

ICR.

ICORR ABERDEEN BRANCH INDUSTRIAL VISIT

Tuesday 25th April 2023

ICR.

Event Programme:

17:30 – 18:00: Arrival of attendees, sign-in and refreshments

18:00 – 18:05: Welcome & Introduction to ICORR - ICORR Chair [Dr Muhammad Ejaz]

18:05 – 18:15: Welcome & Introduction to ICR - Antonio Caraballo [Inspection & Integrity Management Services Director]

18:15 – 19:15: Facilities Tour / Demos, with Q&As.

- Sky-Futures™ UAS Inspection
- OMNI
- INSONO
- Technowrap™ Engineered Composite Repairs
- Chemical Injection / Corrosion Monitoring
- QuickFlange™ Weldless Connectors

19:15 – 19:30: End of Industrial Visit

Values

Respectful

We respect the environment, the cultures where we operate and each other. By being inclusive and working together openly, we can achieve our common goals

Responsible

We are fair, honest and act with integrity. By never compromising on our responsibility, we demonstrate transparency in our decisions and actions.

Dynamic

We are ambitious, innovative and driven. By empowering our people and partners we are able to adapt quickly and remain agile.

Our Sectors



Defence

Defence | Government Agencies



Process Industries

Manufacturing Plants | Chemicals | Pharmaceutical



Oil & Gas

Offshore Installations & FPSOs | Onshore Terminals & LNG | Tanks, Vessels & Pipelines | Petrochemicals



Power

Thermal | Nuclear | Transmission & Distribution



Renewables

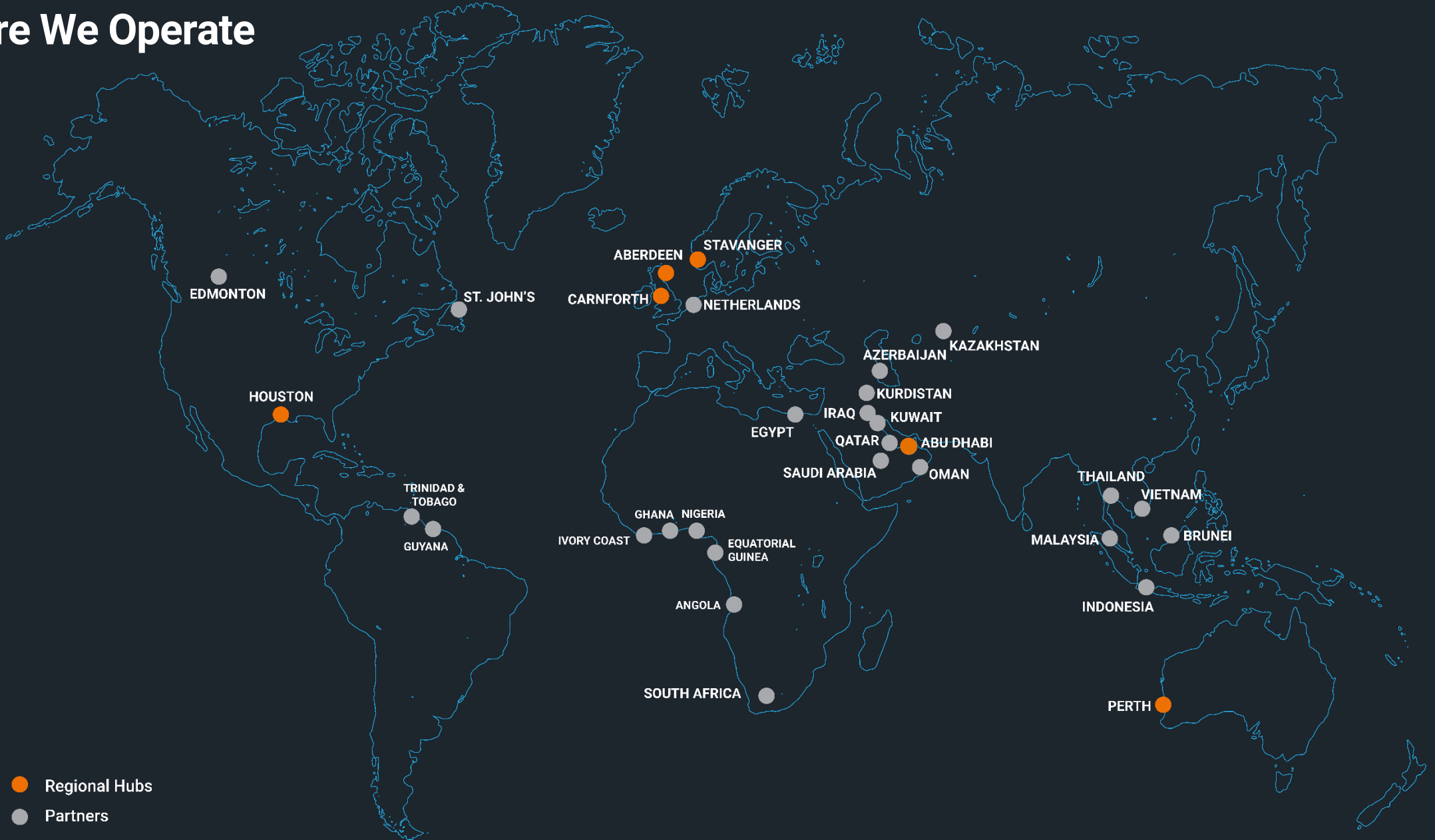
Wind | Biomass | Hydro | Hydrogen | Geothermal



