AISUS

## INSPECTION SPECIALISTS

Minimising Risk, Maximising Value

Offshore Platform

Renewables

Drilling

Decommissioning

# About AISUS

## AISUS specialise in remote inspection solutions, pioneering new technologies designed to solve and improve on key industry challenges.

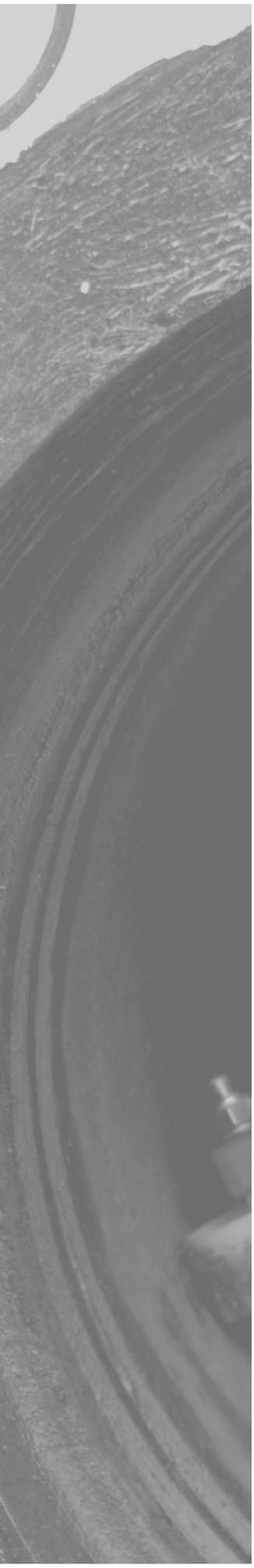
Innovation is at our core, with a focus on safe, cost-effective and time efficient services that support a variety of inspection requirements.

Our team of experts work directly with our clients to design and engineer a solution that delivers clear and measurable results to understand the condition of structural components.

We have secured a strong reputation for operational excellence and a track record for safe, high quality and successful project delivery, including advanced and visual inspection, laser scanning, and custom solutions across the energy industry.

AISUS

**INSPECTION SPECIALISTS**
Minimising Risk, Maximising Value



# Contents



# Global Operations

## Where we operate

Based in Aberdeen, our in-depth experience and technical capabilities enable us to deliver varying inspection requirements to multiple industries, including oil and gas, renewables and petrochemical across the world.


AISUS


## Oil & Gas

We offer a suite of remote inspection solutions which have been specifically designed to solve key industry challenges, across topside, substructure and subsea infrastructure.

## Renewables

Our experience in the evolving renewables industry is underpinned by our broad- ranging engineering expertise. We work closely with operators to develop and deliver low cost, high-value solutions to complex challenges.

## Drilling

The AISUS Riser Inspection Programme is efficient, easy to deploy and adds value and reduces costs. Our ABS class-approved inspection technology meets DNV industry standards, measuring wall thickness, weld integrity, riser bolts, riser inserts and main flanges.

## Decommissioning

We provide a full range of inspection services throughout the asset lifecycle, with many of our solutions transferrable for decommissioning applications.

*Our tools, services, skills and experience are transferable across multiple industries to solve inspection challenges and ensure integrity is maintained.*

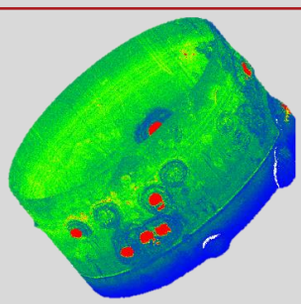
# Inspection Methods

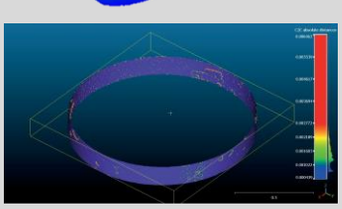
## Visual

AISUS employs cutting-edge technology to provide advanced inspection solutions across various applications. Our services include remote visual inspections of pipelines, caissons, tanks, small-bore vessels, and large platform legs. By utilising 360-degree cameras, AISUS generates real-time data, comprehensive imagery reports, and coloured photogrammetry models to highlight defect areas.

## Laser Scanning

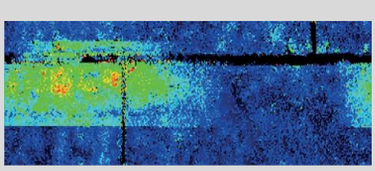
AISUS' underwater laser scanner captures submerged measurements with sub-millimeter precision, quantifying defects including holes and weld root corrosion and topside corrosion slabs. In-house post-processing offers scanned defect assessment.

