FRAUNHOFER INSTITUTE FOR FACTORY OPERATION AND AUTOMATION IFF, MAGDEBURG

INDOORS AND OUTDOORS: DIGITAL INVENTORY MANAGEMENT FOR LARGE PARTS

Real-time knowledge about the storage location of items such as containers or parts and, thus, about current capacities and storage facilities and space is indispensable for effective and efficient inventory management. For logisticians, this means having to document every operation in a storage facility immediately and having to process the data properly and forward it quickly. Inventory management systems are good for small parts or for items on pallets.

Large parts that take up a lot of space in outdoor storage facilities are a different matter. Many companies still document them by hand or with equipment insufficiently suited for the use case. Delays or even unnecessary errors caused by format changes ensue. Hunting for stored items costs time, ties up resources and complicates inventory-keeping.

The Fraunhofer IFF has developed a system that automatically documents logistics operations in such storage facilities to support inventory management. All stock is inventoried continuously in the background. All of the data can be retrieved as needed anytime and anywhere by computer, tablet or smartphone. Logisticians no longer have to make additional phone calls or send emails. Procuring and sending information entails less work.

The system is based on state-of-the-art positioning, communications and identification technologies and can be custom implemented to meet clients’ needs.

Digital Nameplates

Stored items are tagged with RFID transponders and, thus, clearly identifiable in any process. The RFID transponders can be
Based on the always current inventory data, the system optimizes storage facility planning, for instance, by recommending potential storage locations. Logisticians can use this information to specify appropriate storage locations. This eliminates searching for free storage space.

Once the location data have been transmitted, the system automatically compares the current storage location with the assigned storage location. When a part arrives at the desired storage location, its status is entered as “stored”. This makes it possible to check the correctness of storage operations at any time and to respond faster to incorrect storage.

The Fraunhofer IFF’s digital inventory management system can be used indoors as well as outdoors. Various indoor positioning systems can be connected to the digital inventory management system. Continuous positioning also makes continuous tracking possible in buildings and at points of transfer from outdoors to indoors and vice versa.

Inventory management data is accessed by browser-based software. Evaluation and help functions help logisticians determine status and control inventory operations.

Since inventory is taken semiautomatically, the system developed by the Fraunhofer IFF requires significantly fewer manual actions from company logisticians. In addition, inventory costs and risk of erroneous or incorrect data are reduced. By eliminating unnecessary transfer or temporary storage operations and better utilizing remaining space, the system makes storage logistics more energy and resource efficient. The logging of every process step makes it possible to keep a continuous record of parts, covering every stage, from manufacturing to storage and shipping up through a final destination.