

USE CASE

Digital Transparency through RTLS and E-Ink Technology



AT A GLANCE

- Real-time visibility of wafer box locations and status
- Direct, digital data flow between RTLS and MES (Manufacturing Execution System)
- Reduce human errors through automated data capture
- Eliminate paper-based documentation processes



shows all relevant process information in real time, such as processing status, destination station, or material data. The E-Ink displays operate without a permanent power supply, retain their content over time, and ensure excellent readability at all times thanks to their glare-free display technology. Status and process changes are automatically retrieved from the production systems and updated on the displays, ensuring clear identification and assignment of the wafer boxes at any time. Continuous localization via a site-wide sensor network allows movements and positions of the boxes to be tracked precisely at all times. At the same time, the captured data is automatically transferred to the production systems, eliminating manual input, avoiding media discontinuities, and making the entire material flow more transparent and efficient.

PROBLEM DEFINITION

In wafer manufacturing, the status and location of wafer boxes are still often tracked manually using paper-based processes in many cleanroom environments. This approach increases documentation effort, limits transparency, and introduces a higher risk of errors in production. A large number of carriers must be regularly recorded, updated, and traced, resulting in a lack of real-time visibility into the current location and processing status of wafer boxes. At the same time, media breaks occur between manual data entry and connected IT and production systems, causing information to be transferred with delays or incompletely. In case of discrepancies or uncertainties, staff are forced to manually search for wafer boxes in the cleanroom, which is time-consuming. Overall, this leads to higher administrative workload, increased error rates, and delays in production and material flow processes.

SOLUTION

To digitize the processes, an RTLS solution (Real-Time Locating System) is implemented that enables seamless and automated tracking of the location and status of wafer boxes. Each box is equipped with an electronic identifier in the form of an E-Ink display, which

TECHNICAL IMPLEMENTATION

The implementation of a digital RTLS solution (Real-Time Locating System) is based on the interaction between the infsoft LocAware platform®, infsoft Locator Node Dongles, and digital displays for the real-time acquisition of location and status information of the wafer boxes. All wafer boxes are equipped with infsoft E Ink Displays that directly show relevant process data. Localization is enabled by a site-wide network of infsoft Locator Node Dongles that continuously capture the positions of the boxes. Localization is enabled by a comprehensive network of infsoft Locator Node Dongles that continuously track the position of the wafer boxes. Via a standardized interface, the infsoft LocAware platform® is seamlessly connected to the existing Manufacturing Execution System (MES), ensuring an automated, bidirectional exchange of data. Status notifications, process information, and localization data are processed and analyzed in real time, visualized on E-Ink displays, and seamlessly integrated into the production systems. Paper-based documentation is completely eliminated, media discontinuities are avoided, and data flows across the entire manufacturing process are made transparent, consistent, and efficiently automated.

Imprint

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