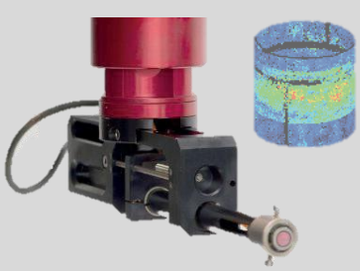




## Ultrasonic

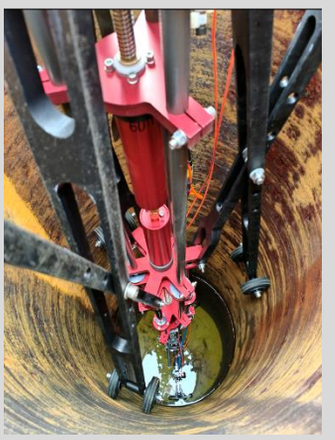
Whether a standalone ultrasonic inspection or combined with a visual inspection, our ultrasonic scanning tools deliver in-depth inspection reports. This verifies current structural integrity, and provides an early indication of defects, helping to identify the requirement for maintenance, repair or replacement.





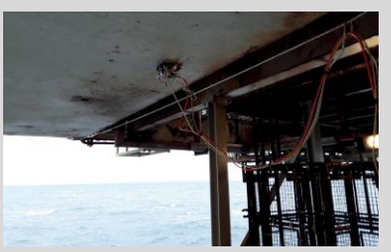
## Subsea ToFD

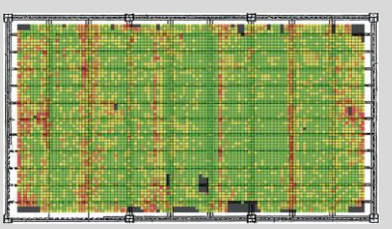
AISUS offers specialised Time of Flight Diffraction (ToFD) inspection services, leveraging the diffraction of ultrasonic waves to achieve highly accurate defect detection in welded joints and other structures. This advanced method provides precise and comprehensive data imagery, ensuring thorough and reliable inspection outcomes.



## Pulsed Eddy Current Testing (PEC)

Measuring through thick coating or marine growth without cleaning or removal is a significant challenge in asset integrity management, especially in hard-to-access areas. The PEC technique, based on electromagnetic induction, uses a current pulse to generate a primary magnetic field near the probe, inducing ‘eddy currents’ in the metal specimen. The results are time-based C-Scans (colour plots).





## Alternating Current Field Measurement

ACFM, this is an electromagnetic inspection. A technique that introduces alternating current into the surface of a component to detect surface breaking/cracks. The technique is non-contact electromagnetic capable of both detecting and sizing (length and depth) defects in metals.

# Capabilities Overview

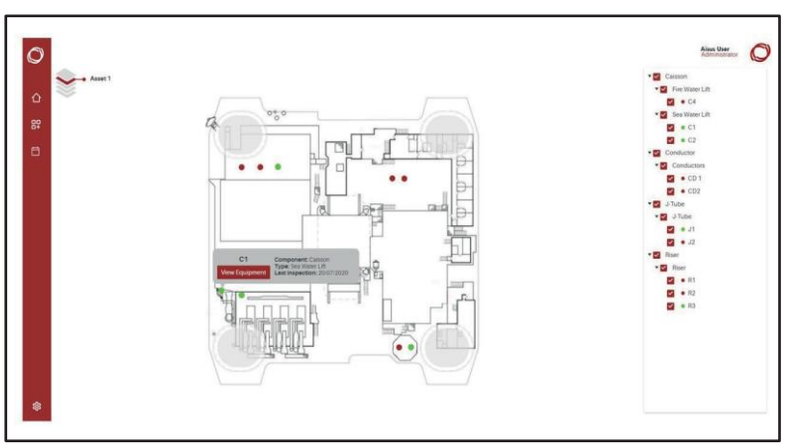
## Data Management

The structural integrity and condition of your asset are critical from an operational, maintenance and QHSE perspective.

Robust inspection data improve the cost, efficiency, and environmental impact of any asset, allowing for early intervention and cost-effective repair work. It also contributes to the avoidance of dropped objects and unplanned shutdowns.

Despite its importance, historic inspection and integrity management ownership data is often found (or lost) in a range of systems, across various business disciplines.

Gemini solves that problem.

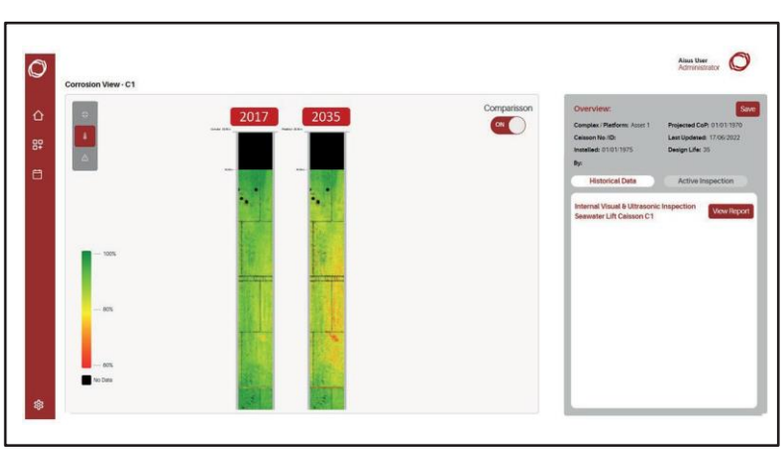


## Predictive Modelling

The largest set of Splash Zone analytics to support corrosion rates available to the global energy industry, ours is based on:

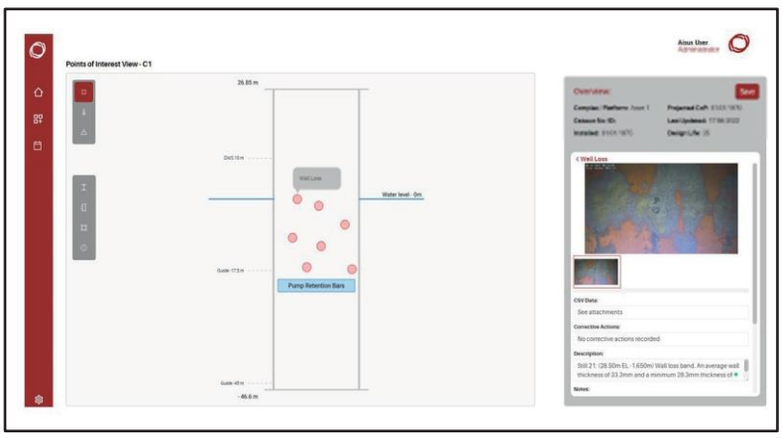
- <160 million UT reading
- <181 thousand images
- <8.5 thousand videos

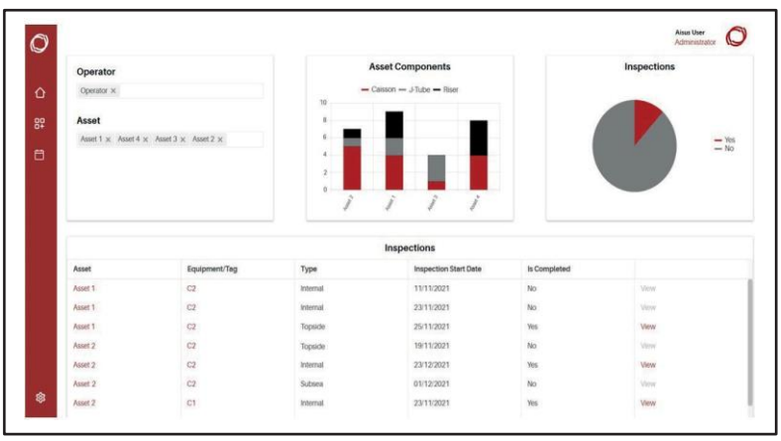
Enhancing maintenance, performance, and issue identification.

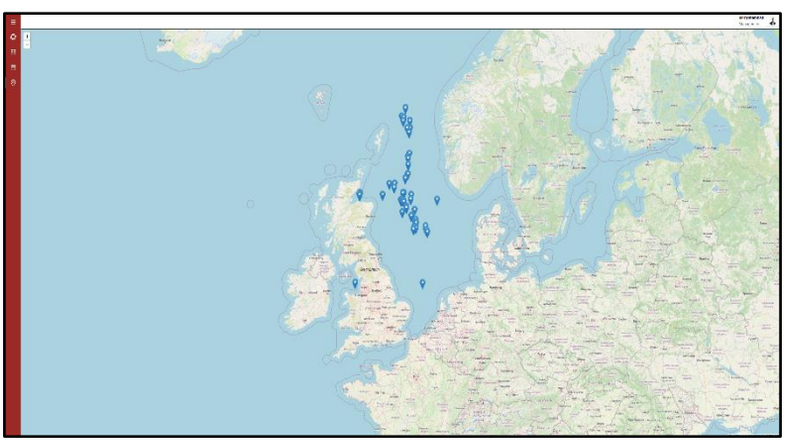


# How it Works

Consolidating asset data in one, easy-to-access, cloud-based location. Our data management platform brings topside, internal and subsea data together in a single view, empowering you with full control and visibility across your assets.



Gemini's integrated reporting is available free-of-charge to all AISUS clients, providing a full overview of:

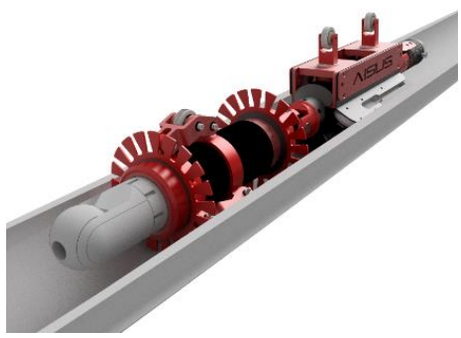
- Inspections History
- Grouped Components
- Maintenance Planning
- Inspection Scheduling, Workpacks, and Drawings
- Defect Visualisation, Photos and Reports
- Anomalies Tagging
- Predictive Corrosion Modelling
- Risk Ranking