Utilities and Infrastructure

Telecoms | Transportation and Marine Water

Where We Operate



- Regional Hubs
- Partners

What We Do



Repair and Maintenance

- › Technowrap™ Engineered Composite Repairs
- › Online Leak Sealing
- › Specialist Onsite Machining & Controlled Bolting
- › Quickflange™ Weldless Connectors



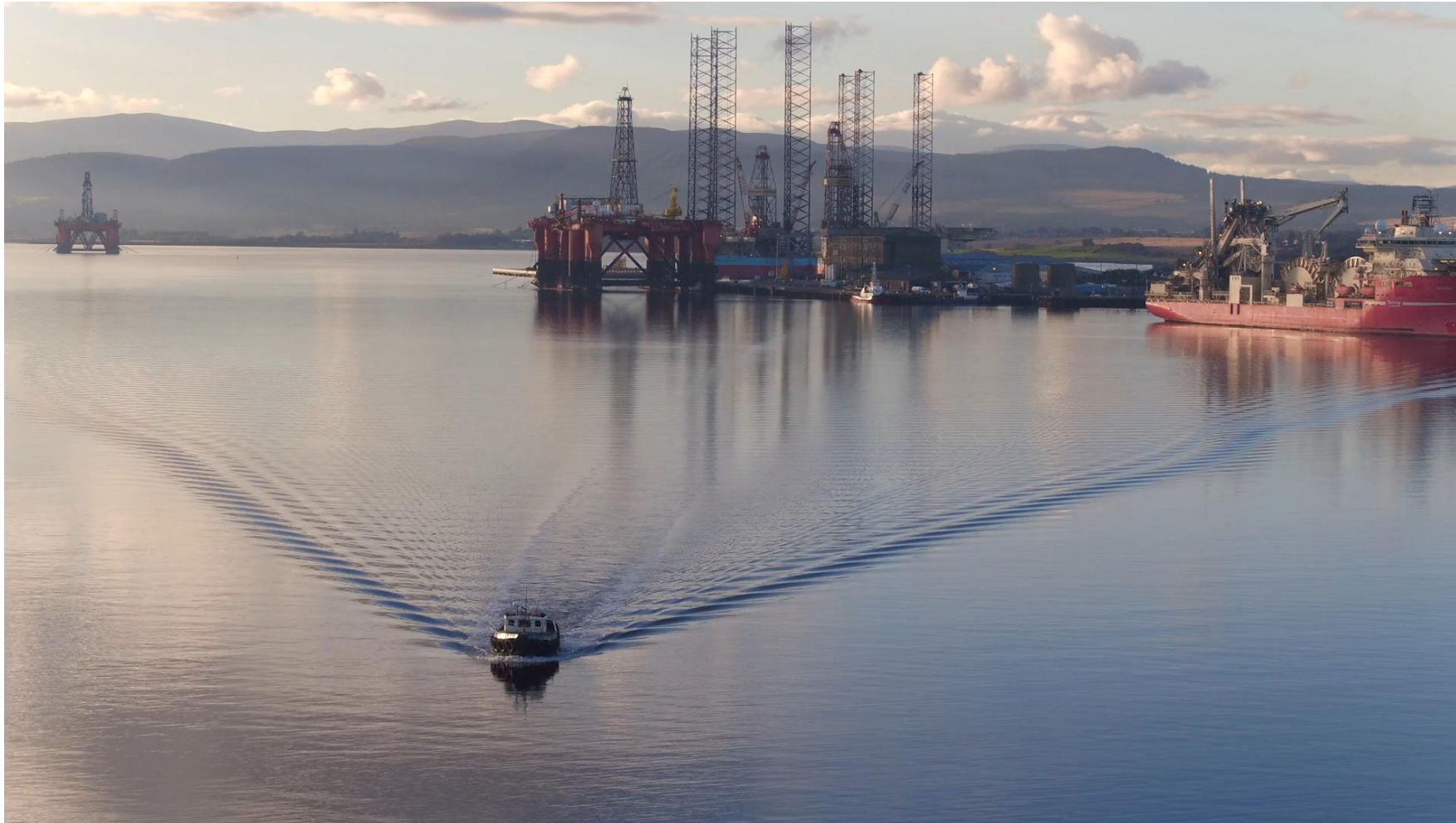
Integrity and Inspection

- › Integrity Monitoring
- › Chemical Injection
- › Sky-Futures™ UAS Inspection
- › INSONO Composite Inspection
- › OMNI Integrity Software

Repair and Maintenance Solutions

A technology-enabled provider of specialist repair, inspection and integrity solutions

Technowrap™ Engineered Composite Repairs



Technowrap™ Features



Engineered Solution

Technowrap™ is internationally recognised and all engineering is bespoke; completed in-house in accordance with the latest iterations of ISO 24817 and ASME PCC-2. ICR have been active in the development of industry standards from the outset of the widespread adoption of engineered composite repairs



Extensive Capabilities

Technowrap™ can restore the integrity of pressure systems, pipelines, and structural components. Solutions can be designed for high pressures and temperatures and are suitable for most defect types. We have a large range of complementary resins suited to different environments.



