

Utilizing Discrete Event Simulation to Improve High Volume Manufacturing Failure Analysis Laboratory

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Dr. Tashtoush interested in multidisciplinary engineering, especially in the field of simulation and systems design, production quality and management, lean manufacturing, robotics and automation, 3D printing processes, engineering statistical analysis, project management, optimization, instruments and electrical devices reliability, healthcare systems, human factors, systems designs and optimization, and robotics.

Abstract: The success of a production system in the electrical manufacturing industry can be reflected through minimal losses and higher productivity, which will satisfy the customer requirement with the maximum profits. Laboratories are an essential section of any manufacturing plant, they are playing a great role in both the design and development process and the production verification and qualification process. Failure Analysis laboratory is a key part for the Electronics Manufacturing and Service (EMS) manufacturing system. It is an end-of-line section, and it focuses on the final product quality, including confirming and containing any production failures and preventing them from being delivered to the customers. To evaluate any process performance, a discrete event simulation model will be the easiest method to replicate the system, and it will help to assess the impact of the any proposed improvements without distraction or interruption of the process and the minimum cost. In this research, simulation will be a validation and verification tool to provide a statistical insight to the proposed implementations of the lean principles.

Keywords: Discrete Event Simulation, ARENA, Statistical Data Analysis, Failure Analysis, Lean Manufacturing, Six-Sigma, Laboratory, High-volume Manufacturing Facility