*Contact us and arrange a free trial of the platform.*

# Capabilities Overview

## Internal Inspection

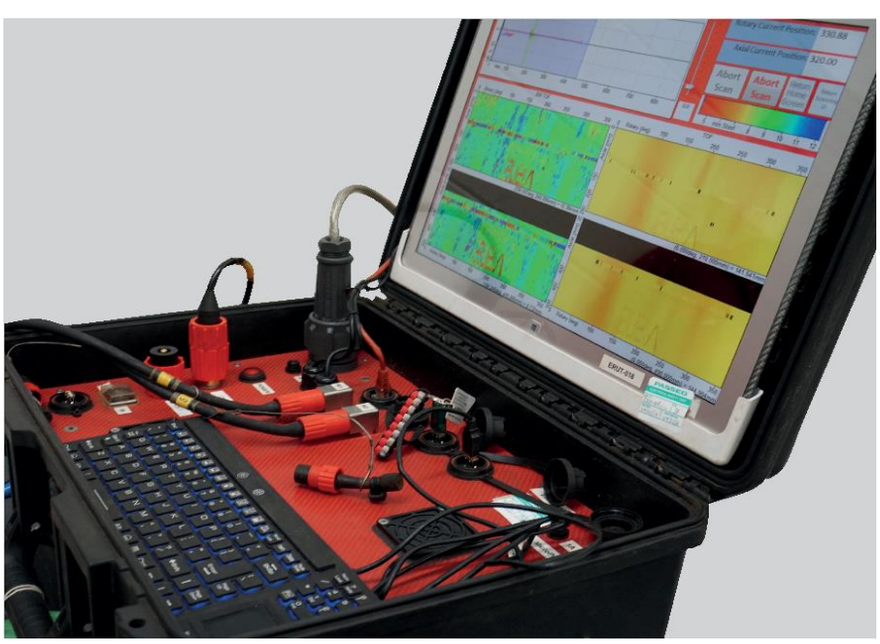
Remotely deployed corrosion mapping solutions provide quantitative wall thickness data for pipework and structures. Designed to be used in hazardous or hard-to-reach environments, where human entry is impractical or dangerous, increasing the safety of personnel. AISUS has developed unique ultrasonic inspection systems for deployment in various applications.

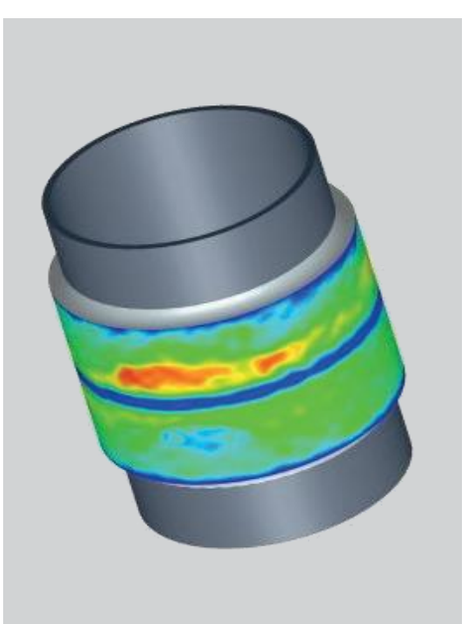


'Off the shelf' systems are readily available for applications including caissons, risers, J/I-tubes and process pipework. Coupled with our experience in automated deployment solutions we have the capability to develop custom-made tooling for the most challenging projects.

Utilising the latest NDE software and live C-Scan maps provide a visual representation of wall thickness to allow rapid screening. Where timely results are crucial, data can be exported immediately into comprehensive reports prior to demobilisation. The full ultrasonic waveform is captured allowing further analysis to be carried out, using additional processing techniques, including surface profiling and cluster analysis.

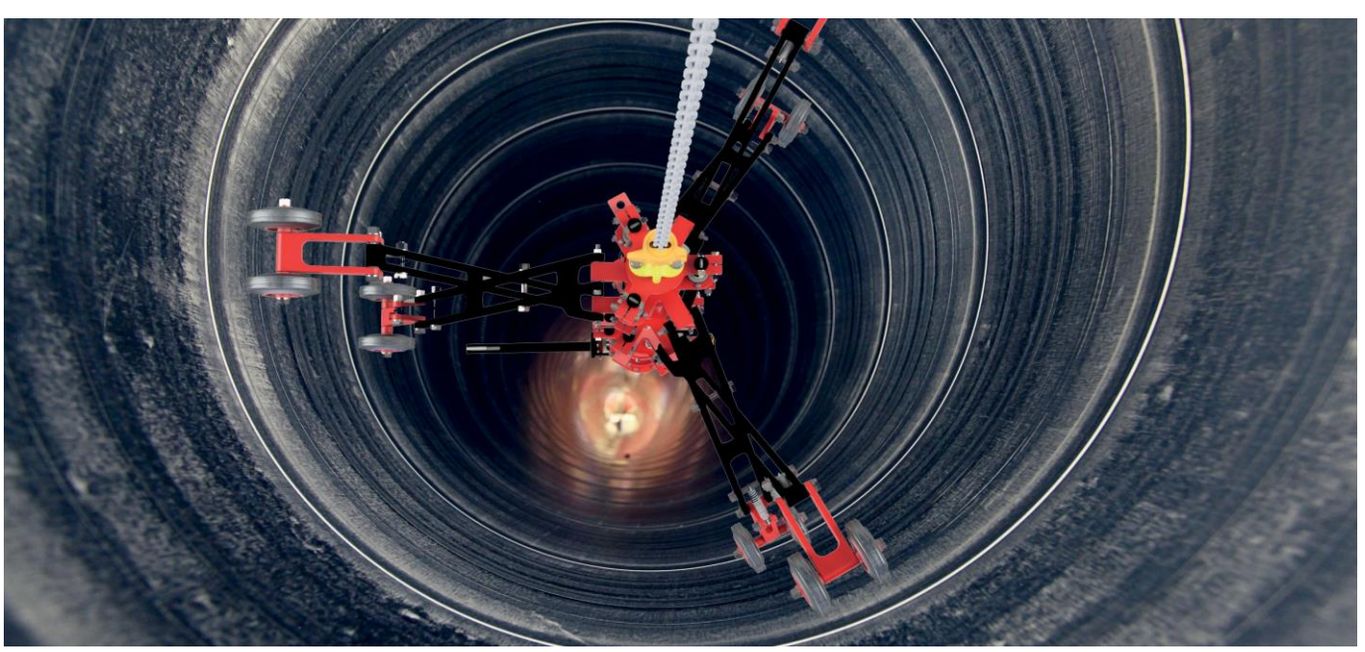
Whether a standalone ultrasonic inspection or combined with a remote visual inspection, the recorded data provides the in-depth information required to verify the current structural integrity of the item and identify any requirement for maintenance, repair or replacement.





