
CONTENTS

Contributors	ix
Foreword	xi
Preface	xiii

Section 1 Organization and Management of Maintenance

Chapter 1.1 The Theory and Practice of Maintenance	<i>R. Keith Mobley</i>	1.3
Chapter 1.2 Organizational Health and Safety	<i>R. Keith Mobley</i>	1.11
Chapter 1.3 Maintenance Versus Reliability Engineering	<i>R. Keith Mobley</i>	1.17

Section 2 Maintenance Best Practices

Chapter 2.1 Sustaining Maintenance	<i>R. Keith Mobley</i>	2.3
Chapter 2.2 Activity-Based Budgets	<i>R. Keith Mobley</i>	2.13
Chapter 2.3 Planning and Scheduling	<i>Thomas A. Gober</i>	2.23
Chapter 2.4 MRO Management	<i>Andrew Gager</i>	2.29

Section 3 Predictive Maintenance Best Practices

Chapter 3.1 Predictive Maintenance	<i>R. Keith Mobley</i>	3.3
Chapter 3.2 Operating Dynamics Analysis	<i>R. Keith Mobley</i>	3.15
Chapter 3.3 Vibration Monitoring	<i>R. Keith Mobley</i>	3.23

Chapter 3.4 An Introduction to Thermography	<i>R. Keith Mobley</i>	3.41
--	------------------------	-------------

Chapter 3.5 Tribology	<i>R. Keith Mobley</i>	3.61
------------------------------	------------------------	-------------

Chapter 3.6 Ultrasonics	<i>R. Keith Mobley</i>	3.73
--------------------------------	------------------------	-------------

Section 4 Maintenance Engineer's Toolbox

Chapter 4.1 Reliability Tools	<i>David J. Mierau</i>	4.3
--------------------------------------	------------------------	------------

Chapter 4.2 Financial Tools	<i>R. Keith Mobley</i>	4.27
------------------------------------	------------------------	-------------

Chapter 4.3 Statistical Analysis Tools	<i>David J. Mierau</i>	4.37
---	------------------------	-------------

Chapter 4.4 Problem Solving	<i>David J. Mierau</i>	4.53
------------------------------------	------------------------	-------------

Section 5 Emerging Technologies

Chapter 5.1 Artificial Intelligence and Machine Learning	<i>Roland Mobley and Mark Stubbs</i>	5.3
---	--------------------------------------	------------

Chapter 5.2 Data Mining	<i>Mark Stubbs and Roland Mobley</i>	5.17
--------------------------------	--------------------------------------	-------------

Chapter 5.3 Predictive Analytics	<i>Mark Stubbs and Roland Mobley</i>	5.23
---	--------------------------------------	-------------

Chapter 5.4 EDGE Computing and Smart Sensors	<i>Roland Mobley and Mark Stubbs</i>	5.35
---	--------------------------------------	-------------

Chapter 5.5 Cloud, Fog, and Edge Computing	<i>Roland Mobley</i>	5.49
---	----------------------	-------------

Chapter 5.6 Digital Twin	<i>Roland Mobley</i>	5.59
---------------------------------	----------------------	-------------

Section 6 Maintenance of Mechanical Equipment

Chapter 6.1 Plain Bearings	<i>William A. Yahraus and George R. Kingsbury</i>	6.3
-----------------------------------	---	------------

Chapter 6.2 Rolling-Element Bearings <i>Daniel R. Snyder</i>	6.21
Chapter 6.3 Belt Drives <i>Dan Parsons and Tim Taylor</i>	6.51
Chapter 6.4 Chains for Power Transmission <i>Frank B. Kempf</i>	6.83
Chapter 6.5 Mechanical Variable-Speed Drives <i>Edward F. Krome</i>	6.93
Chapter 6.6 Compressors <i>R. Keith Mobley</i>	6.111
Chapter 6.7 Flexible Couplings <i>Donald B. Cutler</i>	6.141
Chapter 6.8 Cranes: Overhead and Gantry <i>William S. Chapin</i>	6.159
Chapter 6.9 Fan and Blowers <i>R. Keith Mobley</i>	6.171
Chapter 6.10 Gear Drives and Speed Reducers <i>Robert G. Smith</i>	6.191
Chapter 6.11 Pumps: Centrifugal and Positive Displacement <i>R. Keith Mobley</i>	6.219
Chapter 6.12 The Organization and Management of Lubrication <i>F. Alverson, T. C. Mead, W. H. Stein, and A. C. Witte</i>	6.235

Section 7 Maintenance of Electrical Equipment

Chapter 7.1 Electric Motors <i>James S. Bowers and Frank W. Ceney</i>	7.3
Chapter 7.2 Motor Controls <i>Kenneth L. Paape</i>	7.41
Chapter 7.3 Variable Frequency Drives <i>Terry Hall</i>	7.75
Chapter 7.4 Industrial Batteries <i>Richard L. Kreutzfeldt</i>	7.85