

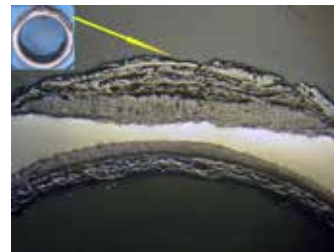


Failure Analysis of Metals, Nonmetals & Composites

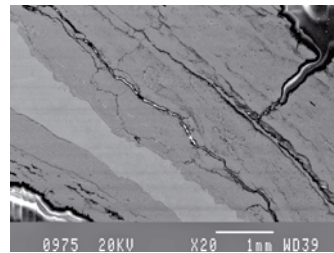
Failure analysis and product improvement of metal components are two of our many specialties at Eurofins | EAG Laboratories.

Eurofins | EAG Laboratories is a full service laboratory providing a comprehensive array of analytical equipment in a modern facility for failure analysis and problem solving. As a result of the increasing sophistication of technology, the analytical techniques used in the past can no longer answer many of the problems today. Constantly improving its analytical equipment, coupled with developing new techniques, Eurofins | EAG Laboratories adds a new dimension to its problem solving capability unparalleled in the industry.

Failure analysis and product improvement of metal components has been a highlight at Eurofins | EAG Laboratories for over forty-three years. Applications including aircraft, aerospace, transportation, construction, consumer products, electronics, hostile service environments, energy production, structural components and medical devices are just a few we have been involved in over the years. Materials selection based on your engineering specifications for products made of metals, alloys, plastics, polymers or composites is one of our many specialties.



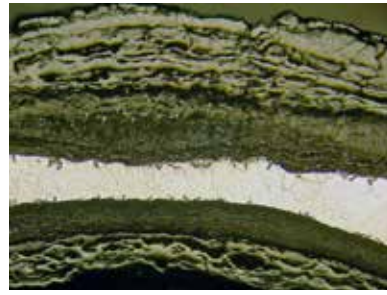
Cross-Section of a corroded stainless steel pipe showing reduced thickness of the base metal from contamination and oxidation 8X.



SEM micrograph obtained at the weld area, showing porosity, cracks and particles in the scale 20X.

Techniques Using:

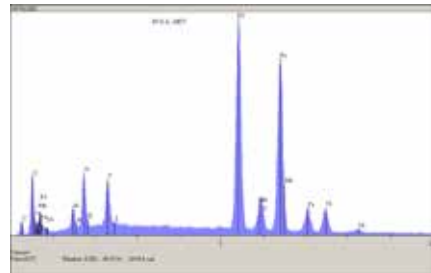
- Scanning Electron Microscopy
- Electron Microprobe Analysis
- AUGER/ESCA Analysis
- Fourier Transform Infra-Red Spectroscopy
- DSC/TGA Analysis
- X-Ray Radiography
- Metallographic Examination
- Hardness and Microhardness Testing
- Chemical Analysis and Mechanical Testing



Optical micrograph of corroded steel pipe showing intergranular attack and reduced thickness 16X.

To Detect:

- Fracture and Failure Modes and Origins
- Fatigue and Other Slow Crack Growth Mechanisms
- Brittle and Ductile Overload Failures
- Stress Corrosion and Hydrogen Embrittlement Failures
- Corrosion/Oxidation Problems
- Contamination Problems
- Wear Failures
- Heat Treatment Problems
- Design/Stress Related Failures
- Plating Problems



EDX Spectrum obtained from the grain boundaries/pits revealed large amounts of sulfides and oxides.