Proven Track Record

Since 1992, we have completed tens of thousands of installations worldwide. Our repairs are delivered with full traceability and documentation to demonstrate engineering, testing, and installation.



24hr Response

We can provide emergency response and support from design to mobilisation within 24 hours where required. We have a dedicated team of trained, competent composite engineers who are available to provide support 24 hours a day seven days a week.



Rigorous Testing

In addition to the baseline testing required in ASME PCC2 and ISO 24817 we conduct thorough testing of various repair types considering multiple parameters generally defined by client specifications.



Long Term Repair

The defined life is the intended service lifetime of the repair. In accordance with ISO 24817, the design lifetime is between two and 20 years. For ASME PCC-2 401, the loading scenario is assessed, and the repair designed accordingly, short or long term.



Approvals

ICR holds Lloyds Register type approval, DNV type examination approval and ABS design assessment approval. This demonstrates that ICR's test data, design, installation, and training procedures are compliant to ISO 24817 and ASME PCC-2 401.



3rd Party Training

We are committed to training and cross skilling our clients and partners globally allowing local teams to carry out scopes around the world further reducing carbon footprint.

Quickflange™ Weldless Connectors



Quickflange™ Features



Extensive Range

We can accommodate ¾" – 14" pipework in all common piping materials across 150# - 900# pressure classes however our range is continually expanding with new qualifications.



Time Saving

Our simple and fast installation process generates an 80% minimum time saving over welding.



Proven Track Record

20 years' experience across the global energy sector with further diversification into new industries.



Environmental Benefits

Quickflange™ is a 100% cold work solution with zero emissions generated.



Accreditations

Quickflange™ has gained industry recognised approval through our DNV and ABS Type Approvals.



Permanent Repair

This simple technology offers a permanent gas tight mechanically strong connection ideal for pipework repairs, modifications, new spool tie in or decommissioning of lines.



Applications

Our industry recognised accreditations allow us to work on a variety of line medias from firewater systems through to hydrocarbon liquid and gas.



3rd Party Training

We are committed to training and cross skilling our clients and partners globally allowing local teams to carry out scopes around the world further reducing carbon footprint.

Online Leak Sealing



Mechanical Clamp Repairs

We can provide bespoke solutions in the form of engineered leak sealing clamps and piping enclosures, manufactured and commissioned in-house. Trained and certified technicians allowing a responsive and safe service.

