

Practical Implementation of DfLSS in Digital Product Development

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Abstract:

Successful organizations realize that probabilistic design techniques have enormous positive impact on time-to-quality. Time to market often becomes irrelevant when the total costs of poor quality factor into the analysis. Liability costs for some exceed the R&D budget. Consider rework costs on recalls, warranty payments, and lost customers from a negative brand image. Too often, companies simply make mistakes, or over react and build in superfluous safety factors.

Design must directly consider the noise factors of variation, recognizing that not all bad outcomes happen at the same time. Variation in manufacturing must be measured, and factored in to design tradeoffs. Applying direct statistical techniques derived from Six Sigma, companies may compare the mean and the standard deviation for any outcome with the target. Then an assessment of the quality level must be related to the costs incurred. With the approach, design can rationally achieve the targeted level of cost.

This presentation summarizes current modeling processes and tradeoffs to automatically create optimum robust designs. Examples of probabilistic design and optimization from the automotive, HEV batteries and fuel cell industries will be presented. Highlights include a reusable workflow process, as well as the challenges and recommendations for successful DfLSS implementation.