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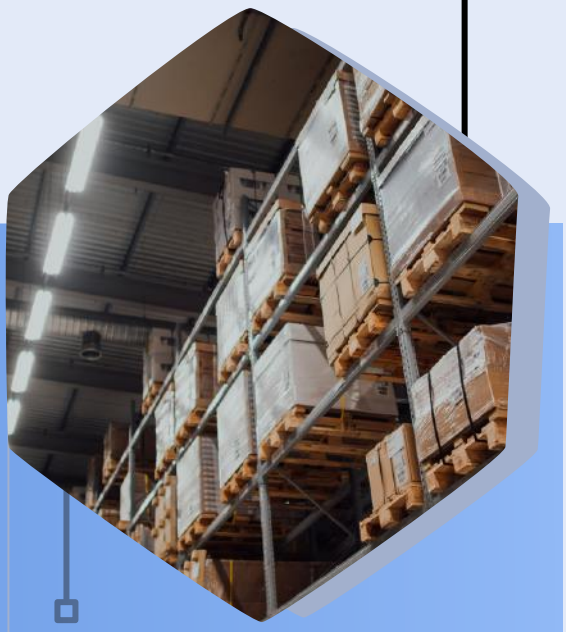


CASE STUDY

Electronic Board Assembly Plant
Recosense
Infrared-based Real Time Locating System (IRID-RTLS)

Overcoming RFID limitations

High density of objects/tags

High locating accuracy

Infrared only

No electromagnetic interference

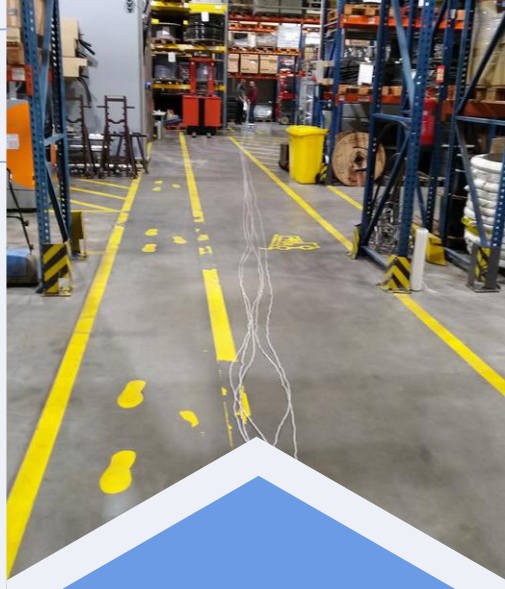
The Company

The company develops, produces, and sells microelectronic products for many different applications.
The product program encompasses components (semiconductors, sensors), Electronic Control Units (e.g. for body electronics, brake control systems, and engine management) and Electronic Manufacturing Services (EMS).
The company also develops and utilizes processes in the areas of substrate and semiconductor technology as well as silicon micro-mechanics.
The main profile of the company is the series production of control units and sensors for automotive ... as well as instrument clusters for premium category cars.

Technology challenge

In the manufacturing process there are several hundreds of electronic boards used simultaneously, all in different magazines and in different process stages. Without the real-time information on the exact location of objects within the plant and the identification of objects a significant amount of time and effort was spent on locating the different boards.
To make the manufacturing process more effective the company implemented a “long range” RFID reader and RFID tags have been mounted on the magazines. The RFID system has been designed to identify all tags located in that area.
The implemented RFID system had several disadvantages.
- the locating precision was not appropriate
- large number of tags could not be followed within a small area (low object density)
- RF technology posed a high risk within the noisesensitive environment

Problem resolution



To overcome the barriers of the RFID technology the company evaluated the Infrared-based Real Time Locating System (IRID RTLS). During the evaluation period, the IRID-RTLS system proved to
be the best choice for applications if
- high density of objects/tags is required
- high locating accuracy is required
- electromagnetic interference is to be avoided
- RFID technology may get disturbed by the manufacturing environment

After the test period, the company implemented the IRID-RTLS system at the largest assembly line. Each circuit board and each magazine has a unique identification number. In the process control system, the circuit board ID numbers are connected to magazine ID numbers with exact location information. After the manufacturing process the circuit board status information is attached. The circuit boards ID numbers, the magazine ID numbers, the status information of the circuit boards and the exact location information are transmitted to the process control system and inventory system, thus giving real-time information about parts, locations, and the status of the products. The electronic components inventory system is always up-to-date.

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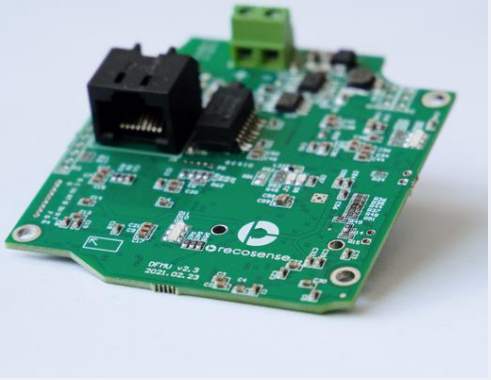

Business impact

After implementing the IRID-RTLS system, process control elevated to the next stage.
- automatic identification of magazines, no need for paper-based identification
- accurate real-time information about product status
- exact location information about everything and any time
- component inventory always up-to-date
- no time is wasted searching for magazines and products

The IRID-RTLS system significantly enhanced the efficiency of manufacturing.