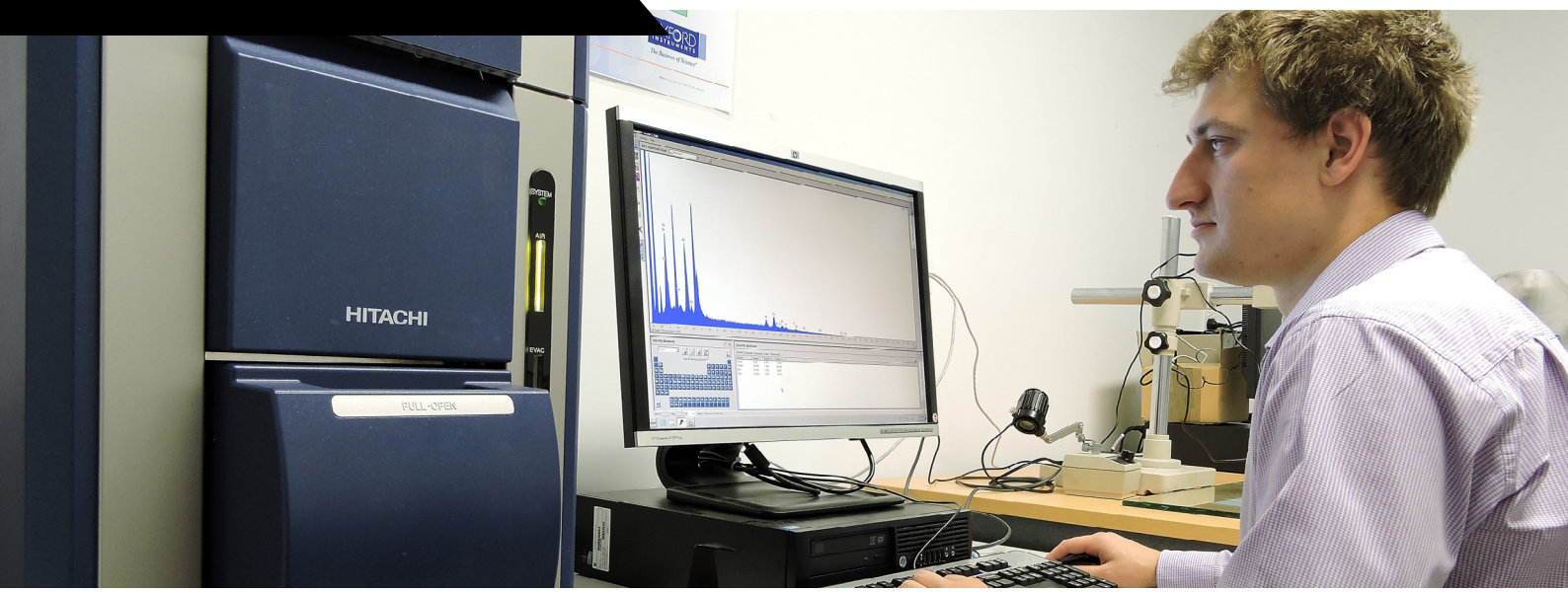


ATTAR Engineering Services

FORENSIC ENGINEERING & FAILURE ANALYSIS

FORENSIC FAILURE ANALYSIS, CONSULTING & IN-HOUSE SPECIALIST TESTING SERVICES

With over 30 years experience in materials evaluation and advanced non-destructive testing (NDT) techniques, ATTAR's forensic engineering services are used to ascertain liability, whether the fault lies in the materials used, product design, manufacturing methods or usage in the field. Our comprehensive investigations will identify both the failure mechanism (the 'how') and the root cause (the 'why') by means of specialised analysis of the materials involved alongside structural, physical, environmental and mechanical testing. ATTAR's team of qualified engineers conduct independent expert witness evaluation providing engineering analysis, accident investigation, litigation support, expert witness testimony and evaluation of conformance to relevant Australian Standards with evidence presented in Court.

Our experience includes the following areas:

- Accident and incident investigations,
- Compliance to relevant codes and standards,
- Materials failure analysis.

The emphasis is always placed on the logical chain of events based on the evaluation, data collection and analysis undertaken by our Engineers. ATTAR is committed to the highest standard of service delivery with all reports peer reviewed by a second engineer as part of our internal quality system.

FORENSIC FAILURE ANALYSIS

ATTAR specialises in determining the root cause of how materials and products fail, including an assessment of equipment that has been subject to corrosion, fatigue, damage, abuse and improper manufacture. We also evaluate the reliability of systems and components; perform life cycle assessments, as well as legislative review and compliance assessments.

Our expertise extends to the following areas:

- Public liability,
- Consumer and industrial product failures,
- Building materials,
- Manual and materials handling,
- Transport and engineering failures.

