



METALLURGICAL (PHYSICAL) ENGINEERING

Enabling optimised equipment life through effective material care and monitoring.

Optimise and monitor equipment life through specialist metallurgical and material knowledge.

SERVICES

- Engineering consultation and material selection
- Design reviews and audits
- Failure investigation
- Integrity and condition assessment
- Remaining Life Assessment (RLA)
- Sampling and laboratory analysis

BUSINESS CHALLENGE

Companies with high temperature and high pressure equipment are under increasing pressure to comply with regulations regarding integrity and safety. Plants and equipment are aging and quick replacement is not always a feasible option from a logistics and operations point of view. Aged high temperature and high pressure equipment may lead to catastrophic failures that can result in loss of life and severe damage to plants. It is therefore important that the condition and life assessment of all high temperature and high pressure equipment is monitored at regular intervals to understand the active damage mechanisms so that any risks that can lead to life, production and plant losses can be mitigated.



Plant and equipment has a finite life and the following are some of the factors to consider during plant optimisation and integrity assessment:

- Correct material selection
- Proper fabrication and construction
- Operating within the design parameters and understanding the risks when operating out of these parameters
- Understanding the damage mechanisms that can lead to premature failures
- Knowing the condition of the plant

To optimise plant life, a proper inspection and maintenance plan needs to be implemented and maintained.

SOLUTIONS

The main objective of our metallurgical engineering service is to assist our clients optimise and monitor their plant and equipment life to ensure safety and reliability.

Engineering consultation and material selection includes the review of current designs within a specific environment, correct material selection as well as the correct fabrication and welding procedures to be used during construction. As part of this service an audit function is also supplied to our clients to ensure that all specifications and standards are adhered to.

Failure investigations involve destructive testing of equipment.

These are performed to identify the active damage mechanism and to determine possible root cause(s) to prevent future failures and to identify other potential risks.

Integrity and condition assessments involve destructive lab and/or non-destructive in-situ testing and inspection to determine if there are damage mechanisms known to affect a specific component's life. Such an assessment would give the client an early warning with regard to future inspection plans and replacement strategies.

During welding and fabrication, materials are subject to multiple variables that can lead to poor and lower than expected material properties. Eventually this will have an impact on the integrity of the component/equipment. As part of the weld procedure development and review services, Bureau Veritas makes use of experienced International Welding Engineers (IWEs) to review and develop procedures for clients to ensure that minimum requirements are met.

Remaining Life Assessment of high temperature pressure equipment involves operating condition review and onsite inspections. As a critical part of the high temperature component inspection, metallographic replication is used to assess damage mechanisms, like creep, that affect the life and can lead to catastrophic failures. Bureau Veritas assists clients to setup non-destructive testing (NDT) scopes of work (SOW), evaluation of results and gives a component condition/life assessment based on the findings.



KEY BENEFITS

Bureau Veritas is recognised as a reputable industry service provider in the field of metallurgical engineering services, inspection and assurance, and operates in accordance with recognised industry standards. The company provides clients with the assurance that plant and equipment will operate safely and reliably.

Our services deliver peace of mind as well as:

- Manage the risk of plant and equipment failure;
- Increase the safety performance of equipment;
- Extend the plant and equipment life by proper condition and remaining life assessments;
- Assist with inspection, maintenance and replacement SOW;
- Determine the damage mechanisms and root cause of failures to prevent future re-occurrence.

RELATED SERVICES

- In-situ metallographic replication
- RLA project management
- Supplier review and management
- Product specification management

INDUSTRIES

- Power generation
- Petro chemical
- Mining
- Industrial

CONTACT

For details about this service, please contact Bureau Veritas:

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FOR MORE INFORMATION

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