



## Degradation Review

Having a good understanding of degradation mechanisms likely to affect plant is always part of good plant management. Though the focus may vary from industry to industry, EASL have provided plant degradation review and assessment services for clients with varying aims.

Whether demonstrating nuclear or industrial safety for safety cases, insurers or third party inspectors, or providing support with targeted plant inspection and maintenance through to demonstrating plant lifetime extension, our highly specialised and broad knowledge set can provide excellence in degradation review and assessment.

## What is Degradation Review?

Degradation review is a wide ranging process of evaluating the real world effects on structures, systems and components, with a particular focus on structural integrity. Whatever the industry, civil nuclear, power generation, defence, chemical, oil or gas, degradation based on the effects of loading and operational cycles over plant operation time has the potential to undermine margins within original design code assessments or to invalidate safety case arguments, threatening safety and plant availability.

Whether it's a small component material failure, or a larger structural concern, ensuring that degradation of all types is inspected, and correct strategies are put in place is crucial to plant safety and operation. Utilising the services of independent experts can provide a clear and cost-effective insight into all potential and current degradation mechanisms, potentially saving time, money and even lives, further down the line.

## EASL's Degradation Review Service

Each client and job is different, but EASL's experienced approach can largely be summarised in the following steps:

### Identifying Potential Degradation Mechanisms

EASL will work with, or on behalf of, customers to identify potential degradation mechanisms. The approach might include:

- Talking to appropriate staff/engineers
- Reviewing plant design information
- Reviewing plant operating data
- Plant walkdown

Likely degradation mechanisms will be dependent on the nature of the plant and how it is operated. EASL have experience in dealing with a wide range of degradation mechanisms. The more common ones include:

- Corrosion
- Flow assisted corrosion (FAC)
- Stress corrosion cracking
- Fatigue
- Fatigue crack growth (known or postulated defects)
- High temperature creep
- Stress relaxation
- Creep-fatigue crack growth (known or postulated defects)
- Deterioration of pipework support systems

## Assessing Implications

Structural assessment accounting for the relevant degradation mechanisms allows the predicted life of the components or features under consideration to be determined accurately. Assessments might range from simple metal loss rates and pressure scantling calculations, to detailed creep-fatigue crack growth and limiting defect size and creep rupture assessments.

Assessments may consider relevant design codes or assessment standards, or may be carried out on a fitness-for-purpose basis. Our staff are highly experienced in the structural assessment of degradation mechanisms including those listed above.

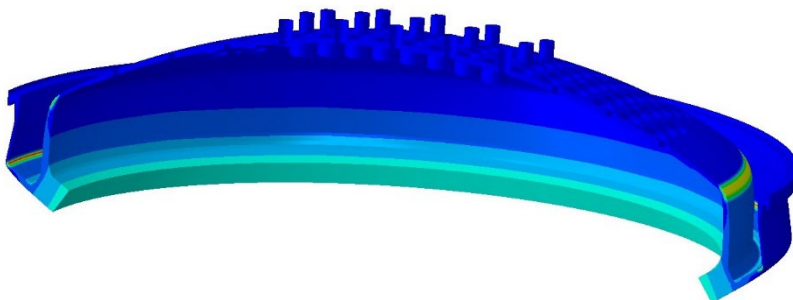
## Determining Appropriate Course of Action

The review will draw clear conclusions and identify a clear course of action. This may be a recommendation that plant safety or plant lifetime extension can be demonstrated without further work, or it might be a recommendation for further focused plant inspections, plant maintenance activities or plant remedial work.

## Acting on the Findings

EASL offer a range of services supporting follow-on activities:

- Amending, writing or providing support to safety case submissions, assisting client communications with regulators or interfacing directly with regulators
- Providing plant substantiation reports and interfacing with insurers and third party inspectors
- Providing support to inspection specialists and assessing inspection findings
- Defining appropriate plant maintenance or remedial work and supporting implementation
- Writing or providing support to plant lifetime extension cases



EASL can provide you with reliable, trustworthy consultancy on a wide array of degradation review aspects, offering you clear advice on the most efficient, safe and cost effective solutions to your problems.

For more information, take a look at our relevant solutions, services and case studies below, or to discuss your specific needs, fill in our contact us on [enquiries@easl-stress.co.uk](mailto:enquiries@easl-stress.co.uk)

## Related Services

- Corrosion
- Hanger Surveys
- Creep-Fatigue Initiation Assessment