



COMPANY PROFILE

ESR TECHNOLOGY

www.esrtechnology.com



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COMPANY OVERVIEW

INTRODUCTION

ESR Technology is a dynamic, forward-thinking and growing SME with a workforce of 80 employees. Our clients shape the future with us as partners in success.

We are pioneering sustainable solutions with over 50 years of expertise in tribology, materials, non-destructive testing (NDT) and safety & risk management. Our partnerships with major organisations involved in sustainable energy production, transport infrastructure, and space technologies are a testament to our unwavering commitment to innovation and excellence.



MANAGING DIRECTOR

RAGHBIR CHAND



OUR COMPANY ABOUT US

Our expertise in tribology, engineering, materials, and safety and risk helps our clients to work confidently and manage the engineering challenges of designing, constructing and operating the critical assets.

ENGINEERING

ESTL

**Industrial
Tribology**

ESR Space

NON-DESTRUCTIVE TESTING

**Inspection
Consultancy**

HOIS

SAFETY AND RISK

**Safety
and Risk
Management**

Divided into **4**
professional teams
within the company

80+
Active Employees

4 Office locations:
Warrington, Abingdon,
Aberdeen, Michigan

OUR BUSINESS DIRECTORS



Managing Director
Raghbir Chand
ESR Technology



Business Director
Vivek Maripudi
NDT and Inspection
Consultancy



Business Director
Luke Butcher
Safety and Risk
Management



Business Director
Simon Lewis
Space Group and
Space/Industrial Tribology



Expertise & Successes

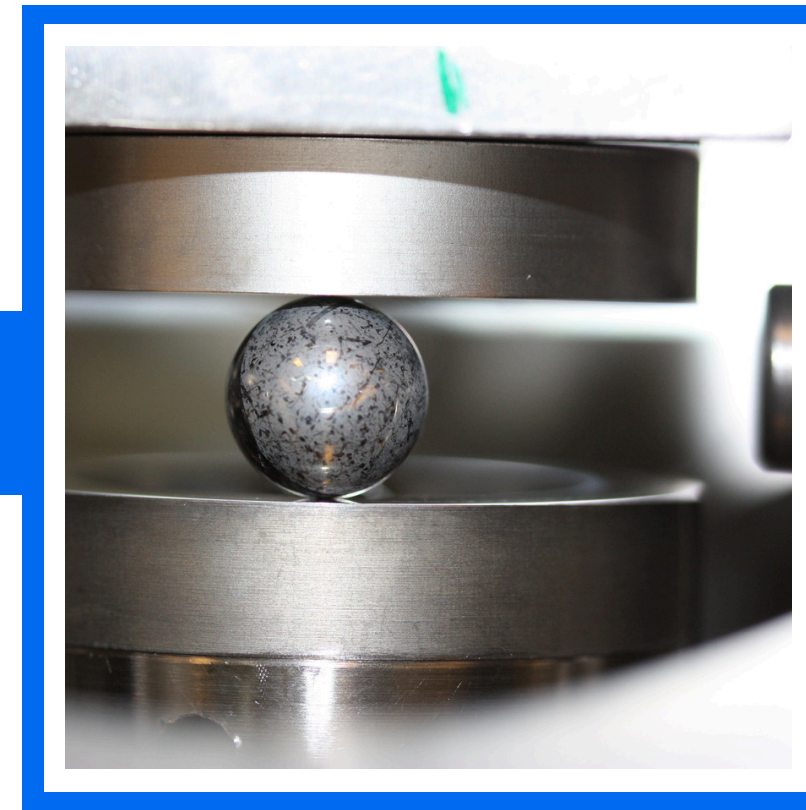
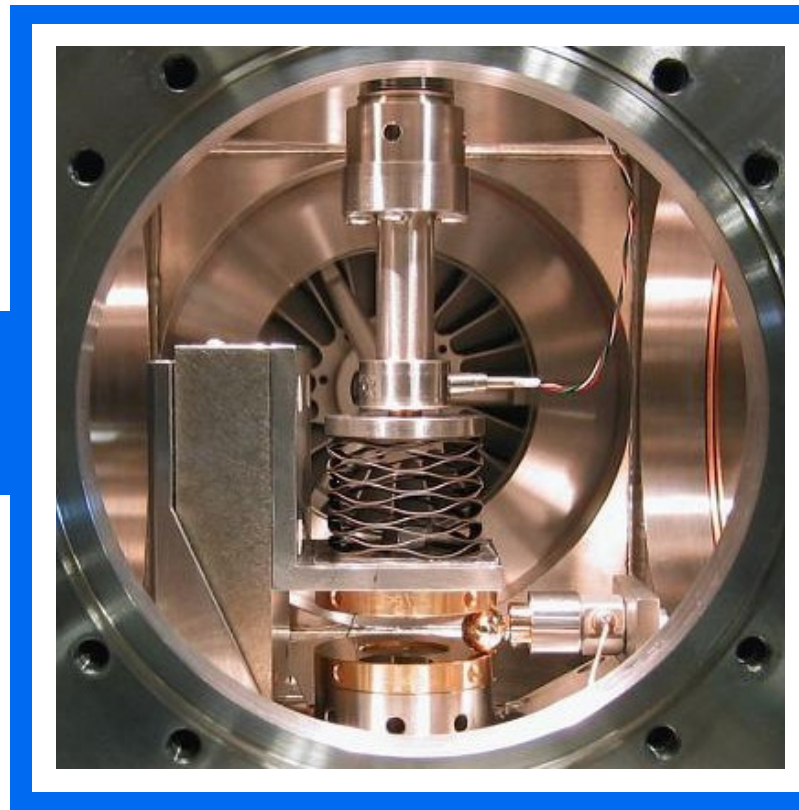
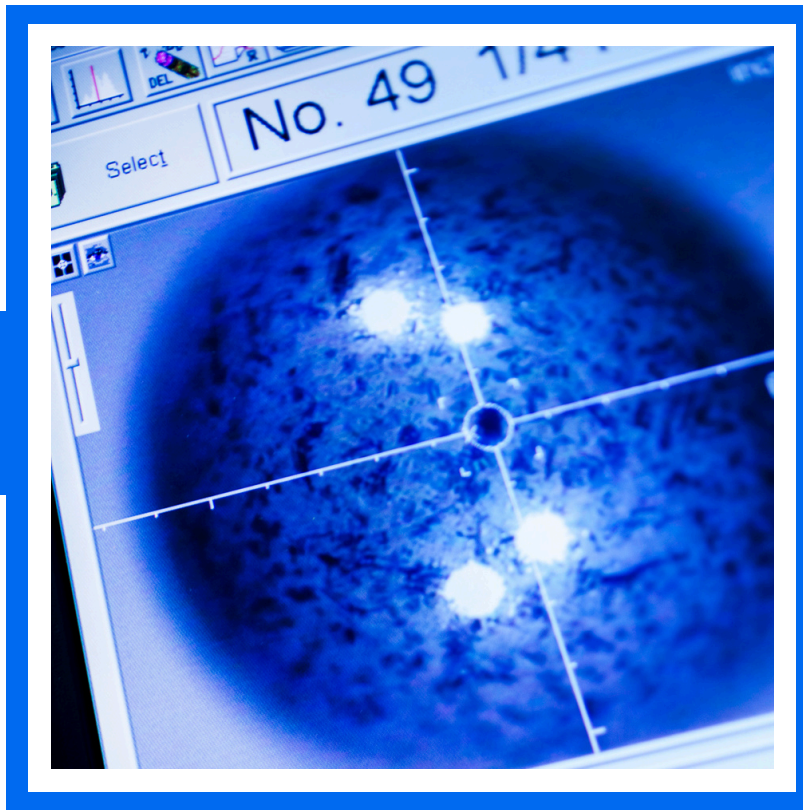
ESTL

Explore further, test better. Innovate with confidence.

We operate the European Space Tribology Laboratory (ESTL) on behalf of ESA. ESTL is ESA's external laboratory, and a centre of excellence in the science and engineering of friction, lubrication and wear in vacuum environments.

