



Statistical Engineering: An Algorithm for Reducing Variation in Manufacturing Processes

By Stefan H. Steiner, R. Jock Mackay



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Reducing the variation in process outputs is a key part of process improvement. For mass produced components and assemblies, reducing variation can simultaneously reduce overall cost, improve function and increase customer satisfaction with the product.

The authors have structured this book around an algorithm for reducing process variation that they call "Statistical Engineering." The algorithm is designed to solve chronic problems on existing high to medium volume manufacturing and assembly processes. The fundamental basis for the algorithm is the belief that we will discover cost effective changes to the process that will reduce variation if we increase our knowledge of how and why a process behaves as it does. A key way to increase process knowledge is to learn empirically, that is, to learn by observation and experimentation.

The authors discuss in detail a framework for planning and analyzing empirical investigations, known by its acronym QPDAC (Question, Plan, Data, Analysis, Conclusion). They classify all effective ways to reduce variation into seven approaches. A unique aspect of the algorithm forces early consideration of the feasibility of each of the approaches.

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