

Traceability at Semecs

Case Study by pb tec and Cogiscan

Solid Semecs is one of the largest Electronic Manufacturing Services (EMS) providers in Europe, with its headquarters in the Netherlands. Semecs is a leading total solutions company with more than 25 years' experience in the design and manufacture of rigid and flexible PCBA's and modules for some of the most complex applications in today's global market.

System requirements

In 2008 Semecs received requests from some of their major strategic automotive customers to implement a fully-automated material tracking and traceability solution for their facility located in Vrable, Slovakia.

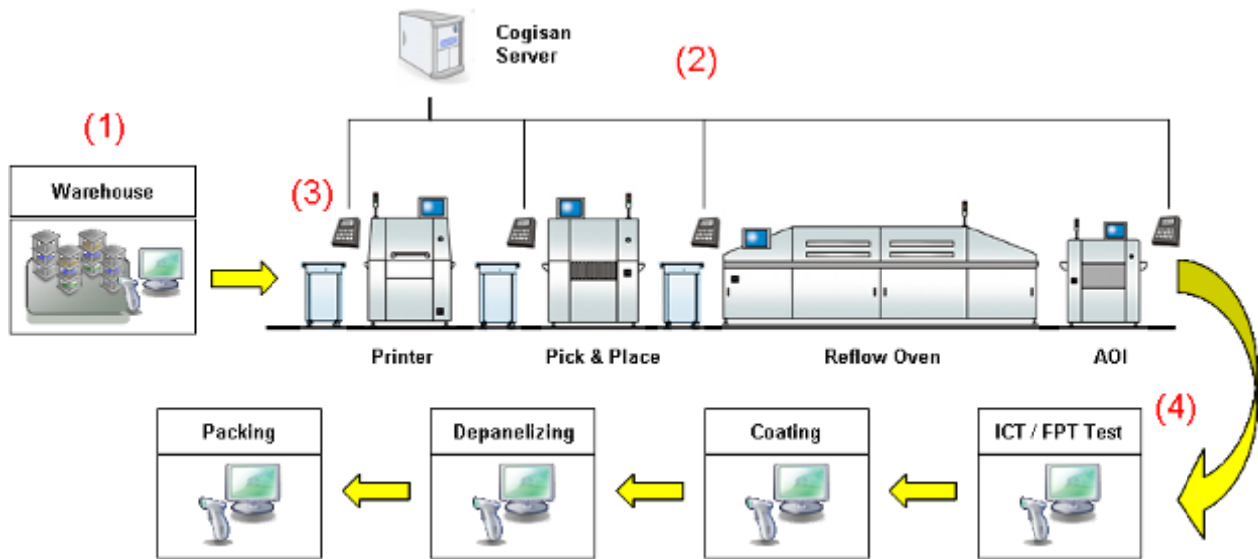
The company's automotive customers were looking for a very high level of product tracking and traceability, from receiving to final packing. Semecs' customers wanted to have comprehensive information about the product history, including: what product had been produced in which line/work station, and with what machine calibrations; which material and component batches had been applied; and which inspection and test results had been registered.

In parallel with the traditional data acquisition process, the system also had to error-proof the assembly process as much as possible. Route control, setup validation of all machines and work stations, and MSD control (control of moisture sensitive devices).

Vendor selection

After a thorough evaluation of several proposals, Semecs selected the solution presented by pb tec and Cogiscan.

The modularity of the Cogiscan platform allowed Semecs to pick and choose only the modules they really needed. As a result they were able to minimize costs in terms of the actual system purchase, as well as the time and effort required to implement it on the production floor. Cogiscan also provided a level of error-proofing not available from other system providers. The fact that Cogiscan platform had already successfully installed similar systems to other leading automotive suppliers provided another level of assurance for the project leaders.



System Overview

The Cogiscan material tracking platform has been deployed on the customer network, with a central server holding the master database, and a number of client PCs equipped with handheld barcode readers running the Cogiscan application.

(1) The first step in the tracking process of Semecs is taking place in the warehouse. Here all incoming materials and tools are supplied with a barcode label for a clear identification.



(2) During the setup Cogiscan's "Line Setup Control" scans the barcodes of all components, solder pastes, stencils etc. to check that they have been setup correctly, and if the machine calibrations fit for the product that will be produced.



(3) A *Product Flow Controller (PFC)* is placed at each machine. The PFC is connected to the machine and to the barcode scanner that is installed. Before the PCB can enter the machine, the PFC ensures that the barcode will be read and checked. If there are errors, the PCB will not be released for further processing.

(4) Beyond the SMT line the panels are processed through several workstations and process steps including electrical In-Circuit Test (ICT), functional test, manual assembly, wave soldering, coating, depanelization and final packing. Each product must go through a precise sequence of operations on specific workstations and machines.

PC's equipped with handheld barcode readers are located at each workstation and the PCB's are scanned before and after each operation. The Cogiscan Route Control application ensures that each panel/individual circuit goes through the proper process steps in the right sequence.

At each workstation the Cogiscan Line Setup Control application also validates that the right components and tooling are being used for each product. All relevant process information is again stored in the Cogiscan historical database. Defective products are automatically routed through a re-route loop.

Cogiscan's "*MSD Control*" (planned at Semecs in the next phase of implementation) enables a permanent control and physical tracking of the *exposure time* (the time in which the component is exposed to the normal atmosphere), and the calculation of the remaining "*Floor Live Time*" (residual time in the atmosphere) of the moisture sensitive components. As soon as the operator has to take a corrective action, this will be shown by warnings and alarms.

Conclusion

SEMECS have now selected and implemented a complete tracking and traceability system for their automotive customers. The system is designed to error-proof the complete assembly process and to eliminate the risk of human errors. Through effective project management, including a detailed scope-of-work and implementation schedule, the system was installed and functional in the expected timeframe and within budget to meet their customer requirements.