We provide expertise and bespoke lubrication solutions for precision mechanisms operating on the ground, and in space. We help our clients achieve optimal mechanism performance and life, no matter what the vacuum application.

With over 50 years space industry heritage and contributions to hundreds of space missions, our support and our lubricant products help clients control development risks, maximise the value of test campaigns and meet mechanism performance, life and cost requirements.



ESTL

Successes and Insights

Lubrication: ESTL is developing long-life solid lubricants for space applications. These new lubricants, funded by ESA, offer 10-100x longer vacuum lifetimes than previous options. Our clients, including NASA, are interested in these products. One variant is already baselined for a European science mission.

Test: ESTL is testing lubricants for a US space company, an eddy-current damper for a UK developer, and a dust-resistant thermal shutter.

Our new "space pig" rig (unofficial name) will offer low-cost thermal vacuum testing for smaller space companies.

Consultancy: Our experienced mechanism consultants help design and develop bearing systems worldwide. Exceptionally, within the last year we also supported the diagnosis and development of an operational work-around for an in-flight anomaly within the MIRI instrument on James Webb Space Telescope (pictured below) – which is a mere 1.5 million km from Earth...

Our **R&D** team is working on projects to improve space lubricants. Our experts are studying stress-life relationships, developing qualification guidelines, using mass spectrometry, and researching cleaning and nitriding processes. Our ESA-funded research is available to registered users from ESA Member and Cooperating States. Our members area recently reached 400 registered users.

