

# **Quality By Experimental Design, Vol 4 Quality and Reliability Series, Vol. 22**

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by Thomas B. Barker, Marcel, Dekker, Inc., New York and Basel, 1985, ISBN 0 8247 7451 5

With the current emphasis in improving product quality in the workplace, the need to study complex processes, such as extrusion, in which many variables control and interact together to determine the final quality of products, a real need exists for scientists and engineers to use statistical methods of experimentation. This book is an excellent introduction to this topic, and a useful self-teaching text. Divided into 5 sections:

1. The Philosophy of Experimentation
2. Statistical Experimental Designs
3. Sorting the Signal from the Noise
4. The Derivation of Empirical Equations from Statistically Designed Experiments
5. Utilization of Empirical Equations it covers the full range of this technique for process studies.

At the end of each chapter, problems are also given for further work by the reader.

The text starts with 2 chapters on why to design experiments and how to incorporate existing process knowledge into more detailed process studies which are required. Next are 9 chapters describing a full range of experimental designs. Each chapter discusses, in detail, the mechanics of each design. and in which situation it is appropriate to use the design. In Section 3, the focus is on how to setup and test a hypothesis using the results of designed experiments which were performed. It does this by offering examples which are worked through in detail. Sections 4 and 5 carry this further in using examples to extract the maximum amount of information from an experiment.

The book has a strong manufacturing emphasis with many examples from the real world. It teaches how to set up and carry out a series of experiments to create a unified understanding of complex manufacturing processes. In addition, software is available which makes use of the experimental designs and allows ready work up of the results.

- Eldridge M. Mount III

