



Risk Based Inspection.

Maintain the integrity of your equipment whilst optimizing inspection spending with respect to the associated level of risk.

Risk-based inspection (RBI) is the preferred method toward assurance and improvement of the mechanical integrity of fixed equipment by identifying, managing and reducing the associated risk of failure. Optimized inspection frequencies are determined according to the likelihood (PoF) and consequences of failures (CoF) and the quality and effectiveness of inspection methods. High-risk items, that are more likely to fail, are inspected more frequently with the level of inspection reduced as low as reasonably practical (ALARP).

Effective risk-based inspection programs demand experienced teams of multi-disciplined engineers as well as appropriate work routines. Our TÜV Rheinland experts are fully qualified to support you with a dedicated hands-on approach in systematically identifying areas of potential concern, characterizing damage mechanisms and answering the questions: where to inspect, what to inspect, when to inspect and how to inspect.

OUR APPROACH

Our approach is founded on international engineering standards and practices including API RP 580 and 581, ASME PCC-3 and RIMAP. API 571 and API 579 / ASME FFS-1 are implemented to inspect for other damage mechanisms and failures primarily depending on operating within a defined pressure/temperature envelope.

KEY STEPS OF OUR RBI PROCESS:

1. Data collection
2. Identification of deterioration mechanisms
3. Risk assessment
4. Development of an optimized inspection plan and mitigation actions, if necessary
5. Reassessment as new data become available

DATA COLLECTION AND VALIDATION SUPPORT

The data feed into the RBI process is the key driver to reliable and effective results. Input is taken from software systems such as monitoring systems and plant databases as well as from design and operation documentation. The lack of reliable - even basic - data can be a huge problem, especially for older plants. TÜV Rheinland can consult you in identifying, collecting and validating the right data for a successful RBI process.

RBI SOFTWARE

Although RBI Software systems supporting the RBI approach are widely available and used, assumptions applied in the calculation of the likelihood and consequence of failure often remain opaque with details frequently hidden in the "black box". TÜV Rheinland is your independent partner for the assessment, selection and implementation of the appropriate RBI software, meeting your specific needs.

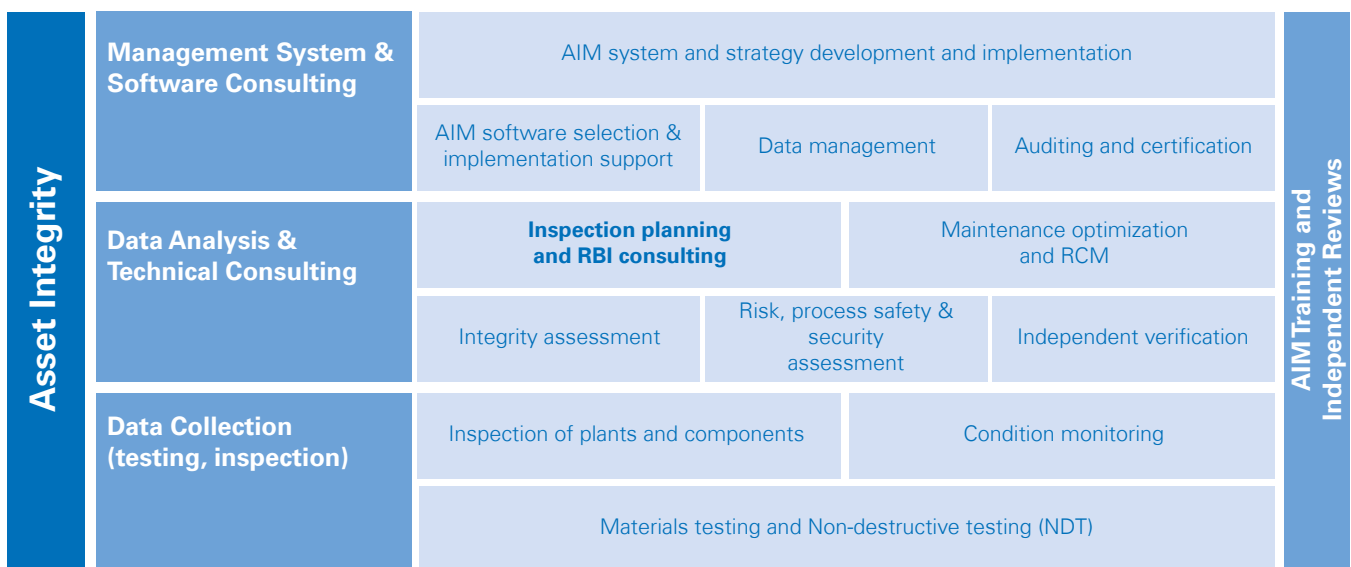
INSPECTION OPTIMISATION STRATEGY

Inspection optimisation strategy (IOS) is a methodology aimed at mature assets that already have RBI strategies in place. IOS makes use of the existing RBI program and improves it by selecting alternative inspection methods. The aim of IOS is to reduce the impact of inspection on:

- Turnaround scope and down-time of the asset
- Number of inspection staff required (especially important for offshore assets)
- Costs of preparing asset for inspection
- HSSE impact of confined space entry



The position of RBI within our Asset Integrity Management program.



ASSET INTEGRITY MANAGEMENT

Risk based inspection is one element of the TÜV Rheinland Asset Integrity Management (AIM) portfolio. We can provide you with AIM related services throughout the asset life cycle, such as:

- Data collection and management
- Condition monitoring solutions
- Integrity assessments (e.g. fitness for service, remaining lifetime calculations)
- Integrity audits and gap analysis
- Inspection and maintenance planning and optimization
- Risk and safety management
- AIM/RBI software selection and implementation support
- AIM/PSM system development, implementation and auditing

WITH OUR SERVICES YOU CAN BENEFIT FROM IMPROVED PLANT INTEGRITY, SAFETY, RELIABILITY AND AVAILABILITY AS WELL AS COST SAVINGS ACHIEVED BY OPTIMIZING YOUR INSPECTIONS AND MAINTENANCE.

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