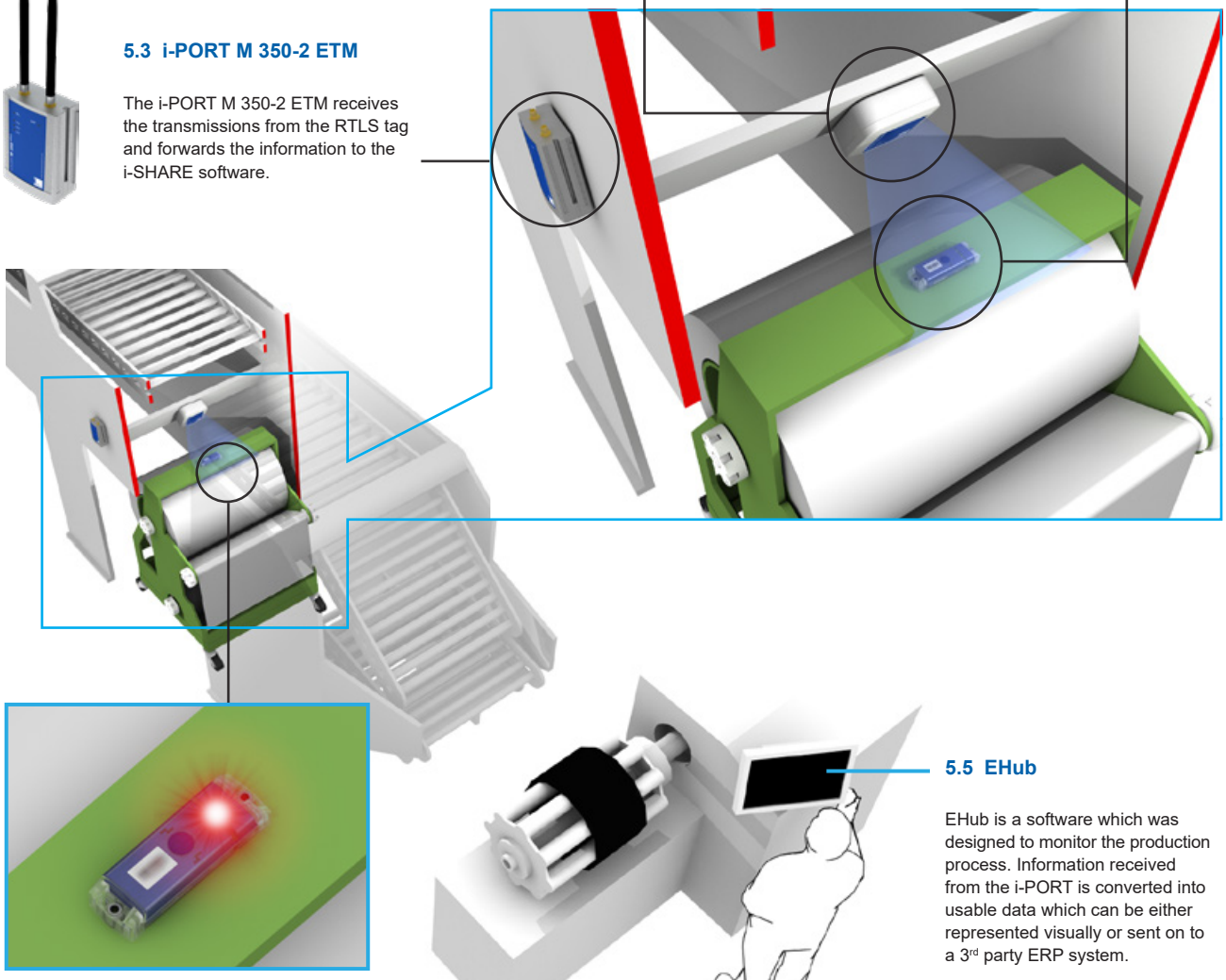
The i-MARK S350-SR is constantly transmitting a marker ID within a small adjustable radius up to 20 cm (depending on environmental factors).

5.2 i-Q350L RTLS

As soon as an i-Q350L RTLS-AS tag detects a marker it will transmit its own and the marker ID.

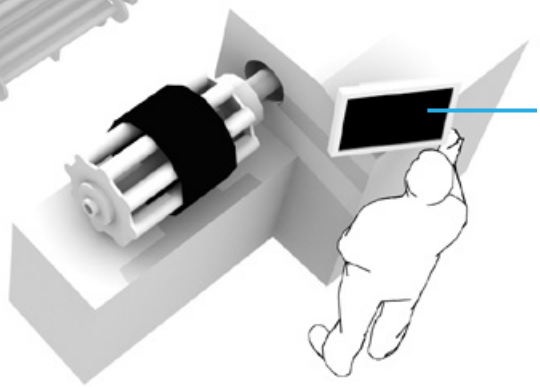
5.3 i-PORT M 350-2 ETM

The i-PORT M 350-2 ETM receives the transmissions from the RTLS tag and forwards the information to the i-SHARE software.



5.4 Red/Green Light

Should material equipped with an RTLS tag be located in the wrong manufacturing plant, the software will trigger a red light on the tag to indicate that the product needs to be relocated. Otherwise a green light appears for validation.



5.5 EHub

EHub is a software which was designed to monitor the production process. Information received from the i-PORT is converted into usable data which can be either represented visually or sent on to a 3rd party ERP system.

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