Our services can be deployed worldwide and delivered safely to the highest standard by our experienced and highly competent engineers.

- Precision motion axes and sophisticated control systems allow repeatability of inspection for data trending over the asset life
- Adaptable scanners for mapping in vertical or horizontal pipework
- Data can be exported immediately or analysed further
- Full waveform captured, allowing extensive post-inspection analysis of data
- Internal / External defect identification
- Mapping resolution up to 2x2mm (if required)
- Quantitative technique
- Early identification of defects



# Capabilities Overview

## External Inspection

AISUS crawlers are remotely operated and are specifically designed to tackle the most challenging offshore environments, ensuring the integrity of your assets and safety of personnel.

Developed to inspect inaccessible, remote components and structures such as the underdeck, splash-zone and subsea infrastructure. Our crawlers are deployed from the topside.

**Benefits:**

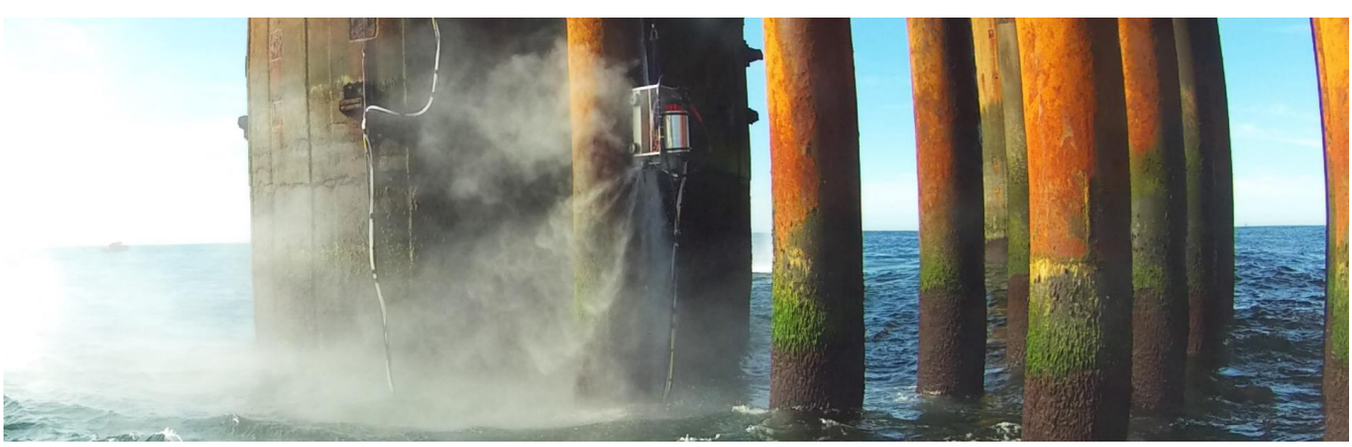
- Reduced personnel on board
- Increased levels of data
- Reduced risk
- Cost effective

**During general and detailed visual inspections (GVI/DVI), our crawlers:**

- Verify structural integrity
- Remove marine growth
- Install and remove messenger wires
- Inform CUI of inspection, repair, and maintenance management

**Suitable for:**

- Internal or external deployment
- From 8” pipe through to flat plate
- Subsea rated with a range of 1000m



# Technology

Based on electro-magnet and earthed magnet solutions, our crawlers are designed in-house and are customisable for:

- HD Cameras
- Pulsed Eddy Current (PEC)
- Ultrasonic Testing (UT)
- Alternating Current (AC) Field Measurement
- Laser Scanning
- Cutting Tools
- Gauging Tools
- High-Pressure Cleaning

Inspection of:

- Topside Plate
- J-Tubes
- Caissons
- Risers
- Conductors
- Monopiles
- Jetty Piles

# Capabilities Overview

## Drilling Riser Inspection Services

AISUS' inspection technology allows for quick and accurate measurement of wall thickness, weld integrity, riser bolts, riser inserts and main flanges, without removing buoyancy or stripping equipment.