Flange Clamps | Pipeline Enclosures | Bespoke Engineering For Complex Geometry

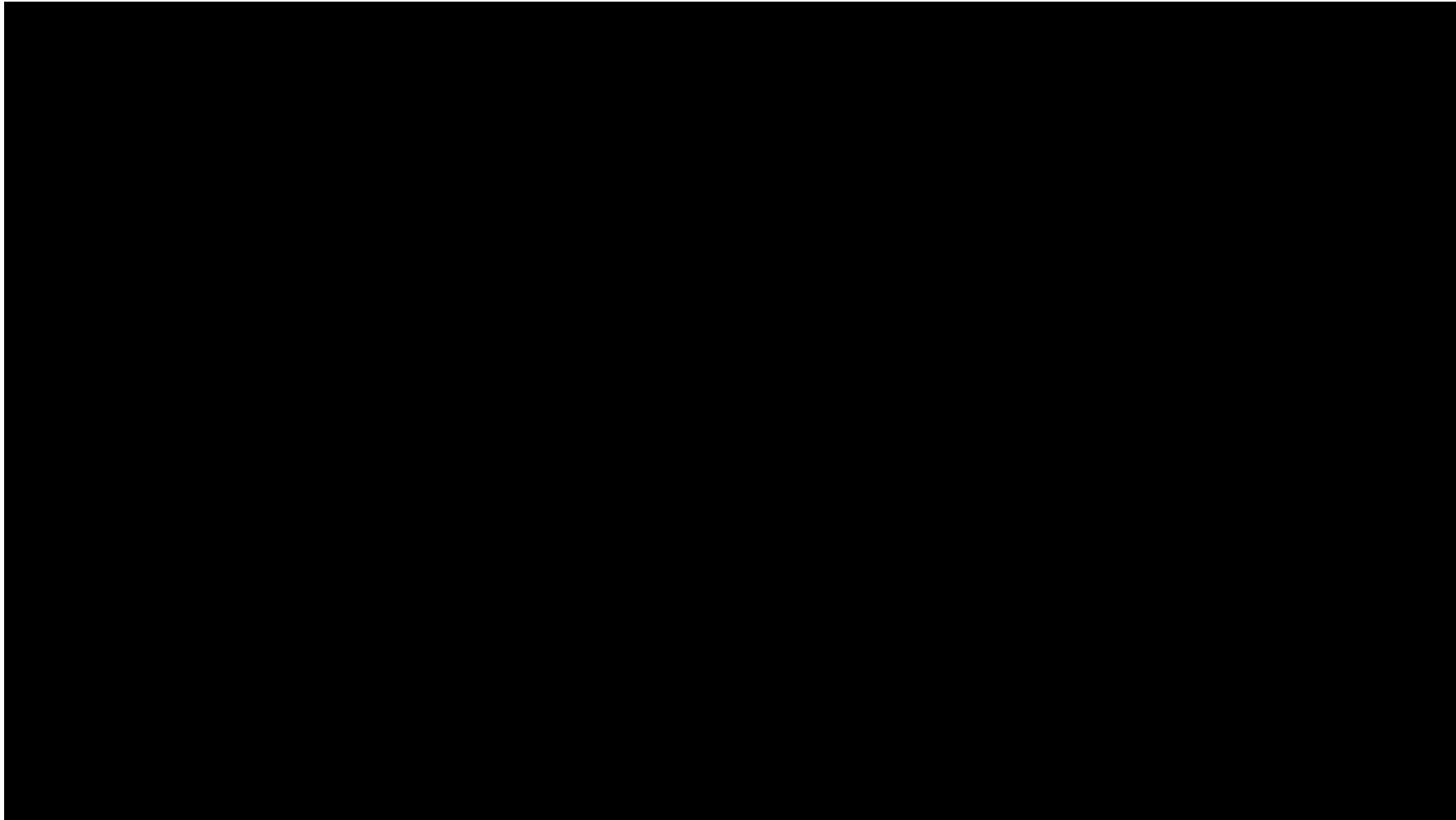


Leak Sealing Craft Repairs

We repair leaks on pressure system components – flanges, valve glands, vessels, pipework and fittings whilst your plant continues to operate at normal pressures and temperatures, our compounds and techniques allow us to operate on a wide range of products and services including steam, water, air, hydrocarbons, gases, chemicals and acids.

Flange Leaks | Valve Gland Leaks | Temporary Patches

Online Leak Sealing Training Rig



Online Leak Sealing Features



24hr Response

Ability to respond quickly to tight deadlines, offering a 24/7 service



Proven Track Record

Working with leading organisations, carrying out critical services both on and offshore globally



Extensive Capabilities

Leak Sealing technologies to cover a wide range of operational requirements



In-house Design & Manufacturing

End to end solution for the design and manufacture of bespoke applications



FEA Analysis

Our design team can provide in-depth analysis into a variety of complex geometries



Minimise Unplanned Shutdowns

Our service can keep your asset running until the next planned shutdown



Multi-Skilled Technicians

Our industry recognised accreditations allow us to work on a variety of line medias from firewater systems through to hydrocarbon liquid and gas.



3rd Party Appreciation Courses

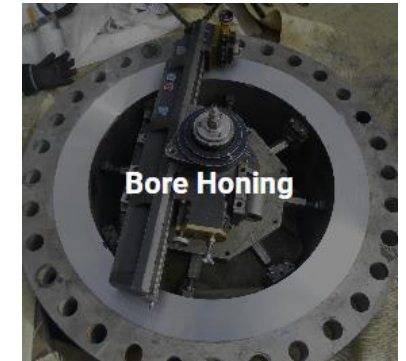
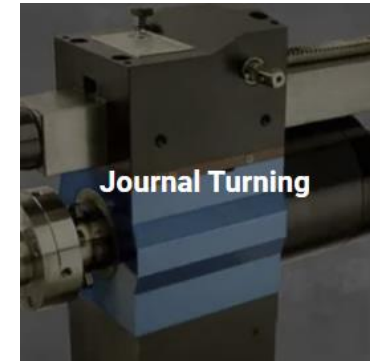
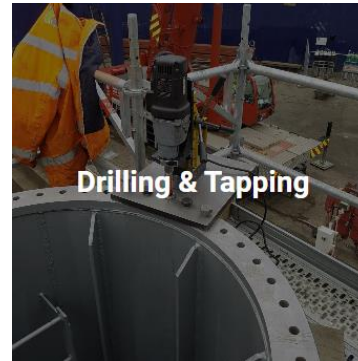
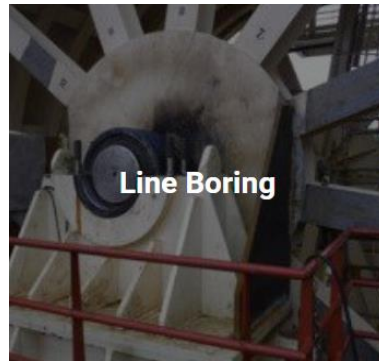
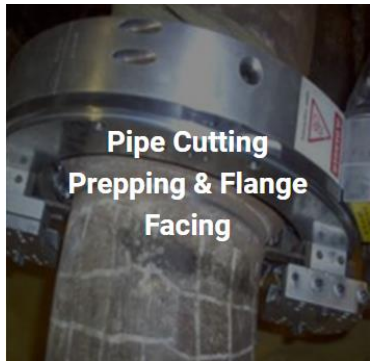
Visit our dedicated Leak Sealing training site and gain first-hand experience of the issues and our solutions

Specialist Onsite Machining & Controlled Bolting

On-Site Machining

We support all machining disciplines when not practical to transport the component parts to a conventional machining facility, providing cost effective machining solutions to all industry sectors.