CONSULTING ENGINEERING

- Qualified and experienced engineers (BSc/BEng/PhD's) providing independent and expert advice in materials evaluation and mechanical testing.
- Experienced in assessing of all types of materials (metals, polymers, ceramics, composites).
- Experience in assessing the performance characteristics of materials (corrosion resistance, wear resistance, high temperature creep resistance, high strength, fatigue resistance, etc.).
- Experienced in reviewing other "expert witness reports", including GAP analysis.

SPECIALIST TESTING

IN-HOUSE SERVICES

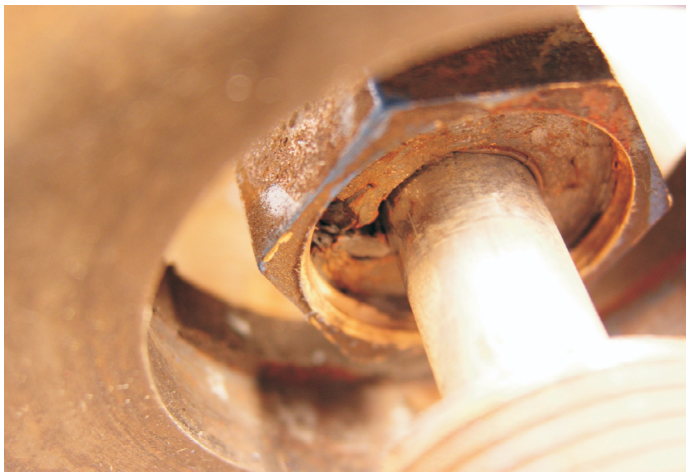
ATTAR's engineers are competent in the methods and use of specialised testing equipment for materials & mechanical characterisation. Using the most advanced in-house test equipment, our team can draw upon a large range of tools to support their investigation. Our advanced systems include:

Scanning Electron Microscopy (SEM):

- SEM with Energy Dispersive X-ray Spectroscopy for elemental identification for all materials.

Stereographic Microscopy:

- Used to study the surface fractures (fractography).



Inverted Stage Optical Microscopy

- Used to study the characterisation of microstructures, identification of defects and confirmation of manufacturing processes.

Analytical Testing:

- Fourier Transform Infrared Spectroscopy (FTIR) & Differential Scanning Calorimeter (DSC) analysis for polymeric materials to identify fundamental material properties such as composition, functional groups, melting point, glass transition, resistance to environmental degradation and more.
- Optical Emission Spectrometry (OES) metallic material analysis and alloy designation.
- Melt Flow Tester (MFT) used to verify the thermal characteristic of thermoplastic polymers.
- Coating thickness assessment.

Mechanical Testing:

- Brinell, Rockwell, Vickers and Micro-Vickers hardness testing to Australian Standards.
- Universal Testing machine (300kN) for tension, compression, flexure and shear testing, fracture mechanics and assessment of structures.
- Adhesion testing (automated).

Evaluations using NDT:

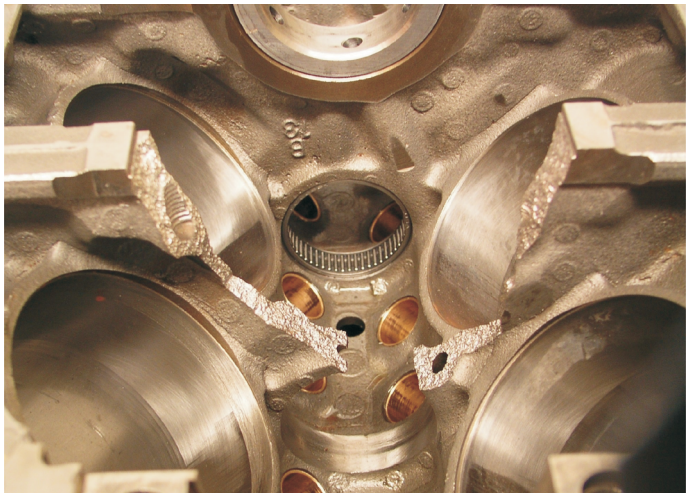
- Evaluation to all Non-Destructive Test methods; Magnetic Particle testing (MT), Penetrant testing (PT), Ultrasonic testing (UT), Radiographic testing (RT), Eddy Current testing (ET), Phased Array Ultrasonic testing (PAUT) and Time of Flight Diffraction (TOFD).

Weld Examination:

- Weld macro testing to Australian Standards.
- Sample preparation and identification of microstructures.

Corrosion and Erosion Assessments:

- Determination of mode of corrosion/erosion, and provision of recommendations on remediation and the suitability of materials for the service application.



CONTACT US

For more information on our forensic engineering and failure analysis services, please contact ATTAR on 03 9574 6144 or via info@attar.com.au.

Ph: 1300 139 155 **Email**: info@attar.com.au
Website: www.attar.com.au
Head Office: 44-48 Rocco Drive, Scoresby VIC 3179