

Contents

		Page
S. Savory	Failure Diagnostics with the Expert-System Shell TWAICE®	1
D. Stegemann, W. Reimche and U. Suedmersen	Failure Detection and Diagnostics in Turbomachines	11
M. F. White and C. Steinebach	Expert System Based Diagnosis of Turbomachinery	43
S. F. Bocklisch	A Computer Assisted Diagnosis System Based on Fuzzy Classification	63
L. Salikov	Analysis of the Dynamic Process of the Systems with the Pulse-Width Modulator	71
H. Fehrenbach, F. Quante, G. Besserlich and R. Klein	Diagnosis of Combustion Engines by the Analysis of the Crankshaft's Rotational Speed	73
F.H. Younis and A. Faure	Defect Detection and Diagnosis of Immersed Solid Materials Using Signal Modelling and Estimation Method	81
A. Sturm and R. Förster	Application of Diagnostic Numbers in Damage Diagnostics	91
Y. Shengmin, H. Yiyun and S. Jian	The ARMA Spectrum and its Order Determination with Unconditional G-spectral Method	101
F. Sordyl and R. Nowicki	Vibration Diagnostics of a Turbocompressor	109
D. Filbert	Technical Diagnosis of Electric Drive Systems	117
D. Pfannstiel, W. Goedecke and R. Isermann	Fault Detection of a Steam Heated Heat Exchanger by Parameter Estimation	127
N. Höbing, R. Klein, B. Kötterba and F. Quante	Monitoring and Diagnosis of the Face Milling Process by Predicting Cutting Forces via Image Information about Workpiece Surface	137
S. Nold, R. Isermann and B. Freyermuth	A Multilevel Knowledge-Based Concept for the Supervision of Technical Processes	145
H. H. Schulz	Knowledge Representation Techniques for Diagnostic Systems	153

Contents

		Page
<i>R. Korte and H. Rake</i>	Methods for the On-line Determination of Friction Forces	165
<i>M. Kerndlmaier, T. Zink and P. Bathelt</i>	An Expert System for Diagnosis of Local Area Networks	173
<i>J. Hlavíčka</i>	Adaptive Diagnostic Procedures for Multiprocessor Systems	183
<i>A. Królikowski</i>	Optimal Stimulus Design for Diagnostics of Electronic Systems with full Accessibility	191
<i>B. Mikac, I. Lovrek, M. Kunštić, V. Maričić and B. Zalar</i>	Test and Diagnostic Facilities for Small Capacity Switching System	199
<i>K. Metzger and H.-U. Vollmer</i>	A Diagnostic Concept for Transient Recorders	207
<i>A. Storr and G. Diehl</i>	Signal Transmitters and Controlling Elements which Fullfil Monitoring Functions	215
<i>A. Hambrecht, I. Hartmann and H.-W. Müller</i>	Failure Classification in Electromechanical Systems Using Pole-zero Configurations of Transfer Function	225
<i>X. Zheng, S. Yang, H. Shi and A. Zhou</i>	The Kernel Architecture for Diagnostic Expert Systems	233
<i>D. Barschdorff, H.E. Neumann and W. Nitsche</i>	Gearbox Failure Diagnostics	241
<i>M. Pawelczyk, J. Rakowski and N. Tchourkov</i>	Tribodiagnosics of Railway Vehicles	249
<i>R. Matla, A. Sek and A. Szewczyk</i>	Technical Diagnostic of Motor-Car Engine Starters	259
<i>N. Härle and J. F. Böhme</i>	Signal Modelling and Detection of Knocking in Spark Ignition Engines	267
<i>P. Kühbauch and F. Quante</i>	A new System for Tool Wear and Failure Monitoring in Multispindle Drilling Heads	275

Contents

		Page
<i>P. Tirinda</i>	Selected Problems of Software Packages for Computerized Systems for On-Line Permanent Monitoring of Multiple Machinery	283
<i>L. Pau</i>	Image Registration Issues in Vision Based Metrology or Sorting Systems	291
<i>Y. Pu, Y.-M. Sun and Y.-F. Bao</i>	A Recognition of the Grinding Wheel Dullness in the Cylindrical Plunge Grinding	303
<i>M. Weck, C. Boge, H. Mehles and W. Reuschenbach</i>	Concept for Process and Installation Diagnosis in Flexible Manufacturing Systems	311
<i>L. Monostori</i>	Computer Aided Generation of Monitoring Strategy for Complex Machine Tool Monitoring Systems	323
<i>D. C. Lewis and D. Brenkley</i>	The Application of a Novel On-Line Wear Debris Transducer to Mining Machines	333
<i>M. Valero and E. Egusquiza</i>	Practical Examples on Detection of Incipient Damages in Rotating Machinery and Industrial Systems by Noise Analysis	345
<i>A. Cesarević</i>	Diagnostics of the Remaining Life of Steam Turbine	353
<i>H. Waller and R. Schmidt</i>	Fault Detection on Turbomachinery by System Identification	363
<i>K. Pipe</i>	Application of Advanced Pattern Recognition Techniques in Machinery Failure Prognosis for Turbomachinery	371
<i>S. Baborie</i>	Means for the Detection of Torsional Vibrations in the Turbine-Generator Shafts and for the Evaluation of the Resulting Stress by Analyzing of the Generator's Electric Output	383
<i>H. Yu and P. Yuan</i>	The Fault Diagnosis of Universal – Shaft by Time Series Analysis	391
<i>Z. Andreić</i>	Computer Modeling of a Multiwavelength Optical Pyrometer	399
<i>E. Egusquiza, C. Santolaria and M. Valero</i>	Failure Detection and Control of Rotating-Stall in Axial Flow Fans	409
<i>D. Elten</i>	Parameter Identification Methods for Induction Machines	417

Contents

		Page
<i>H.-J. Flamminger</i>	Fault Detection and Diagnostic System for Compressor Stations	425
<i>G. Görz D. Landes and U. Nyga</i>	Fault Diagnosis and Fault Prevention Using Sensor-based Process Data	433
<i>R. Haberland</i>	Contactless Measurement of Lubricant Film Thickness	441
<i>W. Heinrich and M. Purschke</i>	Quality Control of Castings by Automatic X-Ray Inspection	449
<i>I. Janoušek</i>	The Adaptive Expert System for Diagnostics of Objects with Stochastic Parameters	457
<i>R. Korthauer and D. Barschdorff</i>	Failure Diagnostics in Rotating Parts of Turbomachines by Simulation Techniques	465
<i>L. Lu, Y.-M. Sun and Z.-F. Tong</i>	The Early Detection of Gear Failure	473
<i>A. Mülln</i>	Electronic Simulation Device for the Torque Control of Driving Lines	483
<i>J. Rakowski and M. Marczak</i>	Process of Diagnostics the Internal-Combustion Locomotives in Modelling	491
<i>P. Rixhon</i>	Intelligent Interfaces for Diagnostic Systems	499
<i>S. Yang, H. Shi, Z. Wang, X. Zheng and A. Zhou</i>	Study on Mechanical Fault Diagnostics	509
	Annex	517