



Case study

Osprey Integrity

Digital-enabled preventative
maintenance programs for
industrial assets

How 3D software enables preventive management for industrial assets

Background

When managing industrial and energy assets, turnarounds often lead to significant expenditures and operational losses.

To address these challenges, [Osprey Integrity](#) partners with [Trendspek](#) to implement an innovative approach that combines UAV solutions with Structural Lifecycle Management (SLM) software.

This collaboration has provided Osprey's clients with advanced tools for preventive maintenance, improved situational awareness, and a robust digital record of asset integrity that can be accessed online, anywhere in the world.

This digital solution has also enabled active monitoring of trends, setting the foundation for predictable maintenance conditions.

Results Overview

To date, over 250 deficiencies have been noted throughout the facility of various classification and urgency, including:

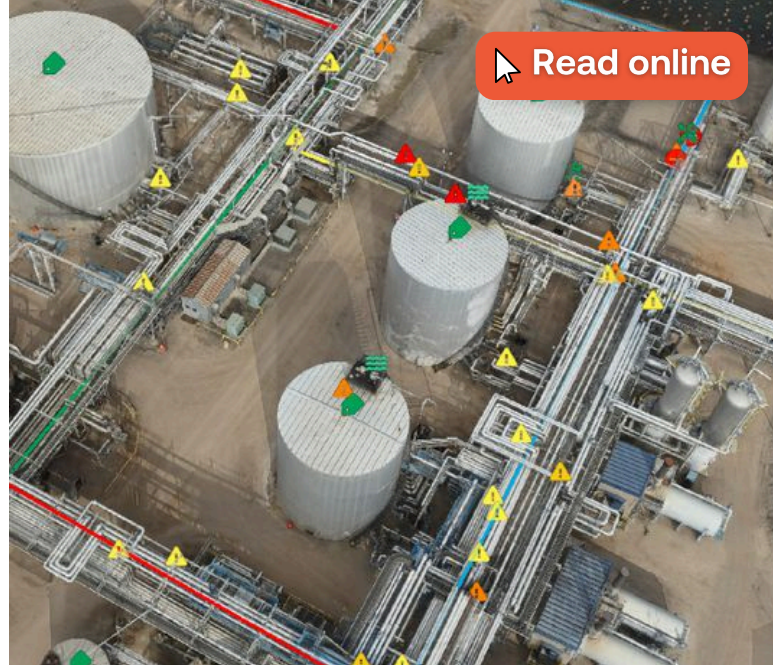
- Insulation deficiencies (e.g., punctures, missing NDE ports, dislodged cladding).
- Steam system leaks.
- Broken or deformed mechanical shutters.
- Thermal anomalies.
- Blocked ventilation outlets.
- Missing structural support hardware.



“Many of these deficiencies would never have been identified by traditional inspection methods, or at least not without considerable access effort and associated

costs. It’s been incredible to see this approach positively influence a preventive maintenance mindset at the refinery.”

COURTLAND PENK
PRESIDENT OF OSPREY INTEGRITY



Methodology: Integrated UAV and SLM Solution

High-Resolution 3D Models:

- Trendspek transforms UAV-captured imagery into millimetre-detail models with 90% site coverage, including inaccessible areas.
- Teams can conduct virtual site walkthroughs to anticipate resources and access required during turnaround periods, such as crane placements, resulting in reduced operational expenditures.

Data Contextualisation:

- Annotations and templates categorise deficiencies by priority, location, and repair requirements.

Interactive Tools:

- Real-time collaboration and virtual walkthroughs allow teams to prepare resources, plan repairs, and streamline processes.

Preventative Maintenance:

- With a detailed feedback loop and active monitoring, clients can establish predictable maintenance cycles, reducing downtime and minimising unexpected repairs.

90% COVERAGE

INCLUDING HARD-TO-REACH AREAS

250+ DEFECTS

IDENTIFIED AND MARKED UP VIRTUALLY IN-APP

INTERACTIVE

REPAIR PACKAGES WITH DESIGN/SPECS

MULTI-PURPOSE

DATA (THERMAL, SPATIAL, CONTEXTUAL)

MINIMISED

RISKS (SAFETY HAZARDS, FINANCIAL IMPACT)

Key benefits

Comprehensive Deficiency Identification

Traditional inspection methods can miss critical issues or require costly access solutions. By contrast, this digital-first approach allows for:

- Detection of both minor and critical issues.
- Computer vision tools to prioritise repairs based on severity.

Trendspek's customisable Templates and Folders allows Osprey to directly adopt their client's maintenance prioritisation tools, which consider the likelihood and consequence of failure to dictate repair urgency.

These templates are used alongside 3D structural data to guide employees and contractors on necessary repair actions, and provides situational awareness not previously possible without considerable administrative burden and field visits.

Predictive Maintenance

With a detailed feedback loop and active monitoring, clients can establish predictable maintenance cycles, reducing downtime and minimising unexpected repairs.

Risk Reduction and Cost Savings

- Fewer site personnel required, minimising safety hazards and operational disruptions.
- Enhanced situational awareness enables efficient resource planning (e.g., crane placements during turnarounds).

Maintenance Planning Tools

Interactive Repair Packages: Deficiencies were reported and categorised in Trendspek to create a consistent feedback loop between all parties - Osprey, the client, and contractors.

