

 Vysus Group

Asset  
Management  
Consulting

# Asset Management Consulting

Asset failure can have catastrophic effects, resulting in loss of life or injury, detrimental environmental impacts, as well as causing devastating damage to a company's reputation. There is also the financial impact due to loss of production, asset damage and legal costs. As a result, industry is moving towards a structured approach to asset management, which helps organisations to manage the lifecycle of assets more effectively.

An effective asset management program has risk management at its core and includes several key elements like planning and performance management. Vysus Group has applied our asset management consulting services to clients in various industries across the world, driving continual improvements in performance.

2 million



150



Carried out over 2 million asset integrity assessment.

Supported over 150 global sites.

\$12bn

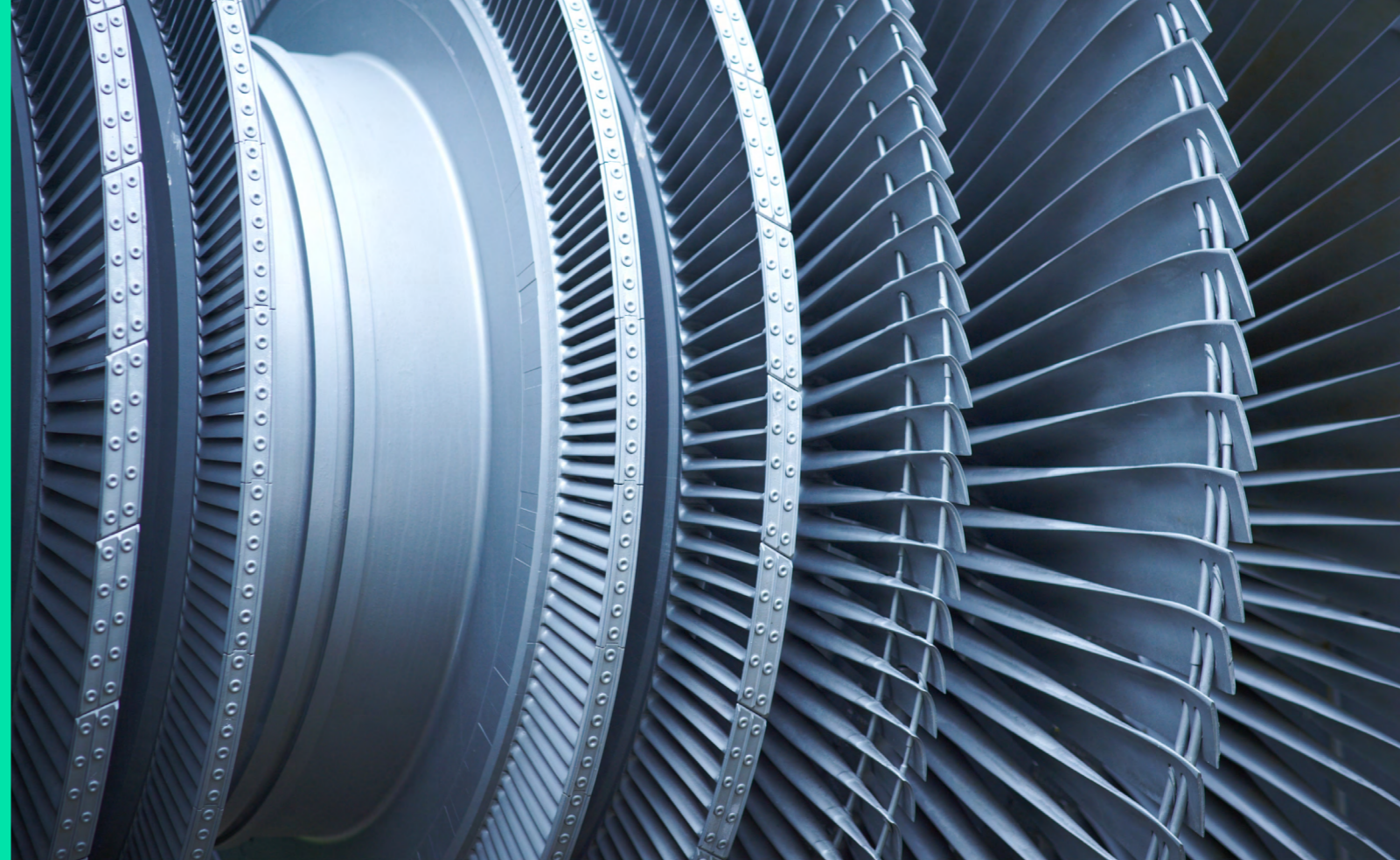


2,500



We have advised on over \$12 billion of assets over the past 12 months.

Analysed over 2500 operating units.



## Benefits of a robust asset management strategy

Every sector of industrial activity faces the common challenges of maximising value from assets while minimising equipment and safety risk. Facilities must also demonstrate compliance with industry standards and regulations like ISO 55001, API and ASME. A robust asset management strategy meets these challenges and improves plant, asset, and equipment availability and uptime. It also results in the identification of critical assets and equipment, the optimising of maintenance and inspection schedules, and the elimination of unnecessary activities.