Our tools are designed to be compact and easy setup, eliminating large, complicated tool packages, that are difficult to transport and operate.

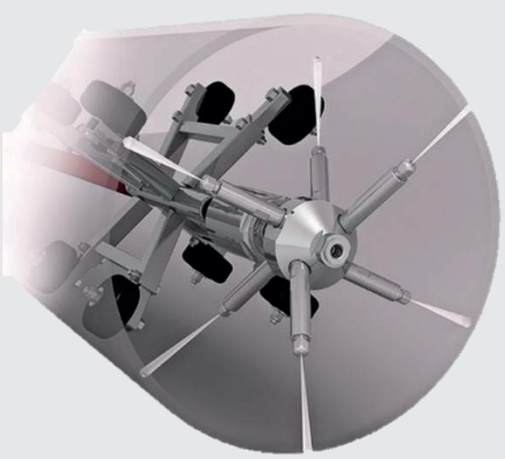
*Eliminate complex and timely processes by providing comprehensive and integrated inspection of your drilling riser system that saves time and money while reducing uncertainty.*

## Innovative Internal Inspection

**Benefits:**

- Inspections onshore or offshore
- Comprehensive inspection with greater accuracy of results
- Greater repeatability for trending
- Digitally recorded results and images for future comparison and trending
- Graphic displays for easier interpretation
- Early detection of defects for proactive maintenance

# AISUS Inspection Programme



AISUS Riser Inspection Programme is designed to add value and reduce costs.

This is achieved by deploying class inspections either onboard or on-site utilising advanced inspection techniques, state-of-the-art solutions to provide an unparalleled riser inspection service.

**Services and Tools include:**

A unique set of benefits unavailable from any other inspection source completely changes the way marine drilling riser inspections and certifications are performed.

**Schedule based inspections**

- Between well, annual, five and ten years

**Condition Based Maintenance Program "CMB"**

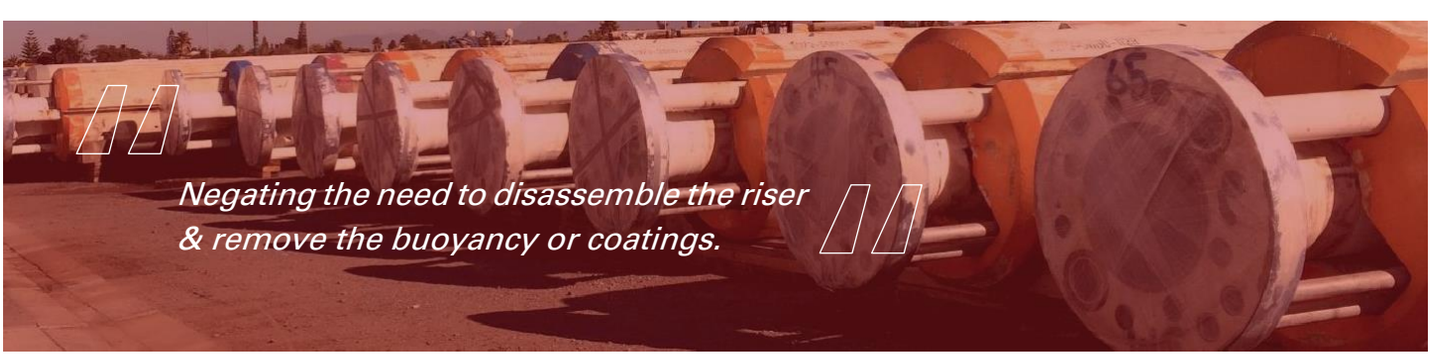
- Recertification intervals based on actual condition and fatigue

**Automated Main Tube & Auxiliary Line Inspection**

- WT scan using UT
- Weld Inspection
- Flange to pipe and pipe to pipe, TOFD, or Phased array inspections can be executed horizontally

**Subsea and Rise Bolt Inspection**

- Complies with industry-standard codes and recommended practices
- State of the art inspection equipment



# Capabilities Overview

## Subsea TOFD (Time of Flight Diffraction)

AISUS offers advanced Time of Flight Diffraction (ToFD) technology for detecting and sizing weld defects in circumferential and axial weld seams, within structures. ToFD can be deployed independently or in combination with other ultrasonic methods, making it versatile for various applications.

This is a non-destructive ultrasonic inspection method to detect faults, providing accurate sizing through wall welds.

ToFD relies on the exact measurement of time taken for ultrasonic waves to travel from the emitting probe to the diffracted waves received by the probe.

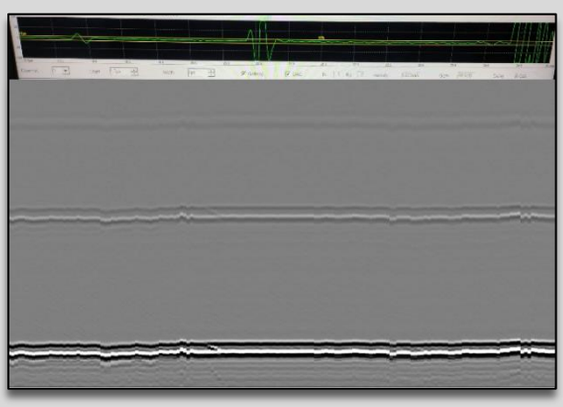
Measuring this ‘time of flight’ gives an accurate size and location of the flaw.

