



Traceability - How Tracking Improves Production Efficiency

Manufacturers use tracking and traceability processes to manage inventory and monitor the location of components throughout the manufacturing process. Companies want to ensure the quality of each part that they produce. Traceability systems can identify bottlenecks and ensure that materials are delivered to the right place at the right time to maintain a smooth production flow.

Barcodes for Component Tracking

Many manufacturers use barcodes to track individual parts or assemblies as they pass through the production line. Barcodes can be printed on labels that are affixed to a part or can be printed directly onto the part. The latter ensures that the identification barcode remains on the part even if a label is lost or removed. Barcodes can include the model number and serial number of the part, factory information, date of manufacture, and other information.

The barcode on each part is scanned at each point in the manufacturing, assembly, and testing process so that the MES system knows where every piece is located in the plant. Barcodes can be read as a part is picked for assembly, inspected for quality, or tested for performance. The codes are used by the tracking and traceability functions of the MES system to determine exactly where each part is in the factory, and verifies when it exits the line.

By knowing where each part and assembly is in the manufacturing line, managers can identify bottlenecks where materials are building up behind a process. Managers can evaluate the process where the bottleneck is taking place, and modify the process to increase the flow. This could be done by making the process itself more efficient, or adding a parallel process station to increase the production rate.

Barcodes for Component Tracking

To get the most out of tracking and traceability, these functions have to be seamlessly integrated into MES systems within the plant. Plant managers need to have a top level view of the efficiency of the entire plant. Line managers need to understand the efficiency of their specific lines, and link data with processes that precede and follow after their line. Plant MES systems allow all managers and operators to share data to ensure that the parts they are responsible for are working flawlessly.

When a barcode is added to a part, this new code is added to the plant database. Information about the specific part are included, as well as time and location information.



When the part enters the production line, the barcode is scanned. The database information about that specific part is loaded, and new data is added to the database about when and where the part enters the line.

When the part undergoes any sort of interim process, such as inspection, modification, or insertion into assembly, the database is again updated.

When the final assembly that contains the part exits the manufacturing system, the database is once more updated with this information.

This holistic tracking process allows manufacturers to analyze their manufacturing data in many ways. For example, if a certain part model is found to be defective, the manufacturer can identify every single assembly that contains that part, so they can target their recall efforts rather than initiating a global recall. Manufacturers can compare lines and identify problems with single lines or single machines. By having all of this data available, manufacturers can create a more efficient production process, saving the company money over time.