

Axiomatic Quality ; by Basem Said El-Haik; John Wiley & Sons, Inc. , 111 River Street, Hoboken, NJ 07030, 2005, ISBN: 047168273X, 285 pp. Listed: \$89.95

Axiomatic Quality is a synthesis of Axiomatic Design, Robust Design, and Design for Six Sigma (DFSS), which provides a road map to allow the designer, managers, or anyone interesting in the latest advanced methods to achieve the ultimate quality and reliability of a designed product or process.

Axiomatic Design is a design theory promoted by Suh (1984) who proposed two design axioms : 1) functional independence 2). minimized information content; as the base to use for implementing and evaluating a better design.

This book describes how to use the design axioms and robust design process to achieve DFSS. As such, it also provides the derivation and examples that achieving the minimized information content measure is the same as the traditional quality measure of minimizing the variance of a parameter.

The implementation of DFSS is based on a series of mappings which starts from the customer domain mapped to the functional domain as the functional requirements (FR) of the product/process, further mapping to the physical domain of design parameters (DP), and the final mapping to the process domain which defined by the processing Variables (PV).

In each of the mapping, quantitatively identify the parameters and its transfer function is critical to allow the tenet of applying the design axioms and robust design concepts and techniques. In another word, design axioms and the robust designs are served as the means and the ends of achieving DFSS.

A lot of concepts are expressed in mathematical formulae and the reasoning through mathematical derivations. Some severe typo and lack of formula beautification hinder the understanding of more serious readers. Cases in example are to define the measurement for the first and second axiom of a design as expressed in (3.4) and (3.5). For the (3.4), the indexing is wrong which prevents any readers to really understand the formula. In (3.5) the product sign Π was misplaced.

I am strongly recommending this book to any person who is interested in the most avant-garde concepts and techniques to improve their design of the products and process to the six sigma level.

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Suh, N. P. (1984), Development of the science base for the manufacturing field through the axiomatic approach, Robotics and Computer Integrated Manufacturing Journal, Vol.1, No. 3.