Our combination of in-house machine design, development and manufacturing, coupled with state-of-the-art equipment, innovative engineering solutions and technical expertise, guarantee a high standard of work to meet clients' specific mechanical requirements. ICR carry out on-site machining to high-precision workshop tolerances & surface finishes.



Specialist Onsite Machining & Controlled Bolting

Controlled Bolting

We provide a wide range of tools along with highly experienced personnel who can perform site surveys, recommending the right solutions to meet our clients specific requirements. With a proven track record of leak-free shutdowns and start-ups, our experienced project management team support at site activities and all controlled bolting services.

Our Flange Management processes and procedures ensures all aspects relating to bolted connections are clear, concise and safe operationally combined with the required trained expertise. With more than 20 years experience, we can support all of your bolting requirements.



Specialist Onsite Machining & Controlled Bolting Features



24hr Response

Ability to respond quickly to tight deadlines, offering a 24/7 service



Proven Track Record

Working with leading organisations, carrying out critical services both on and offshore globally



Extensive Capabilities

Hydraulic bolt tensioning, torqueing, nut splitting, flange spreading and alignment



Project Management

In-house flange management, along with site based project support



State-of-the-Art Equipment

From modern low profile hydraulic wrenches to innovative battery operated torqueing equipment



Minimise Unplanned Shutdowns

We have the capability and expertise to respond quickly – 24/7 – to tight customer deadlines to all industry sectors.



Performed in Remote Locations

Trained and qualified technicians available to undertake your bolting requirements at any site, including off-shore



In-house Design & Manufacturing

Capabilities to create bespoke machinery to conduct complex projects

Integrity & Inspection Solutions

A technology-enabled provider of specialist repair, inspection and integrity solutions

Integrity Monitoring

Over the last two decades ICR has become an industry leader in integrity monitoring solutions offering clients independent technical consultancy tailored to their specific needs.

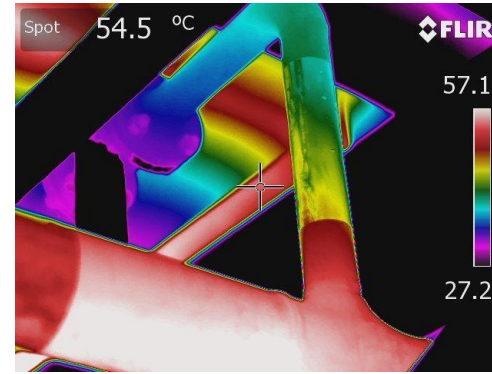
Our consolidated service reduces manpower requirements whilst maximising data acquisition in one interface.



Corrosion Monitoring Solutions



Oilfield Microbiology & Chemical Monitoring



Optical Gas Detection, Quantification & Thermography



Access Fitting Refurbishment / Decommissioning Services

Other Services include:

Caisson Monitoring Strings | Chemical / Corrosivity trials – third-party verification of chemical performance and chemical optimisation | Sand Monitoring | Rental Services/Consumables Supply | Dissolved Oxygen Monitoring | Methane Quantification

Integrity Monitoring Features



Unbiased Solutions Provider

We are purely service-based and unbiased towards any Original Equipment Manufacturer, recommending what best suits client specific needs



Multi-skilled Technicians

Our multiskilled field technicians can execute a wide range of combined service scopes



3rd Party Training

We can provide 3rd party audits and verification. Training can also be provided with competency assured



24hr Response

We can provide emergency response and support from enquiry to mobilisation within 24 hours where required



Data Management

Combined reports and data acquisition, effectively presented and managed



Time Saving

Our service can keep your asset running until the next planned shutdown



Remedial Support

We implement efficient monitoring programmes providing early warning of integrity threats and ensure compliance with HSE standards



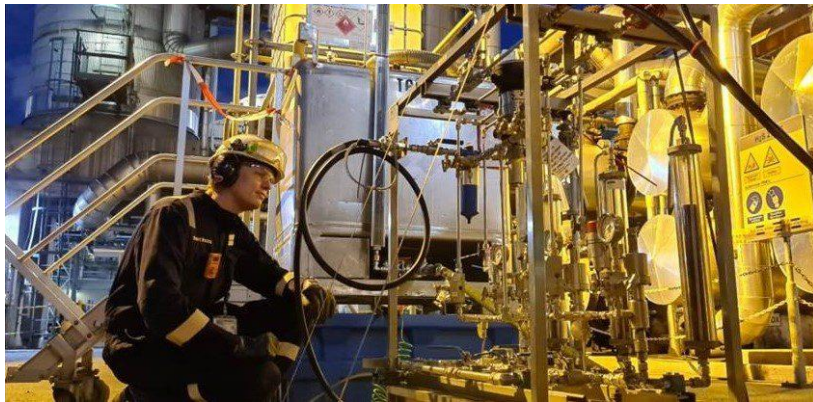
Proven Safety Record

Over 20 years providing specialist services to the global Oil and Gas industry with no reported incidents

Chemical Injection

We have over 30 years of proven international experience, providing rental, sale and maintenance packages tailored to our clients' specific requirements.

