

A Multi-Measurement Points Evaluation and Improvement Decision-Making Model for Solder Paste Printing in SMT

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Abstract

Effective data analysis and application can help enterprises to make timely, intelligent, and efficient decisions. Driven by a highly critical mass, Taiwan's electronics industry already possesses a complete industrial ecological chain and has established a vital position in the global electronics industry. It is an important issue to construct a model for improving the evaluation of product process quality and intelligent decision-making via production data in order to enhance the quality level of product manufacturing processes. This was used to improve the process quality of the printing process of SMT solder paste. Because the printing process of SMT solder paste is a flat surface, there are usually multiple measurement points to test its quality. This paper first proposed an evaluation index for the SMT process based on the characteristics of the multiple measurement points. The confidence interval of the index was then derived as a statistical test tool to determine whether the process had improved. In addition, when the process needed to be improved, variance analysis was used to determine the direction of process improvement. Applying the model proposed in this paper will help the industry to improve the product quality of surface mount technology, thereby reducing various social losses. Enable enterprises to take into account the sustainable development of the economy and the environment.

Keywords

Internet of Things, production data, process yield index, product failure evaluation index, confidence interval.

Biographies

Kuen-Suan Chen is currently a Chair Professor of the Department of Industrial Engineering and Management at the National Chin-Yi University of Technology, Taiwan, Republic of China. He obtained his Ph.D. degree in Industrial Engineering and Management from the National Chiao Tung University in 1995, and his M.S. degree in Applied

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