

## METALLURGICAL TEST HOUSE & CONSULTANTS

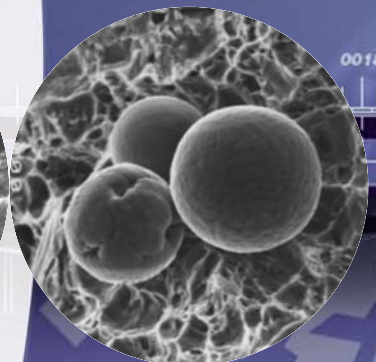
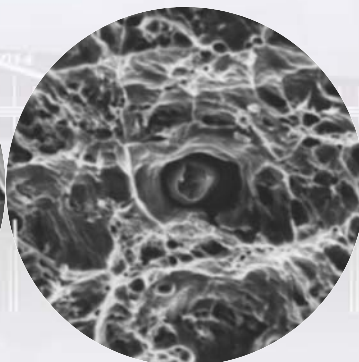
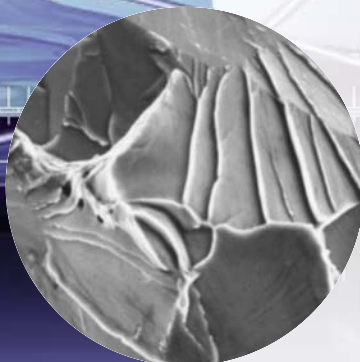
TEi has a comprehensively equipped laboratory with a team of qualified, trained and experienced metallurgical and technical staff operating to the requirements of an internationally acknowledged quality standard ISO/IEC 17025.

We can assist you in key areas of your business including:

- Product Development
- Material Selection
- Component remnant life assessments
- Welder Performance and Weld Procedure Qualification
- Failure Investigations
  - Quality / Process control investigations
    - Product and Material conformance
    - Material upgrades
    - Third Party surveillance
    - Litigation and Arbitration
    - Annual Approval Testing Programs
    - Product Durability
    - Engineering, Inspection and Maintenance
    - Cryogenic and Elevated temperature testing



Evaluation of fracture and microscopic features



Contact TEi Metallurgical Services today and allow us to demonstrate our rapid response and ability to solve your problems!

## MECHANICAL

### TENSILE TEST:

Ambient and Elevated temperature to European and American specification: Yield & Ultimate Strength, Elongation, Reduction of area & Proof testing utilising 500kN Servo-hydraulic computer linked MAYES machine.

### CHARPY IMPACT TESTS:

Dedicated European and American test machines for cryogenic, ambient and elevated temperature tests: Evaluation of Toughness and fracture properties.

### COMPRESSION MACHINE:

Flexibility, Formality and Fracture properties.

ROCKWELL AND VICKERS HARDNESS TESTS: Evaluation of hardness and equivalent strength.



## DIMENSIONAL

CALIPERS, VERNIERS, MICROMETERS, STRAIGHT EDGES, PROTRACTORS, SHADOW-GRAPH:

Creep strain measurements, defect sizing and product compliance.

## METALLURGICAL

Using OPTICAL MICROSCOPES, STEREOSCOPES

Micro and Macroscopic examination of materials up to x1000 magnification.

Characterisation of service failure mechanisms. Degradation of microstructure from elevated temperature service and exposure to corrosive environments.

Grain size and morphology, Phase balance, Cleanliness, Defect evaluation, Coating and Thermal treatment evaluation.

## SCANNING ELECTRON MICROSCOPY

30 to x200,000 magnification. Evaluation of fracture and microscopic features.

## ENERGY DISPERSION X-RAY ANALYSIS

Qualitative evaluation of coatings, corrosion products, deposits and micro-constituents.

## HEAT TREATMENT

MUFFLE FURNACES for heat treatment of test specimens and establishing simulated high temperature service effects on microstructure and physical properties. Optimisation of product heat treatment parameters and determination of hardenability.

## NDT

RADIOGRAPHY, MPI, DPI, ULTRASONICS, TUBE INSPECTIONS: DINSEARCH, IRIS, EDDY CURRENT, BORESCOPE.

## CHEMICAL

CHEMICAL ANALYSIS:

Rapid spectrographic analysis of low and high alloy steels using computer linked 24 channel diffraction grated spectrometer.

Gas in metal analysis utilising Thermoconduction and Infra-red techniques.

## CORROSION

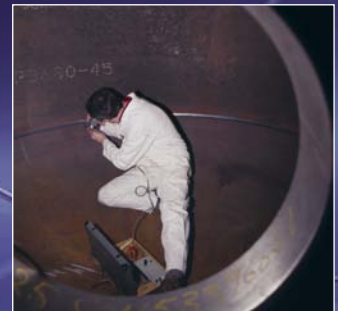
Pitting and Intergranular Corrosion tests to measure the stability of materials and fitness for purpose.

## IN-SITU TESTING

Supplementary to the NDT techniques TEi Metallurgical Services specialises in: Alloy verification and Positive material identification

Portable hardness testing using Equotip or Krautkramer MIC10 equipment

In-situ metallographic examinations and replication of Microstructure (Thermal degradation and creep cavitation assessments)



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