## A collaborative approach to asset management

We are an independent, trusted advisor with a collaborative approach to asset management. We offer technical excellence, passion, and an ongoing partnership for implementation and monitoring of results. Embedding Vysus Group expertise into client teams creates the best opportunity for both short and long-term success.

Assessing and managing risks forms the heart of our methodology for asset management. We apply this method to every system, from a single piece of equipment to complex integrated facilities across multiple sites. Our expertise comes from cumulative experience across numerous industries in diverse locations combined with an innovative problem-solving mindset.





# Asset Management Consulting services



## Asset integrity consulting

We provide a wide range of asset integrity management solutions for all asset types (i.e. pressure systems, pipelines, structures, etc.) including:

- Mechanical Integrity program implementation, including RBI, onsite and offsite services
- Integrity management strategies/plan implementation and optimisation
- Pressure systems, structural, pipeline & lifting integrity management services support
- Process Safety Management (PSM) implementation and support
- Project, turnaround and contractor management
- Inspection optimisation and non-destructive testing instead of examination
- Software consulting and engineering support for Asset Performance Management (APM) and Risk Based Inspection (RBI)
- ASME support (i.e. authorised inspector, repair plans, verification assessments, etc.)
- API inspections (API 510, 570, 653)



## Technical due diligence

We help our clients understand and manage their risk of their assets and supports them to achieve optimisation of asset performance through our following technical due diligence service offerings:

- Asset Management Consulting (audits & benchmarking studies for both at corporate and individual site level)
- Asset performance health check & benchmarking
- Business asset management strategy creation and implementation
- Information systems consulting and technical support
- Process Safety Management (PSM)
- Technical due diligence assessments
- Asset life assessments and extension studies
- Operational risk assessments
- Asset turnaround/shutdown planning and support
- Pre-acquisition assessments and support



## Maintenance and reliability services

Maintenance programs often rely on historical Original Equipment Manufacturer (OEM) recommendations and fail to consider operating and commercial changes over time. We offer the following independent consulting services:

- Maintenance program audits and Downtime & Overall Equipment Effectiveness (OEE) analysis
- Reliability improvement studies, developing, planning and implementation
- Maintenance work process design and execution analysis
- Asset register and criticality development including Computerised Maintenance Management System (CMMS) population
- Maintenance and reliability policy, procedure and strategy creation and implementation support
- Bad actor equipment analysis and Root cause analysis (RCA)
- Preventative Maintenance (PM) implementation and optimisation including task list development
- Failure mode effects and criticality analysis (FMECA) and Reliability Centered Maintenance (RCM)
- Storeroom and spare-parts analysis and optimisation
- Predictive maintenance



## Corrosion consulting and engineering

Corrosion induced failures are a regular cause of unplanned shutdowns. We offer comprehensive corrosion consulting and engineering services:

- Corrosion Management Strategy Development and engineering consulting services
- Corrosion studies and consulting, including Corrosion Control Documents (CCDs)
- Damage Mechanism Reviews (DMRs) and Integrity Operating Window (IOW) solutions
- Materials engineering and Fitness For Service (FFS) assessments
- Failure and root cause analysis
- Metallurgical engineering support including welding engineering
- Cathodic Protection System Design, startup, commissioning and surveys
- Technical engineering support for corrosion protection systems and compliance with relevant regulations and standards
- Fabric Maintenance and Probes/Coupons management
- Pipeline and Fixed Equipment analysis and assessment



# Vysus Group provides support throughout the entire lifecycle of your assets

Each stage in an asset's lifecycle, from design to decommissioning, requires a different focus for asset management. During Front End Engineering and Design (FEED), it is possible to influence inspection and maintenance schedules using risk-based methods. This approach can eliminate unnecessary activities over the entire life of the plant leading to substantial savings. It can also help to ensure spare parts are available and reduce considerable delays to a repair. A risk-based approach for ageing assets could increase the daily monitoring and asset care.



01

## Design

Asset management right from the start.

We help you incorporate factors that will influence integrity at concept or design stage, providing expertise during FEED stage. This will extend the life of the asset beyond those built using more traditional methods.



02

## Build

Address and resolve potential issues early in an asset's life.

We assist during the construction phase of your assets to provide technical assurance that they meet all requirements.



03

## Operating and maintenance

Identify anomalies before they become problems.

We develop and implement monitoring and mitigation measures to help your asset achieve its maximum safe life. Where it is too late for prevention, fit-for-purpose analysis, monitoring and asset management measures can help avoid premature repair or replacement, unplanned shutdowns and to help optimise production.



04

## Life extension

Extend the life of your asset by addressing threats to its integrity.

As an asset approaches the end of its planned or design life we help you make informed decisions on the feasibility of extending its life. We assess the current condition, the safety and environmental implications of continuing to operate, and the cost and practicality of any upgrade work.



05

## Late life management

Eliminate unnecessary activities to reduce costs.

Late life asset management is crucial to ensuring continued safe and profitable Integrity Operating Windows. We assist with bridging the gap between late life operations and cessation of production, helping you reduce cost by optimising your asset management activities, evaluating operating models and identifying and reducing tasks that don't fulfil profit or safety objectives.