- 3D models provide detailed contextual information for repairs, including measurements, materials, and safety considerations.
- Conditional data can be compared over time and actively monitored, setting the foundations for predictive maintenance capabilities.

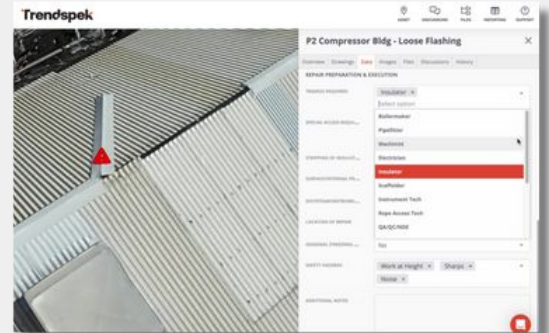
20/20 Vision of Potential Risks: Customisable templates in Trendspek allow for varied defect reporting and easy sharing:

- Safety Hazards (e.g. work at heights/sharps/noise)
- Category (e.g. structural/insulation/cladding/thermal)
- Critical Maintenance Priority to indicate likelihood of failure
- Access Requirements (e.g. Rope, Abseil, Crane Bucket)
- Repair Works Recommendations (e.g. who needs to work on this, materials required)

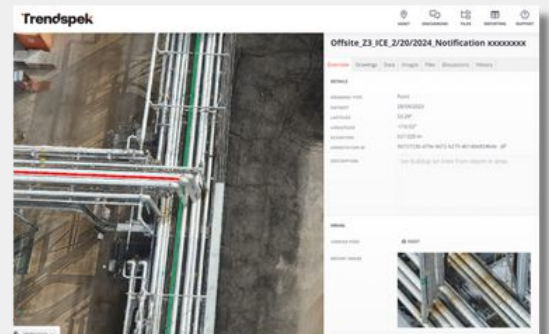
Secure and Scalable Collaboration:

- Real-time reporting with global accessibility.
- SOC2 Type 2 certification ensures data protection.

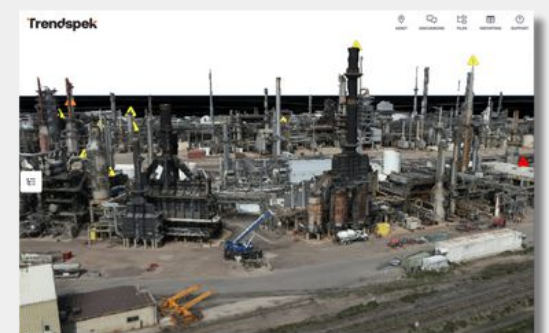
- 1 Customisable Templates used to determine location of repair, access requirements, safety hazards and more



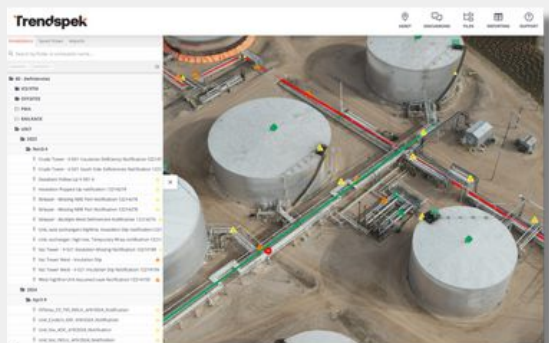
- 2 Annotation Card detailing measurements, location, markups, and other notes.



- 3 3D Precision Reality Twin model



- 4 Folder system to organise annotations and markups, ranging from minor to critical





SLM software delivers:

Repeatable, scalable inspections

- Millimetre-detail 3D model with 90% coverage, including hard-to-reach areas
- Identify deficiencies from minor to critical, using computer vision to inform prioritisation of repairs
- Measure and markup with full 3D context
- Safe NDT (Non-Destructive Testing)

Interactive reporting

- Collaborate in real-time by sharing logins with stakeholders and contractors
- Provide interactive reporting access
- Export data-rich PDF/XCL reports

Proactively protect against risk

- Support critical decisions with evidence
- Minimise site personnel and site disruption, resulting in less financial or safety risks

Streamlined maintenance planning

- Accurate specs/design to share with contractors for maintenance planning
- Interactive side-by-side timeline to monitor changes and predict future risks

Cost control and forecasting

- Layer interactive reports to provide full context for audits, risk assessments
- Plan CAPEX with minimal contingencies

Optimised processes for teams

- Unify global team communication within one virtual workspace
- Allow remote collaboration with global teams and specialists

Why Trendspek

Leading 3D Structural Lifecycle Management Software

Traditional inspection methods, often using scaffolding, elevated work platforms, cranes, and heavy machinery, can involve significant time, resources and dangerous safety risks.

Trendspek, a leading web-based platform powered by advanced 3D imaging and data analytics, offers an innovative approach to industrial facility inspections.

Transforming thousands of drone-captured images into high-quality 3D models, users can zoom into millimeter detail and use a suite of powerful tools to enable fast identification of potential risks and data-driven monitoring of asset condition.

Through powerful collaboration tools, users are able to securely share inspection information to facilitate the planning of future investigations and plan remediation works.

This approach empowers global teams to complete inspections without costly repeat site visits, while streamlining maintenance planning, and minimising shutdown periods while proactively actioning risks.

Protected by SOC2 Type 2 certification, Trendspek can be accessed securely via any web browser, anywhere in the world.

