Improving Semiconductor Back-End Final Test Throughput via RFID-Based Lot Control System

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Abstract

Due to the fast changing environment and increased competition in the semiconductor industry, time saving is very critical. Engineers are striving to reduce the unnecessary waste from all possibilities. However, the high variations – involving multiple types of work centers, large varieties of products and process flows have made the tracking and handling of the lots difficult. Some semiconductor front-end (wafer fabrication/probe) facilities have started employing RFID-based fully automated system. However, at the semiconductor back-end (packaging/final test), RFID was hardly used due to the higher complexity and variation of the tasks. The typical system used in back-end facilities includes paper lot traveler, manual and semi-manual (barcode) lot's ID entry, leaving much room for errors. This contradict with the idea of eco-green manufacturing and paperless environment. This project proposes an employment of RFID technology in tracking and managing the lots movement in semiconductor final test. This RFID system will work interactively with the MES (host data mining system) to identify and validate each asset or parameters of the current process flow. The RFID-tag will increase the accuracy of retrieving the correct data by minimizing the possibility of such handling or system error. The replacement of traditional paper lot traveler with RFID-tag provide the needed information and makes the entire clean room towards a paperless environment and nevertheless eliminates the potential dirt sources induced by the paper handling.

Keywords
Radio Frequency Identification (RFID), semiconductor