Our provision of pneumatic and electrically-driven chemical injection pump services cater for a range of injection rates, pressures, chemical duties, and environmental factors. All systems are built and tested to the highest standard in our state-of-the-art facilities.



Rental Services



Engineered Systems



Spares & Servicing

Pump & Equipment Sales

As the appointed Authorised Service Centre for Williams & Milton Roy, our personnel are qualified to service and repair Williams & Milton Roy products, including cover under manufacturer warranty.



Chemical Injection Features



24/7 Support

We have a dedicated team of trained, competent specialist who are available to provide technical support 24/7



State-of-the-Art Equipment

We are proud authorised distributor for market leaders in precision and reliability, Kenco Engineering product range, Williams Pneumatic Air Driven pumps and Milton Roy Electric drive pumps.



Client Training

We offer training tailored to each client's individual needs from our dedicated training facilities in Aberdeen, Carnforth, and Stavanger.



Proven Track Record

With over 30 years' experience, we strive to surpass our customers' expectations by providing a personalised, bespoke, and cost-effective solutions



Extensive Range

Our large rental fleet of chemical injection pumps skids can accommodate flowrates 0.0015 to 2,000 LPH



Engineered Solutions

We can provide a fully inclusive service from inception to maintenance – ultimately ensuring any equipment supplied will be fit for purpose and as future proof as possible within the requirements of the project.



Dedicated to Quality

Our pump skids and accessories are produced to the highest standard and comply with international standards such as UKCA, ISO, API, ATEX, CE, and others.



Spares & Servicing

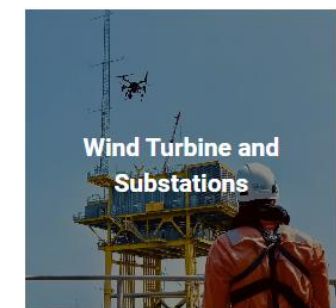
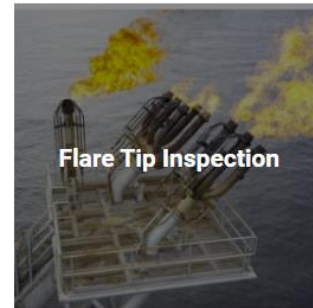
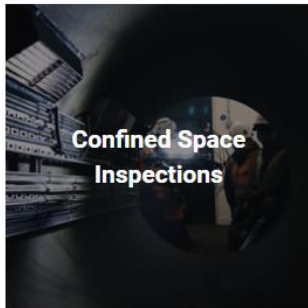
Our outstanding team of highly competent engineers and technicians, can provide first-class service and support throughout the pump's life cycle from design and manufacturing to spare parts and service

Sky-Futures™ UAS Inspection

SKY
-FUTURES™

Sky-Futures™ is a global leader of Unmanned Aircraft and remote sensing operations.

With over 10 years' experience, Sky-Futures Remote Pilots and Inspection Engineers have earned a reputation for operational excellence and unrivalled service delivery.



Sky-Futures™ Features



Safer, Faster & Cost Effective

Our modern Unmanned Aircraft provide services up to 85% cheaper and faster than traditional techniques



State of the Art Equipment

Specialised, industry specific sensors coupled with bespoke, purpose built rotary and fixed wing aircraft deployed on each operation



Cloud-based Reporting

All our industry-renowned inspection and survey reports are delivered via a secure cloud-based system



Supporting Net Zero

We work with SeekOps® Inc to provide methane detection, localisation and quantification services using the SeekIR® sensor



Global Operations

Our clients are spread over 40 countries in 6 continents in the oil & gas, telecommunications, nuclear, utilities and renewables industries



Quality Data & Analysis

We provide our clients with end-to-end analysis services including data capture, data analysis and reporting



Extensive Capabilities

GVI and CVI inspections, Gas Detection and Quantification, Long Linear Surveys, Live Streaming; 3D, Photogrammetry and Digital Terrain Modelling and more...



Industry Accreditations

We routinely engage with multiple industry bodies to ensure our procedures are in-line with current best practice

INSONO Composite Inspection



INSONO Features



Reporting

Combines multiple technologies to provide clients with an automated, user-friendly visual inspection report / 3D model.



Rigorous Testing

A clearly defined acceptance criteria has been developed, backed up by an extensive test programme.



Environmental Benefits

Allows for the extension of defined life repairs reducing waste whilst avoiding carbon intensive alternatives.



Approvals

Giving the assurance required by the regulatory bodies within the parameters of industry standards API 579 / ASME PCC2 and ISO 24817.



Validated

Validated by the welding institute TWI with pending UKAS accreditation.



