Automation and traceability in PCB manufacturing - Datalogic

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TraceXpert is a software solution that optimises control processes and enhances performance levels in the electronics industry. Customers of this system include leading manufacturers world-wide, who are looking for a bar code reading system to automate the assembly process of electronic components for PCBs, and to quickly and reliably check and trace the different components during the production process.

Such applications require readers able to work in demanding industrial environments with high decoding and transmission capability, as well as great flexibility to let the solution be adapted to the particular needs of the software. To satisfy these requirements, a combination of Datalogic's Dragon™¢ hand held bar code readers and DS2100 Testarossa, fixed-position laser bar code readers are the best solution.

Bar codes are used from the very beginning of the manufacturing process, when components enter the factory, as the goods are recorded and identified through them. With bar codes, the different phases of the operating process are quicker and can be accurately monitored.

Automatic Programme Selection for downloading and changing programmes
When the PCB reaches the first Testarossa bar code reader on the line, the corresponding programmes are downloaded to each machine. Real-time Feeder Check to automatically check that the right components have been loaded on the machine.

Each feeder is labelled with a bar code to identify it which contains information such as tape width, reel diameter, machine type, etc. Each time a new reel is put on a feeder, the feeder bar code is automatically read by the Testarossa, readers at the kitting station and the operator simply has to read the reel bar code with the Dragon™¢ to ensure it is a suitable feeder for this component.

The feeders are read during every pick-up on the CP machines. The computer then consults the database to see which reel is on this feeder. The feeder slot position is identified at the same time and a check is carried out to ensure that it is the right component for the feeder slot number for this programme. If it is not the right component the machine stops immediately. This also means that it is unnecessary to check the components during a feeder set-up, reducing changeover time considerably, and making it possible to set up 70 feeders in about one minute.

Stock Control System to trace the amount of components contained on each component reel and its location.

The serial number on the bar code enables the system to trace the amount of components contained on each component reel, as well as its location in the factory. Each time a PCB is finished, the database updates the location of feeder and reel. Pick-up errors and rejected components are counted

automatically.

Traceability

If something goes wrong, its origin can be traced and the boards located that should be checked or modified. The system provides full traceability for PCBs, components and operators. Traceability works with the help of the serial number on each reel. Related data, such as supplier, lot number and number of components must be available. During production, all relevant data such as production time on each machine, the operators involved, and the components included is updated on the database for each PCB.

Feeder Maintenance

Each feeder is labelled with a bar code serial number and the key information for each feeder is stored in the database. This way not only the location of each feeder is updated continuously, but the number of placed and rejected components is also continuously updated. When a feeder runs empty on a machine, an automatic check is carried out to determine whether it is ready for maintenance.

With the use of bar codes and Datalogic's readers, a very efficient data collection and checking systems can be carried out, as each single component of the boards produced is identified and checked during the production process. This leads to a quality enhancement, an optimisation of the component stocks and a decrease in cycle time, errors and obviously costs.

DS2100 Testarossa

An ultra-compact laser bar code reader which offers excellent reading performance (800 scan/sec), extremely high reliability and ease of installation in any operating condition. Reliable real time decoding is assured by dual processor architecture. It is totally immune to ambient light thanks to high-frequency laser light modulation.

DragonTM

An industrial hand-held laser bar code reader characterised by ruggedness, reliability and durability. All models are equipped with bi-directional license-free radio frequency communication to the host by means of a base station. They can transmit the code read and receive acknowledgement of correct reading in real time.

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