06

## Decommissioning

Manage the risk of permanent shutdown.

Decommissioning is a costly process, carried out at the very point in the asset lifecycle when revenue is at a minimum. We assist in the development and management of decommissioning programs - identifying, managing and resolving risk through services including residual life assessments, lifting equipment assessments and review of asset management processes for the shutdown phase.





# Expertise applied



## Ethylene plant

**Background** Our client was operating a seven-year-old plant that had no prior corrosion management or Mechanical Integrity (MI) inspection program in place. This was a concern for both the facility management and corporate teams as the level of risk to the facility was not being measured, managed or understood.

**Vysus Group solution** We collected design, process and corrosion data and established an optimised Risk-Based Inspection (RBI) program that met both company and regulatory requirements to improve safety and maximise profitability.

**Result** Our RBI inspection plan has 1,500 locations covering internal damage mechanisms and corrosion under insulation (CUI), compared to a traditional plan, which has 16,000 locations covering internal corrosion only. The initial cost savings were \$500,000, with an additional \$500,000 of ongoing savings over 15 years with an estimated total savings of \$7.5M USD.

## Oil & gas refinery

**Background** Our client's MI program was using a standard time- based approach that was inspecting piping per line item. This resulted in failures that impacted on integrity and reliability performance and subsequent high inspection costs

**Vysus Group solution** We established a software enabled RBI methodology, including the development of systems and circuits to help better define corrosion Damage Mechanisms (DMs) and set-up a more targeted inspection program. We subsequently conducted Corrosion Monitoring Location (CML) optimisation, to pinpoint areas of high risk to damage and update Inspection Test Plans (ITPs) to deploy more effective inspection techniques/ methodologies for increased Probability of Detection (PoD).

**Result** We improved the integrity, reliability performance and safety of the facility, ensuring a more effective performance and continued compliance with Process Safety Management (PSM) requirements, with minimal disruption to operations. We helped the client collect 96% of data based on engineering documentation, reduce fixed equipment internal inspections by 50%, decrease piping inspection by 85% - with projected bottom line savings of \$52 million over the next 10 years.

## Agricultural chemical manufacturer

**Background** Our client was implementing an MI RBI program for its largest facility following a transition from a time-based inspection approach. Corrosion damage mechanisms had not been previously identified through formal corrosion assessment, exposing equipment to higher risk and increased inspection cost.

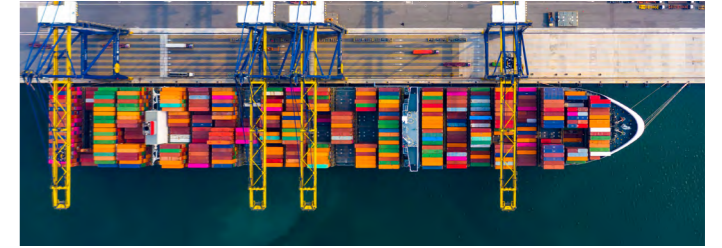
**Vysus Group solution** We collected design, integrity, process and corrosion data remotely to minimise personnel exposure and conducted a corrosion Damage Mechanism Review (DMR) to identify all threats to the facility. This was subsequently used in the implementation of a software enabled RBI program.

**Result** We were able to successfully implement the client's RBI program, on time and on budget. This was crucial for its facility as any delays would have had a significant impact to operations, as a facility turnaround was planned later that year. By completing the RBI, we were able to identify high-risk assets and develop inspection test plans that needed to be included in the upcoming turnaround schedule, minimising facility risk and associated cost.





# Expertise applied



## North American gas plant operator

### Background

Our client recently commissioned a new facility and asked us to design and implement an MI program that would ensure the facility met the OSHA PSM requirements. Our client had no internal resource experience or capability to draw on which exposed the company to OSHA violations.

### Vysus Group solution

We identified all of the requirements to meet the OSHA PSM requirements for the MI program. We also recommended an RBI approach for the assets to help identify high risk equipment and optimise inspection plans and strategies. We were also able to recommend the deployment of a software RBI program to further enhance the efficiency of the program.

### Result

We successfully implemented our client's RBI program on time and on budget. This was crucial for their facility as any delays were exposing them to increased risk of non conformance with OSHA PSM. In addition we were able to achieve a 73% reduction in required CMLs for baseline inspections that also resulted in 40% overall savings for the inspection program with a minimum financial saving of \$500,000 per year.

## Transport and Infrastructure Operator

### Background

Our client identified asset management practices as a contributing factor to incidents and failure events on site. Maintenance strategies and plans for some equipment were suboptimal and was affecting safety and cost of operations.

### Vysus Group solution

We established an Asset Management policy and a Strategic Asset Management Plan (SAMP) for our client's assets and facilities. Our team identified critical equipment and developed optimised maintenance strategies and effective maintenance plans. To achieve an effective implementation and demonstrate value to the client's senior management team, we completed the project initially for a pilot asset, prior to expanding to others through a phased approach.

### Result

We helped bridge Asset Management (ISO 55000) gaps with the client, optimising safety and performance, while reducing costs.



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