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Nota di contenuto	ROBUST DESIGN METHODOLOGY FOR RELIABILITY; Contents; Preface; Acknowledgements; About the Editors; Contributors; PART One METHODOLOGY; 1 Introduction; 1.1 Background; 1.1.1 Reliability and Variation; 1.1.2 Sources of Variation; 1.1.3 Sources of Uncertainties; 1.2 Failure Mode Avoidance; 1.2.1 Insensitivity to Variation - Robustness; 1.2.2 Creative Robust Design; 1.3 Robust Design; 1.3.1 Product Modelling; 1.4 Comments and Suggestions for Further Reading; References; 2 Evolution of Reliability Thinking - Countermeasures for Some Technical Issues; 2.1 Introduction; 2.2 Method 2.3 An Overview of the Initial Development of Reliability Engineering2.4 Examples of Technical Issues and Reliability Countermeasures; 2.4.1 Severe Consequences; 2.4.2 Defective Components; 2.4.3 Undesired Production Variation; 2.4.4 Sensitivity to Noise Factors; 2.5 Discussion and Future Research; 2.6 Summary and Conclusions; References; 3 Principles of Robust Design Methodology; 3.1 Introduction; 3.2 Method; 3.3 Results and Analysis; 3.3.1 Terminology; 3.3.2 View of Variation;

3.3.3 Procedures; 3.3.4 Objective; 3.3.5 Methods and Methodologies; 3.3.6 Experimental Approach; 3.4 Discussion  
3.5 Conclusions  
3.5.1 Synthesis; 3.5.2 A Definition of Robust Design Methodology; References; PART Two METHODS; 4 Including Noise Factors in Design Failure Mode and Effect Analysis (D-FMEA) - A Case Study at Volvo Car Corporation; 4.1 Introduction; 4.2 Background; 4.3 Method; 4.4 Result; 4.4.1 Causes Matching the Noise Factor Categories; 4.4.2 Causes not Assignable to any of the Noise Factor Categories; 4.4.3 Comments on the Result; 4.5 Discussion and Further Research; 4.6 Summary; References; 5 Robust Product Development Using Variation Mode and Effect Analysis; 5.1 Introduction  
5.2 Overview of the VMEA Method  
5.2.1 A General Procedure for VMEA; 5.3 The Basic VMEA; 5.4 The Enhanced VMEA; 5.4.1 Assessment of Sensitivities; 5.4.2 Assessment of Variation Size; 5.5 The Probabilistic VMEA; 5.6 An Illustrative Example; 5.6.1 Application of the Basic VMEA; 5.6.2 Application of the Enhanced VMEA; 5.6.3 Application of the Probabilistic VMEA; 5.7 Discussion and Concluding Remarks; Appendix: Formal Justification of the VMEA Method; References; 6 Variation Mode and Effect Analysis: An Application to Fatigue Life Prediction; 6.1 Introduction; 6.2 Scatter and Uncertainty  
6.3 A Simple Approach to Probabilistic VMEA  
6.3.1 Model for Uncertainty in Life Predictions; 6.4 Estimation of Prediction Uncertainty; 6.4.1 Estimation of Scatter; 6.4.2 Statistical Uncertainty; 6.4.3 Model Uncertainty; 6.4.4 Scatter and Uncertainty in Loads; 6.4.5 Total Prediction Uncertainty; 6.5 Reliability Assessment; 6.6 Updating the Reliability Calculation; 6.6.1 Uncertainty after Updating; 6.7 Conclusions and Discussion; References; 7 Predictive Safety Index for Variable Amplitude Fatigue Life; 7.1 Introduction; 7.2 The Load-Strength Reliability Method  
7.3 The Equivalent Load and Strength Variables

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## Sommario/riassunto

Based on deep theoretical as well as practical experience in Reliability and Quality Sciences, Robust Design Methodology for Reliability constructively addresses practical reliability problems. It offers a comprehensive design theory for reliability, utilizing robust design methodology and six sigma frameworks. In particular, the relation between un-reliability and variation and uncertainty is explored and reliability improvement measures in early product development stages are suggested. Many companies today utilise design for Six Sigma (DfSS) for strategic improvement of the desi

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