

3- Day Robust Design for Reliability Green Belt Training

Robust Design – An Essential Approach for Improving Product Design Reliability and Quality at the Lowest Costs

WHERE: Sugar Land Campus, University of Houston
WHEN: September 7, 2021

Who should attend?

- Individuals responsible for increasing product reliability, process quality or reducing costs in a design, development or manufacturing
- Specialist having input to product or process design, improve validation test effectiveness & efficiency

Why Use Robust Design for Reliability (RDfR)?

Reliability is one of the most important characteristics of an engineering system. Reliability can be measured as robustness over time as a leading key performance indicator. Robustness development in Design for Reliability process provides benefits in improving engineering efficiency and reduction of early-on physical testing and traditional test-fix-test cycles. Going beyond conventional reliability growth methods or similar, RDfR provides an approach to improve reliability in higher engineering confidence in small sample size by developing robustness in early product development and manufacturing design.

Benefits to Your Business

- Ensuring that products and processes are designed to be able to deliver consistent functionality over the widest range of operating conditions.
- Error-free implementation of the past collective knowledge and experience
- Generation of new design information, often for improving product Quality / reliability, performance, and cost.

Course Overview

Robust Design method, also called the Taguchi Method, pioneered by Dr. Genichi Taguchi, greatly improves engineering productivity. By consciously considering the noise factors (environmental variation during the product's usage, manufacturing variation, and component deterioration) and the cost of failure in the field the Robust Design method helps ensure customer satisfaction. RDfR focuses on improving the fundamental function of the product or process, thus facilitating flexible designs and reliability engineering. Indeed, it is the most powerful method available to reduce product cost, improve reliability, and simultaneously reduce development interval.

This course is intended for engineers, scientists, and managers involved in all phases of product realization; design, development, manufacturing/process engineering, materials, quality, and reliability. It provides both an approach and a specific set of tools for successfully implementing RDfR. The course approach will be highly interactive. The instructors will strive to initiate a dialog with and among the participants on the best application of the techniques. The concepts introduced will be reinforced using demonstrations and hands-on exercises.

Course Instructor: Dr. Matthew Hu. Dr. Hu has been a recognized exceptional industrial expert and leader in robust engineering, quality, reliability, Design for Six Sigma (DFSS) Robust Design for Reliability. He holds a Ph.D. degree in Industrial Engineering and has two master degrees in Industrial Technologies and Statistics. Dr. Hu is a Certified Robust Design Expert, a Certified LSS Master Black Belt, a Certified Quality Engineer and also a Certified Reliability Engineer. His clients include Automotive (GM, Chrysler, Delphi, BorgWarner), Oil & Gas (Schlumberger, Baker Hughes), Home Appliance/HVAC (Haier, Goodman), Electronics (Molex, Foxconn), Wind Energy, Polymeric Membrane, United Technologies Corporation and others.

Why University of Houston

University of Houston offers a complete range of improving competitive advantages consulting services including Lean Six Sigma, Design for Six Sigma, Robust Design for Reliability to help companies to stay on innovative and competitive edge of their businesses with demonstrated successes that are affordable for small and mid-size companies. Obtain University of Houston Verified Certificates.

Deliverables

Our customized program is designed to fit the unique needs of each client. Upon training completion, your quality improvement leaders will be well-versed in the basic quality concepts and be able to immediately provide their departments with the skills necessary to confidently address routine production processes and communicate the resolution with all parties involved.

The selected quality improvement experts will be able to immediately begin facilitating design improvement and problem-solving projects

Course Goal

Upon completion of this course, the participants will be able to use RDfR approach to plan and execute reliability improvement project to optimize product or process design in the presence of uncontrollable user conditions.

Course Benefits

Dr Taguchi's approach to RDfR provides a structured methodology which allows the development of robust & reliable products and processes. In this course, participants will learn to apply Taguchi's robustness concepts and techniques such as "shrink and shift" optimization and noise management strategy. Participants will use the Fundamental Principle to improve the reliability of a product by minimizing the effect of the causes of variation without eliminating the causes.

Course Content

- Introduction & history
- Robust Design and Design for Reliability Overview
- Robustness Thinking in Design for Reliability
- Reliability Execution Scorecard
- Boundary Diagram and Interface Analysis
- Robustness Assessment
- Reliability Block Diagram and P-Diagram
- Robust Design and Failure Modes Effects Analysis (FMEA)
- Robustness and Reliability, Failure Modes and Noise Mapping
- Noise Management Strategy Development
- Verification Strategy and Accelerated Testing Methods
- Robustness /Reliability Demonstration and Reliability Prediction
- Critical-to-Reliability (CTRs) Health Management
- Application Workshop using Minitab
- Project coaching / group project presentations

Name	Job Title	Certificate/Professional Training Program				Associated Academic Program
		Program Name	Duration	Cost	Program Role	
Dr. Matthew Hu	Program Director	1. Design for Six Sigma Leadership	1 Day			Engineering Technology Innovation & Management, M.S.
		2. Robust Design	3 Days	\$2250		
		3. Robust Design for Reliability Professional Training Program	3 Days	\$2500	Director	