

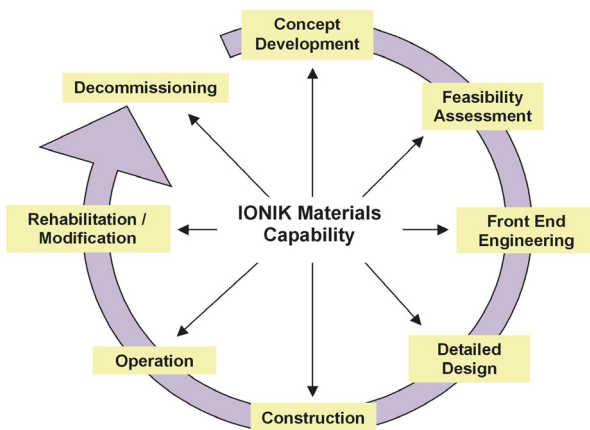


RELIFING LIFE EXTENSION

There is increasing pressure on companies from global competition to optimise their return on asset investment. This requirement can be realised through optimising asset availability and life. Targeted improvement through the application of Asset Integrity Management is a controlled and effective means of optimising return on investment whether the asset is new or existing.

IONIK CONSULTING is an independent, innovative, commercially pragmatic, total life cycle, materials engineering consulting company. IONIK brings together a group of engineering expertise across the globe with distinct market leadership in the life cycle fields of Materials (metallics and non-metallics), Corrosion, Cathodic Protection, Coatings, Metallurgy, Welding, Fabrication, Asset Management, Training, HSE, Risk and Integrity related engineering businesses. This expertise has been gained across a broad manufacturing and industrial base.

Our aim is to establish and maintain engineering leadership in the knowledge, application and practise of Technology, Products, and Services utilised in the pursuit of Life Cycle Management (LCM) of assets.



IONIK seek to provide a holistic LCM of assets service to industry. We take pride in our culture and are dedicated to integrity, flexibility, growth, quality, and success in all regards.

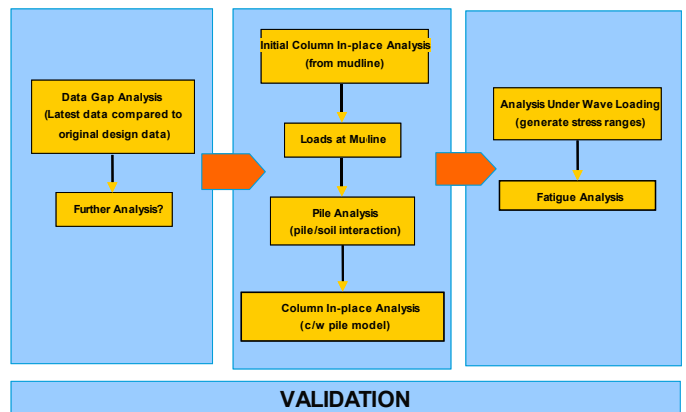
An integral part of this holistic service is the relifing or life extension of existing assets.

IONIK's experience in life extension includes the following assets:

- Offshore structures including tripods and monopods.
- Pipelines and piping
- Pressure vessels

Our approach to extension of life is risk-based, life cycle cost driven and pragmatic.

We also ensure stakeholders including regulatory authorities are fully appraised of the progress and limitations of such projects.



In all such projects, IONIK ensures that the following components of extension of life are given due consideration

Integrity assessment to the following codes/practices:

- Corrosion: DNV RP F101 (ASD & PSF), ASME B31G, NG-18, Shell 92, RSTRENG (Simplified and Detailed), and AS 2885.3.
- Crack & Fatigue Crack Growth: BS 7910
- Multiple Failure Modes: API RP 579 (general, local metal loss, pits, brittle fracture, blisters and laminations, cracks, weld misalignment/shell distortions/dents/gouges, creep, fire damage).
- Span assessments: UK HSE guidelines, DNV Guideline 14, and DNV RP F105.
- Stability assessments: AGA Level I, II & III, JPK Simulator.
- Remaining life assessments based upon different corrosion growth models.

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Corrosion modelling to the following codes/practices:

- NORSOK M-506
- De Waard & Milliams
- Cassandra

Structural assessments of the following kind are performed:

- In-place assessments of offshore structures
- Fatigue analyses of offshore structures
- Reliability assessments using redundant member methodologies.
- Pressure vessel ASME VIII analyses

The codes/practices used for structural assessments include the following:

- API RP 2A (21st Edition)
- ABS Procedures for extension of life for structures.
- API 510 Repair and Recertification Requirements for Pressure Vessels.
- AISC Manual for Steel Construction WSD
- DNV RP C203

