

Early Failure Detection in Low Voltage Power Supply Production

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This study aimed to develop a machine-learning approach for early failure detection in custom low-voltage power supply (LVPS) electronic boards within a quality control process. Neural Networks (NNs) were applied as an anomaly detection model to classify the data between two distinct Quality Control (QC) tests, focusing on the performance metrics of the boards. The QC tests occur before and after the boards are subjected to a burn-in test and are referred to as initial and final testing, respectively. The experimental setup includes configuring both test stations, along with a burn-in station, to capture relevant measurement data. The proposed method effectively used measured parameter features to predict potential failures, by distinguishing the patterns in the test bench datasets, improving the reliability of the LVPS boards. The accuracy of the NNs demonstrates the impact of our approach on the quality control procedure, indicating its potential viability for use within quality control procedures.

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