

1. Record Nr.	UNINA9910143403403321
Autore	Sofronas Anthony
Titolo	Analytical troubleshooting of process machinery and pressure vessels [[electronic resource]] : including real-world case studies // Anthony Sofronas
Pubbl/distr/stampa	Hoboken, N.J., : John Wiley & Sons, c2006
ISBN	1-280-31135-5 9786610311354 0-470-23188-2 0-471-75203-7 0-471-75202-9
Descrizione fisica	1 online resource (374 p.)
Disciplina	621.8/16 621.816 660.2804
Soggetti	Machinery - Maintenance and repair Plant maintenance Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 345-347) and index.
Nota di contenuto	ANALYTICAL TROUBLESHOOTING OF PROCESS MACHINERY AND PRESSURE VESSELS; CONTENTS; Preface; 1 Introduction; 2 Strength of Materials; 2.1 Load Calculations; 2.2 Stress Calculations; 2.2.1 Axial Stress; 2.2.2 Shear Stress; 2.2.3 Bending Stress; 2.2.4 Torsional Stress; 2.2.5 Combined Stresses; 2.2.6 Thermal Stresses; 2.2.7 Transient Temperatures and Stresses; 2.2.8 High-Temperature Creep; 2.2.9 Shell Stresses; 2.3 Piping Thermal Forces, Moments, and Frequencies; 2.3.1 Piping Failures; 2.4 Allowable and Design Stresses; 2.5 Fatigue Due to Cyclic Loading; 2.6 Elongation and Deflection Calculations 2.7 Factor of Safety 2.8 Case History: Agitator Steady Bearing Loading; 2.8.1 Additional Agitator Guidelines (Single Impeller); 2.9 Case History: Extruder Shaft Failure; 2.10 Dynamic Loading; 2.10.1 Centrifugal Force; 2.10.2 Inertias and WR(2); 2.10.3 Energy Relationships; 2.11 Case History: Centrifuge Bearing Failures; 2.12 Case History: Bird Impact

Force on a Windscreen; 2.13 Case History: Torsional Impact on a Propeller; 2.14 Case History: Startup Torque on a Motor Coupling; 2.15 Case History: Friction Clamping Due to Bolting; 2.16 Case History: Failure of a Connecting Rod in a Race Car
2.17 Bolting 2.17.1 Holding Capacity; 2.17.2 Limiting Torque; 2.17.3 Bolt Elongation and Relaxation; 2.17.4 Torquing Methods; 2.17.5 Fatigue of Bolts; 2.17.6 Stripping Strength of Threads; 2.17.7 Case History: Power Head Gasket Leak; 2.18 Ball and Roller Bearing Life Estimates; 2.18.1 Case History: Bearing Life of a Shaft Support; 2.18.2 Coupling Offset and Bearing Life; 2.19 Hydrodynamic Bearings; 2.19.1 Shell and Pad Failures; 2.20 Gears; 2.20.1 Gear Acceptability Calculations; 2.20.2 Case History: Uprate Acceptability of a Gear Unit; 2.21 Interference Fits
2.21.1 Keyless Hydraulically Fitted Hubs 2.21.2 Case History: Taper Fit Holding Ability; 2.21.3 Case History: Flying Hydraulically Fitted Hub; 2.22 Strength of Welds; 2.23 Fatigue of Welds; 2.24 Repair of Machinery; 2.24.1 Shafts; 2.24.2 Housings and Cases; 2.24.3 Gearboxes; 2.24.4 Sleeve Bearings and Bushing Clearances; 2.24.5 Alignments; 2.24.6 Acceptable Coupling Offset and Angular Misalignment; 2.24.7 Vibration Measurements; 2.25 Interpreting Mechanical Failures; 2.25.1 Failures with Axial, Bending, and Torsional Loading; 2.25.2 Gear Teeth Failures; 2.25.3 Spring Failures 2.25.4 Bolt Failures 2.25.5 Bearing Failures; 2.25.6 Reading a Bearing; 2.25.7 Large Gearbox Keyway and Shaft Failures; 2.26 Case History: Sizing a Bushing Running Clearance; 2.27 Case History: Galling of a Shaft in a Bushing; 2.28 Case History: Remaining Fatigue Life with Cyclic Stresses; 2.29 Procedure for Evaluating Gasketed Joints; 2.30 Gaskets in High-Temperature Service; 2.31 O-Ring Evaluation; 2.32 Case History: Gasket That Won't Pass a Hydrotest; 2.33 Case History: Heat Exchanger Leak Due to Temperature; 2.34 Equipment Wear; 2.35 Case History: Excessive Wear of a Ball Valve
3 Vibration Analysis

Sommario/riassunto

A highly practical troubleshooting tool for today's complex processing industry. Evolving industrial technology-driven by the need to increase safety while reducing production losses-along with environmental factors and legal concerns has resulted in an increased emphasis on sound troubleshooting techniques and documentation. Analytical Troubleshooting of Process Machinery and Pressure Vessels provides both students and engineering professionals with the tools necessary for understanding and solving equipment problems in today's complex processing environment. Drawing on forty years
