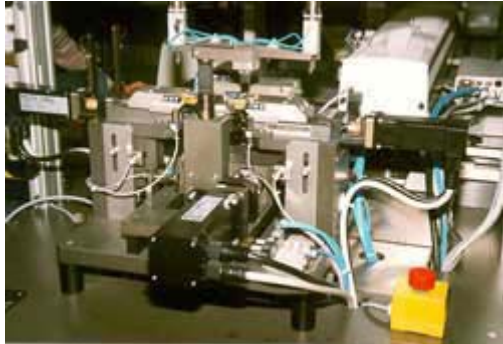




Highly precise axis control for IC conditioning



IC conditioningmaschine

Nowadays, the electronics industry has to manufacture its products in the face of ever higher upward pressure on costs despite, at the same time, having to produce to meet more stringent quality demands. Consequently, it is essential to minimise reject rates in production processes, such as PC board component insertion, as far as possible. One of the most frequent sources of flaws when inserting components on PC boards with integrated circuits (ICs) relates to geometrical inaccuracies of the IC pins. These inaccuracies necessarily lead to costly insertion errors if the component insertion process runs fully automatically. For this reason, PC board manufacturers today now endeavour to diagnose and effectively correct defects in the IC pin geometry prior to

component insertion. Messrs. ROOD Technology, with its ProLiner 900 product, offer such a fully automated system for combined inspection and correction of the IC pins. A high-speed Pick & Place handler in the inspection module of the ProLiner 900 moves the IC to be inspected in front of a video camera whose software checks the spatial geometry of the pins on the basis of several shadow projections. If this scan result exceeds defined tolerances of the setpoint, the IC is automatically transferred to the conditioning module. This conditioning module consists of a central console onto which the IC being processed is placed and two micro-combs whose teeth are moved between the IC pins (see sketch below). The console can be rotated through 90° in order to allow processing of the IC from all four sides and can be moved in the Y direction. The combs can be controlled in the X and Z direction mutually independently. All axis drives must be controlled by an NC system in the conditioning process in which the pins are bent flat and rectangularly parallel and must be integrated in the overall sequence by a PLC. After the conditioning process, the IC is re-inspected in order to check compliance with the setpoint and, if necessary, it is fed back to the conditioning module again for correction.

The PLC module integrated in the Eckelmann CNC20 allows the NC part to be embedded optimally in the PC-aided logical sequence control of the overall system comprising handling, inspection and conditioning module.

Various interfaces, ranging from the low-cost, simple RS232 interface to communication via a high-speed network, are used for communication between CNC20 and the system PC. The CNC20 graphical user interface running under Windows NT was adapted by Eckelmann engineers to the specific needs of ROOD Technology. This support by provision of personnel capacity as early as the run-up phase ensured that ROOD Technology was able to complete the prototype plant by the appointed deadline. In particular, deployment of Eckelmann staff on customer premises and the work performed jointly on customer premises made a crucial contribution to fast project handling.

Besides the technological arguments, other factors were crucial for ROOD Technology when opting to work together with Eckelmann: Firstly, the many years of experience in solving demanding control problems and the reliability of Eckelmann controllers and, secondly, the fact that Eckelmann, as an all-in supplier of CNC and drive engineering, affords advantages over pure CNC product suppliers. In the case of highly specialised and development-intensive applications in particular, the machine constructor is reliant on a reliable, committed, innovative and flexible control partner who, at the same time, can also guarantee solutions geared to the future and long-term availability.