## The ToFD Theory

ToFD uses longitudinal waves for flaw detection in welds. Ultrasonic sensors are placed on either side of the weld, with one emitting an ultrasonic beam and the other receiving reflected and diffracted signals from anomalies.

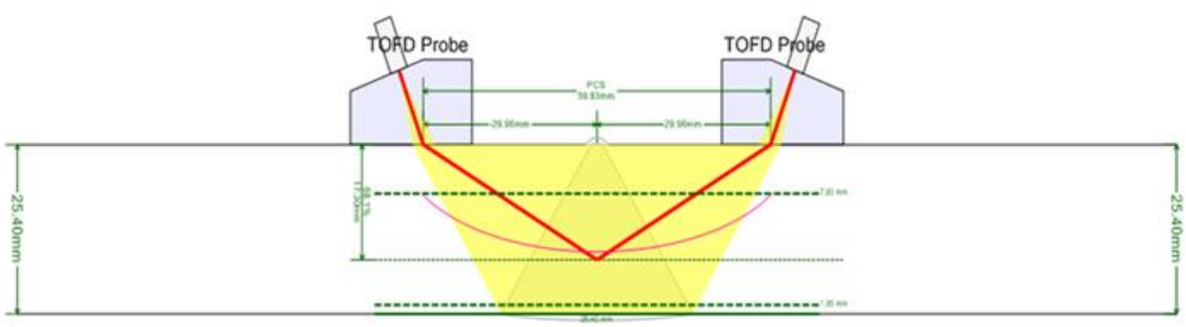
When the beam detects a flaw, diffracted energy spreads in all directions. By measuring the time of flight of these diffracted beams, accurate and reliable defect detection and sizing are achieved, even for off-oriented cracks.

TOFD inspections collect A-scans, to create B-scan images, which are analysed to measure defect dimensions.



**Benefits:**

- Very accurate for detecting flaws in welded structures
- No shutdown required
- Quick set-up and rapid scanning
- Cost-effective compared to phased array systems
- High sensitivity to detect even the smallest of welding flaws
- Reliable method of corrosion inspections
- Versatility in maintaining structural integrity
- Accurate sizing of defects
- Detailed and quantitative data is immediately available
- Full coverage

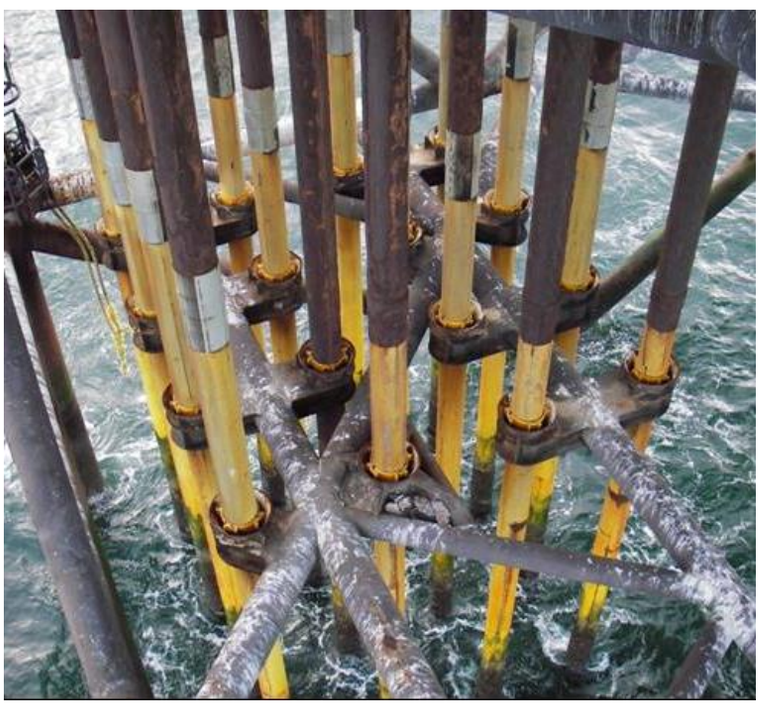



*Specialists with Subsea ToFD. Reflecting and diffracting ultrasonic sensors from anomalies.*

