

Development of a Process Monitoring Tool for the Manufacturing Process of an Electric Vehicle Battery Enclosure

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Abstract

High volume manufacturing requires process control that is responsive to manufacturing related issues. It is critical that tools and resources are implemented that gauge manufacturing performance and identify root cause issues.

This project focuses on the design and manufacturing process of an electric vehicle aluminum battery enclosure and the implementation of a production measurement system. The current problem is a lack of process control communication and out of control alarms when uncontrolled events occur for manufacturing associates at the battery enclosure manufacturing work station.

This report examines the core principles of Quality Engineering, the economic advantages of implementing a vision measurement system into a high volume production environment, identifies and quantifies sources of variation within a battery enclosure, determines the best method of a measurement system implementation and validation and provides process alarms and a control plan that are a solution to the communication feedback issue.

The key results from the multiple analyses and studies determined and quantified the largest sources of variation within the battery enclosure, the correlation between a Coordinate Measurement Machine and Vision Scan Measurement System, and a Control Plan for the established dimensional parameters.