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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  
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3 Vibration Analysis

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## 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

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