

Creating the factory of the future ...

Automated process for component handling and storage using Super Dry Totech Dry Tower



Nowadays companies are looking more and more for flexible automation and digitalization of their processes. Track and tracing becomes an essential part of every automation process. Industrialization 4.0 is a good example of an initiative that helps companies getting ready for the next industrial revolution, focusing on flexible automation, digitalization, and track and tracing throughout the whole supply chain. In this way manufacturing in

Europe stays competitive and significant amounts of manual labor are eliminated. This article will show you how a logistic process for an electronics factory is completely automated and digitalized. Track and tracing throughout the whole factory is taken care of and productivity has increased enormously.

The component reel flow

Every electronics manufacturer deals with an enormous amount of components which are used in the production process. These components are placed on component reels that can be used by the pick and place machines for PCB assembly. Current technology has advanced and this flow of component reels can now be fully automated, from inbound to the moment they are ready to be placed on the pick and place machines. Even more important, processes can be set up in a way that there is complete tracking and tracing of the components reel at all times, eliminating manual handling and reducing errors.

This automated process is set-up as follows. All incoming reels are handed to a robot that is able to automatically recognize reels using vision technology. With 3D vision it recognizes specific characteristics of the reels and scans the unique barcode. The reel gets a unique serial number and the component information is automatically logged into the ERP system. Placed in a standardized carrier, the reels are ready to be transported to their storage locations. For the most efficient process, multiple trays are stacked by robot cells. Automated Guided Vehicles (AGV) are used for transportation. AGVs are systems that take care of transportation of materials and products in a fully automated and autonomous way.

Jos Brehler, CEO from Totech, SUPER DRY explained “The component reels are being delivered by the AGV to the Dry Tower in which they are stored in a humidity controlled environment. The Dry Tower enables the factory to store the reels in an automated way, controlled by the factory’s ERP system. The Dry Tower is

operated by three robots, two for taking care of the inbound reels and one for handing the them over when they are ready to use for production.”

When a reel is needed for production it will be automatically picked and handed out to the operator, who puts it into a feeder that is used to place the reels in Feeder Carriers. Feeder Carriers are specially designed to increase the tracking and tracing of components in the logistic process. Every slot of the feeder carrier has its own identity and is connected with the Manufacturing Execution System (MES). Using the location information in an intelligent way for smart scheduling and assignment of the slots, the operator handling time and the margin of error with reels and feeders is reduced substantially. Having supporting systems like the feeder carrier also prevents loss of reels which causes searching time and mistakes like placing the wrong reel on the machines.

The final step before PCB assembly is placing the feeders with the reels into the pick and place machines. This process has reduced the amount of manual handling to only 2 steps, the remainder of the process is completely automatic.

The benefits

During the whole process there is real time insight of component locations and production process status. Using real time information to prepare future production batches not only gives a huge productivity increase, it also helps reduce product lead times and increases flexibility. The margin of error is being eliminated by a real time control of the MES and ERP. By continuously investing in intelligent automation and productivity, the setup of this process is a perfect example of how to build the factory of the future.

The company

[Prodrive Technologies](#) is a leading global provider of world-class technical products, systems, and solutions. Creating the factory of the future is an important part of their success. Having a passion for technology drives the company to continuously improve their products and processes and to push the status quo. From the moment Prodrive Technologies started with in-house production they looked at automation in a different way. Working in a dynamic industry and producing over a thousand different products every year requires the company to have flexible automation. With automation, it is important to focus on the processes and not on products. With this philosophy over a 1.000 different products can be handled by the same automated processes. This article showed an example of one of the automated processes that are helping to make the company successful.

Creating their own systems that support or improve the production processes is one of Prodrive Technologies core competences. The Prodrive Technologies AGVs are a good example of an in-house development, taking care of the intelligent transport of components and products. The AGVs are not only used to optimize their internal processes, but are now also available for outside sale. Prodrive Technologies is a fast growing company with a high diversity in products, which makes flexibility in transport essential. After an extensive market research, Prodrive Technologies decided to develop their own AGVs that actually provide the flexible and intelligent transport that is needed. Taking care of the transport, the AGVs increase Prodrive Technologies' productivity and enable 24/7 production possible without human interference. They navigate without supporting infrastructure through the factory, finding their way from pick-up locations to drop-off locations.

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