



# Case study

## Asset integrity management (AIM)

### THE CHALLENGE

Assets that are vulnerable to degradation must be properly maintained to ensure they function safely and profitably throughout their lifecycle. Understanding the susceptibility of components to damage can significantly reduce through-life costs, and reduce the impact on planned maintenance activities. With this in mind, our client required a bespoke asset management solution which considered the integrity of components continuously exposed to high cycle fatigue and a corrosive environment.

### OUR SOLUTION

We began by creating a cost effectiveness analysis with which to justify the investment, and identify the operational safety requirements of our client's equipment, along with the relative 'through life' costs.

We then examined the structural integrity of our client's system, by modelling the component, and analysing the impact of various loads and cycles. This provided a set of requirements for defect detection in critical areas of the component and allowed us to create acceptance criteria which we used to assess the technical maturity of the inspection system throughout the programme.

Because no existing commercial inspection technologies or suppliers were suitable for our client's specific requirements, Frazer-Nash established a suitable team to develop a bespoke inspection system to meet the requirements. We also devised a trials and design review programme with test specimens suitable for each phase in the development.

We worked closely with the client to devise the qualification process for the inspection system and build the procedures for in-situ use. The system is now being used successfully in its intended environment.

In order to manage the large amount of asset data and prioritise inspections, we also developed a bespoke asset management system called AIMS (Asset Integrity Management Software). This software holds historical manufacture, refurbishment and operation data in order to inform a complete evaluation of the risk associated with individual assets following the analysis of inspection results. This also includes an inspection planning and risk ranking facility.

### BENEFITS

By tailoring an AIM scheme around the client's drivers and constraints, we were able to design a cost effective process which would significantly increase and quantify standards of safety and reliability. An AIM approach can be adopted for any structure or component where a strategy of suitable inspection, structural analysis and operational risk evaluation is required to result in the most cost effective through-life maintenance strategy. In addition to improving safety, this strategy could also provide commercial benefits in the form of supplying evidence to allow the in-service life of the asset to be extended.

#### Client

Undisclosed

#### Business need

Improved Asset Integrity  
Management of Safety Critical  
Components

#### Why Frazer-Nash?

Frazer-Nash has considerable knowledge of structural integrity and analysis and was able to apply this using a Systems Engineering approach to improve the through life management of these critical components.



Bespoke remote inspection system developed in-situ