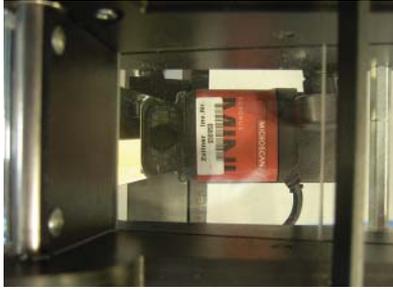


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Consistent traceability of PCBs guaranteed with Data Matrix symbols

At Zollner Elektronik AG, printed circuit boards (PCBs) are tested so that only faultless products reach the customer. In order to cope with the minimal space in the test adapters as well as the requirements of brightly polished surfaces, a small bar code reader was needed. Now the Microscan Quadrus® MINI handles the control procedure.

As a System Service Provider for Electronic Manufacturing Services (EMS), Zollner Elektronik offers production and service of electronic, mechanical and inductive components. The company manufactures its products, such as modular electronic PCBs, in Zandt, Germany, as well as in twelve other factories worldwide. An important aspect of the production process is the automatic final inspection systems for safety-related assemblies such as PCBs for the automotive sector. The quality control and inspection procedure separates out rejected items before they reach dispatch and is documented for each PCB produced.

In order to guarantee consistent traceability of the PCBs, from the material charges used for the components through to correlation of the inspection data, the company identifies the PCBs using Data Matrix symbols. These Data Matrix are decoded in all stages of production and saved in a database after the process and material data are collected. This allows confirmation that upstream inspection processes are successfully completed before the start of testing, as well as restricting the number of repeat tests and permissible remedial actions required.

The quality control procedure is performed in test adapters supplied by ATX Hardware GmbH. In the Twister Adapter system, voltage is applied to the PCBs and defined routines are executed and documented. A reject component gate ensures that imperfect components are safely eliminated from the process chain. For traceability purposes, and for reading the Data Matrix, a 2D reader was needed to meet multiple requirements.

The assembly carries a 15 mil 12 x 12 Data Matrix, which is applied to a label made of PP foil by means of thermo-transfer printing. The brightly polished surface of the foil poses strict requirements on the chosen reader. Furthermore, the reader had to fit the restricted space availability of the test adapter. Zollner

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Elektronik consulted WI-Systeme GmbH, specializing in automatic marking and bar code reader integration, on the selection of the appropriate reader for their requirements. The WI-Systeme technical department proposed the Quadrus MINI imager from Microscan Systems as a solution, as its mounting size of 5.3 x 4.6 x 2.5 cm permits integration into the Twister Adapter system without impeding the handling of the test specimens when inserted. A second Quadrus MINI with a 90° mirror is mounted in a reject component gate, so that the code of rejected assemblies will be verified and provide confirmation that all imperfect components are eliminated from the process chain.

In addition, the brightness of the foil poses strict requirements on the integrated illumination for the imager. The Quadrus MINI is well-suited for this application with stationary objects, since it can be accommodated in the restricted space of the inspection system and it offers considerable freedom in operating clearance. The autofocus capability facilitates quick change-over, and reliable decoding prevents unnecessary downtime due to reading problems. With implementation of the Quadrus MINI readers in the test adapter system the reject component gate, Zollner Elektronik can easily ensure that only successfully inspected components are delivered to their customers.



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