Portable Equipment

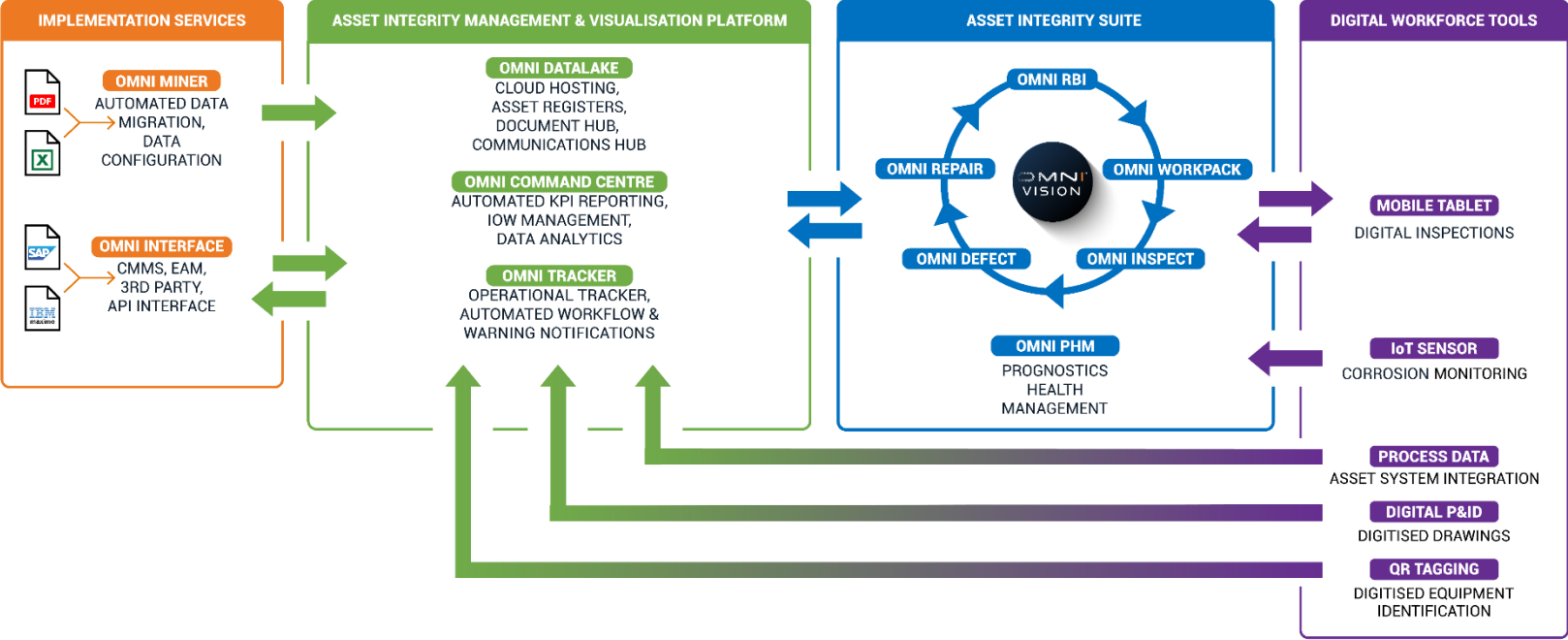
The portable hand-held equipment and specifically designed probes allow for inspection of all geometries including complex configurations.

OMNI Integrity Software



OMNI is a digital lifecycle asset integrity management solution, enabling companies to manage, predict, plan and optimise their asset integrity management programmes. From risk-based inspection (RBI) through to repair and inherently boasts features such as automation, tracking, collaboration and communication we help you build cohesion across various assets and throughout entire organisations.

OMNI PROCESS FLOW



OMNI Modules

OMNI facilitates the processing of anomalies, assessments and repair work orders through its stage-gated process. Temporary repairs can then be tracked automatically through OMNI’s operational tracker, using a traffic-light system to manage expiry and next inspection due dates.

The screenshot shows the 'Anomaly Identification' form. It includes fields for Anomaly Number (00012), Anomaly Code (INT & EXT), Date Reported (17/03/2021), and Completed By Date (19/03/2021). There are dropdown menus for Anomaly Type (Both external & Internal) and Anomaly Sub Type (Repair Order). A text area contains an anomaly description: 'Rigwork shows to have deteriorated beyond MAWT during UT inspection. Recommended anomaly assessment FFS Level 1 and potential repair WO to be raised to fix.' Other fields include Anomaly Status (Active), Priority (P2), FSD No. (PROD EXP-30-MOD S-015), Feature ID (Test points: 12, 17, 19, 21 and 24), and Inspection Report No. (30-FX-PROD-UT Inspection Report) dated 17/03/2021. Action buttons include 'COLLABORATION REQUEST', 'SUBMIT FOR APPROVAL', and 'REJECT'.

The screenshot shows the 'Repair' form. It includes a Review Date (29/03/2021) and Access Requirements (Rope Access, Work Permit). The Type of Repair is set to 'Temporary Repair'. Checkboxes for 'Shutdown Required' and 'Isolation Required' are checked, while 'MoC' and '3D Scan Required' are unchecked. The Action Party is 'Repair Order Team'. Below this, there are sections for 'Engineered Design' with 'Design Request' and 'Engineered Design' buttons, each with a 'VIEW DOCUMENTS' button. At the bottom, there are fields for Repair Work Order No. (WO 28701), Planned Completion Date (31/03/2022), and Actual Completion Date. A 'QA/QC Form' section also has a 'VIEW DOCUMENTS' button. A 'Final Report' section also has a 'VIEW DOCUMENTS' button.

