



# Practical Plant Failure Analysis: A Guide to Understanding Machinery Deterioration and Improving Equipment Reliability (Mechanical Engineering)

By Neville W. Sachs

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## Practical Plant Failure Analysis: A Guide to Understanding Machinery Deterioration and Improving Equipment Reliability (Mechanical Engineering) By Neville W. Sachs

Component failures result from a combination of factors involving materials science, mechanics, thermodynamics, corrosion, and tribology. With the right guidance, you don't have to be an authority in all of these areas to become skilled at diagnosing and preventing failures. Based on the author's more than thirty years of experience, **Practical Plant Failure Analysis: A Guide to Understanding Machinery Deterioration and Improving Equipment Reliability** is a down-to-earth guide to improving machinery maintenance and reliability.

Illustrated with hundreds of diagrams and photographs, this book examines...

- When and how to conduct a physical failure analysis
- Basic material properties including heat treating mechanisms, work hardening, and the effects of temperature changes on material properties
- The differences in appearance between ductile overload, brittle overload, and fatigue failures
- High cycle fatigue and how to differentiate between high stress concentrations and high operating stresses
- Low cycle fatigue and unusual fatigue situations
- Lubrication and its influence on the three basic bearing designs
- Ball and roller bearings, gears, fasteners, V-belts, and synchronous belts

Taking a detailed and systematic approach, **Practical Plant Failure Analysis** thoroughly explains the four major failure mechanisms—wear, corrosion, overload, and fatigue—as well as how to identify them. The author clearly

identifies how these mechanisms appear in various components and supplies convenient charts that demonstrate how to identify the specific causes of failure.

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## **Practical Plant Failure Analysis: A Guide to Understanding Machinery Deterioration and Improving Equipment Reliability (Mechanical Engineering) By Neville W. Sachs Bibliography**

- Sales Rank: #891125 in Books
- Published on: 2006-08-18
- Original language: English
- Number of items: 1

- Dimensions: 10.00" h x .69" w x 7.01" l, 1.51 pounds
- Binding: Hardcover
- 288 pages

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