# Capabilities Overview

## Visual Inspection

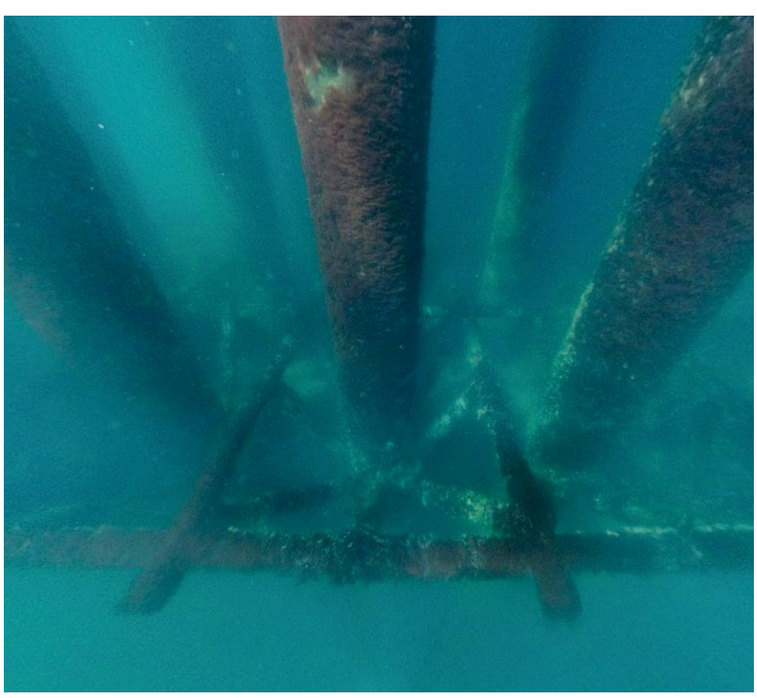
AISUS specialise in delivering advanced remote visual inspections, our cutting-edge techniques and experience team work closely with clients to create a custom-solution for your specific needs, ensuring critical inspection data is captured to maintain the integrity and safety of your assets.



Our fleet of cameras can be deployed at short notice to deliver the highest quality real-time footage during inspections at all stages of the asset lifecycle, from commissioning, through operations, to decommissioning, controlled remotely by our experienced engineers.

With camera/crawler systems suitable for use within explosive atmospheres, or deployment to depths of up to 1000m, we can engineer solutions to challenging projects.

Our in-house design team can also assist with custom tooling for access to complex pipework and structures.



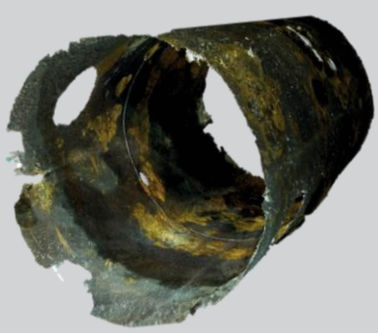
- Real-time footage for immediate assessment
- Detailed panoramas or photogrammetry models
- Fleet of cameras available including ATEX-certified, standard and high-definition systems
- Off-the-shelf or custom-made camera centralisers available to ensure optimum visual inspection results
- Suitable for all remote visual inspection purposes from initial screening to full close visual inspection
- Pioneering solutions for challenging inspection projects, including tracked crawler systems and multi-axis tooling

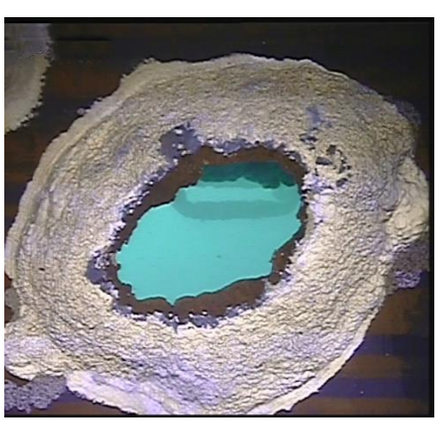
## 360-degree 8k Video & Stills

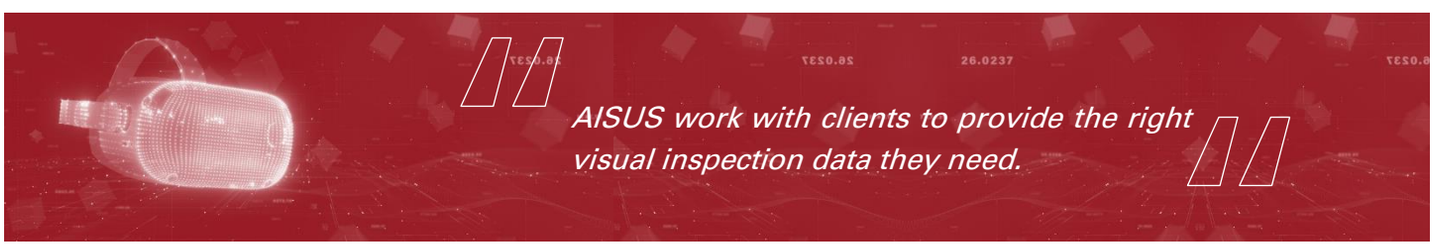
The AISUS 360 marinised VR camera captures 360 VR videos and stills up to 8K 3D and can record immersive 8K video while streaming in 4K.

**Features include:**

- Precise 9-axis FlowState stabilisation
- CrystalView monitoring
- Automatic proxy file creation
- Stitch-free editing







AISUS

**AISUS Offshore Ltd**
Unit 21 Denmore Road, Bridge of Don
Aberdeen
AB23 8JW

+44 (0) 1224 222070

info@aisus.co.uk

AISUS.CO.UK

**Barry Marshall**
General Manager
Aberdeen
+44 (0) 7715681596
barry.marshall@aisus.co.uk