The screenshot shows the 'RBII Tracker' table with the following data:

ID	Location	RBII No.	Status	Screening Date	Submitted	Approval	Collaboration Request
14-FX-36Y	Production module_test	7	Closed	26/01/2021	17/03/2021	17/03/2021	15/04/2021
14-PL-OIL	Deck	1	Closed	09/02/2021	25/02/2021	25/02/2021	
12-PL-OIL	Deck	10	Closed	14/02/2021	07/04/2021	07/04/2021	15/03/2021
30-FX-PROD	Production module	1	Closed	15/03/2021	23/04/2021	23/04/2021	03/05/2021
18-PY-OIL	Prodn module	1	Closed	19/03/2021			
16-PY-OIL	Prodn module	1	Closed	19/03/2021	22/03/2021	22/03/2021	
PRODUCTION EXPORT	Marzane	1	Closed	01/04/2021	23/04/2021	23/04/2021	
15.04.2021 - CUSTOM	lklkj	1	Closed	14/04/2021			
14-PL-OIL	Deck	2	Closed	21/04/2021			

OMNI Features



Process Automation

Highly configurable software which enables automation between modules, tracking and real-time warning notifications.



Operational Tracker

Intuitive tracking system that provides full-transparency and visibility of the status of all Integrity activities.



Collaboration

Online communication medium between users



Communication Hub

Providing traceability and ease of communications across teams through build in collaboration request feature, ensuring ease of data transfer.



Accreditation

We work in line with API 581 and other industry standards to ensure that system users can leverage best practice.



Real-time Analytics

Providing operational insights through monitoring data against organisational and integrity parameters.



Drives Efficiency

Through the use of advanced technology integration to the core functionality of the product, efficiency is built in at every stage of the integrity lifecycle.



Security

Working to best practice and building in security features such as end-to-end encryption and automated vulnerability testing.

Our solution - what can INSONO do?

INSONO uses modified probes with discrete frequencies to carry out an examination of a composite repair.

Resonance and mechanical impedance probe gauge depth of anomalies.



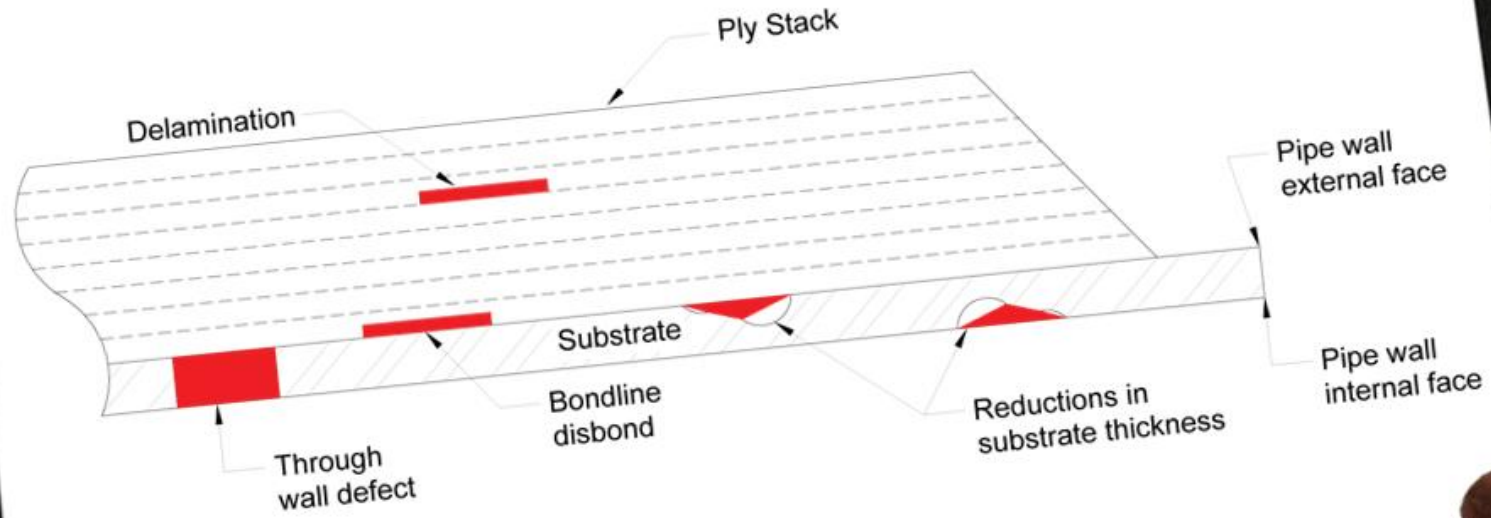
Pitch and catch probe detects and sizes any anomalies.



3D scanning.

What can INSONO detect?

ICR.



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