

Manufacturing Process Design and Optimization , Robert F. Rhyder, marcel dekker, inc. Cimarron Road, Monticello, NY 12701, 1997, 368 pp, \$125.

This book pertains to present a set of manufacturing process optimization and improvement tools in a straightforward and easy-to-understand manner. In the first part the author presented the process design and optimization techniques. In the second part, basic process improvement techniques which included Pareto, Ishikawa diagram and SPC techniques, were introduced. In the third part Design of Experiment techniques and examples were reviewed, especially two levels factorial designs in the context of Taguchi orthogonal array.

The author repeatedly emphasized the simplicity in the approaches. The main rationale for a simplicity approach is stated in the preface : “people support what they understand and merely tolerate what they don’t”, but the simplicity in presentations do not necessary have to be simple minds or even superficial. Unfortunately, most of the subjects explored in the book is more of simple minds and superficial than simplicity.

As an example, three chapters in the first part about the manufacturing process design, we may summarized it in a few words: to reduce number of combinations of the process steps in the manufacturing processes it will help you to reduce the process variations and helps the problem diagnostics. In the real manufacturing process design the above principal is easier said than done. The real trick in the process design is that you have to recognize and consider all the factors, which includes the operation of the process itself, available processing equipment, processing capacity and reliability of the equipment, processing material used, available operation personnel and their quality. And all of these factors will affect the quality and productivity of the process. A computation of the process step combinations which the author emphasizing is the least difficult part of the process design.

Two third of pages was spent in the Design of Experiment which is limited to two level factorial designs. The simplified interpretation of the Signal to Noise ratio in page 272 is highly misleading, several conceptual interpretation can be outright mistakes, for example, the subtle misleading statement of interpreting the height of the distribution as the signal.

The title and intent of the book is attractive. However, the coverage is more of a simplified book report on the few references which are repeatedly cited in almost all chapters. I will not recommend this book to any person who need a functional knowledge of how to design and improve the manufacturing process. Quote Deming’s word : “You have to learn from the master”

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