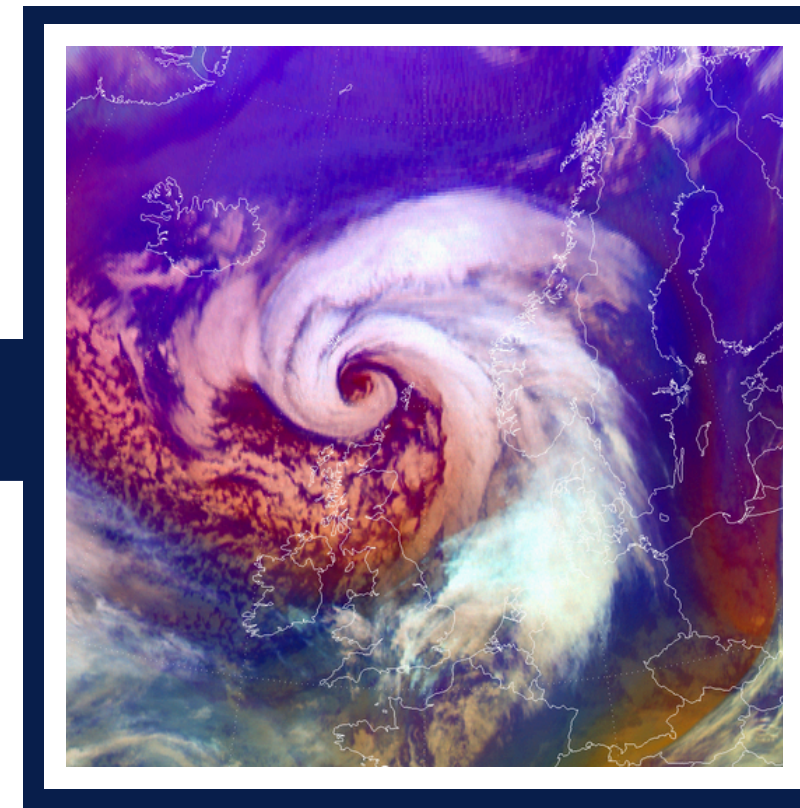
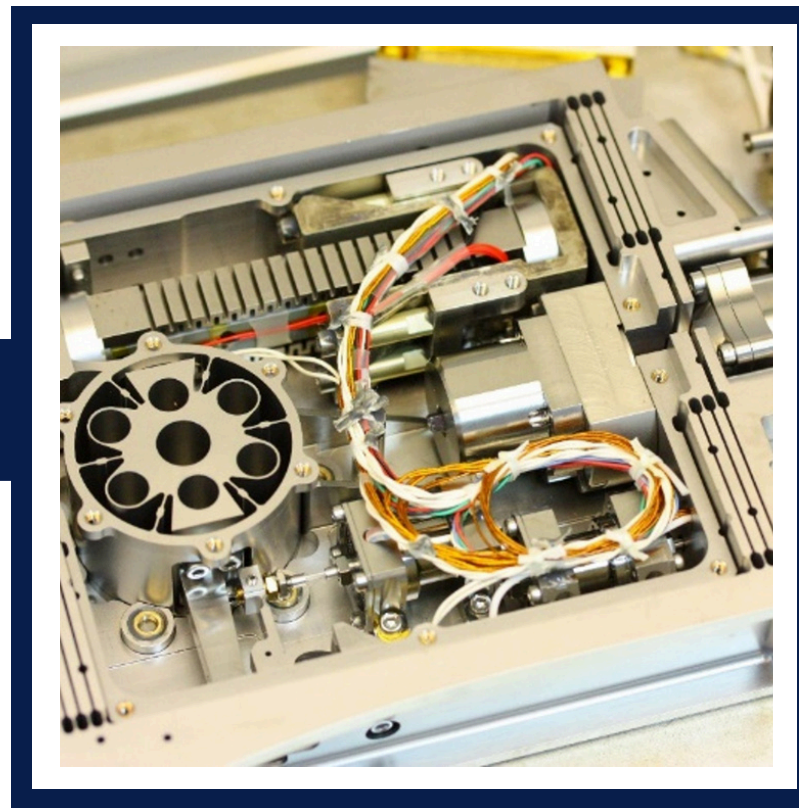
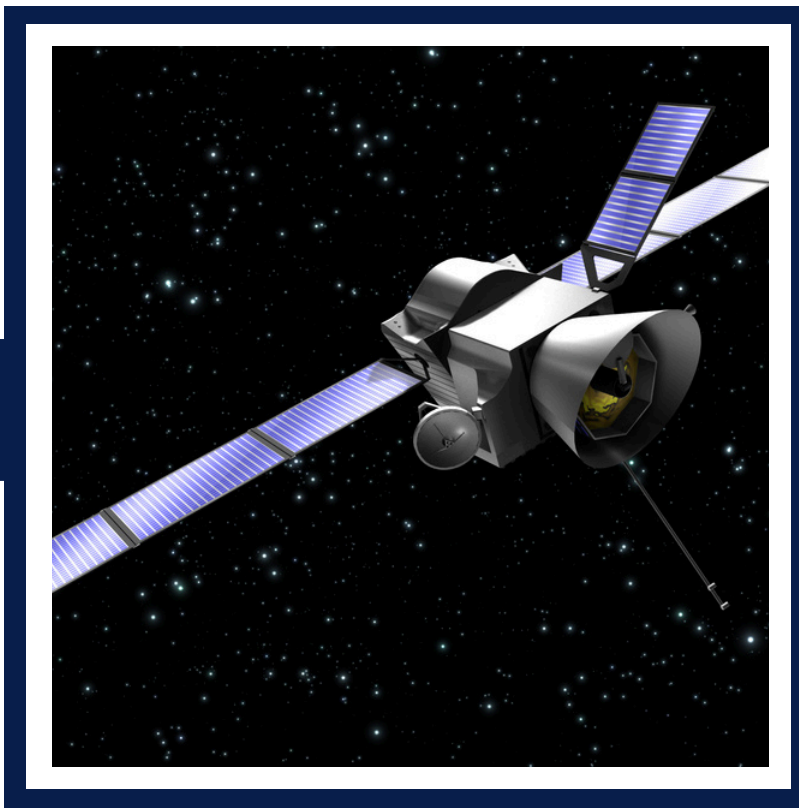


ESR SPACE

Translate insight into motion. Transcend your limits.

We are a UK-based engineering team offering progressive mechanism solutions, backed by extensive space heritage. ESR Space redefines the limits for extreme environments and mechanism lifetimes, enabling hardware, missions and clients to achieve more.

Access the latest insight to overcome your mechanism challenges – for science, telecoms, commercial space or exploration. Our experience has been established through decades of support to the international space community.



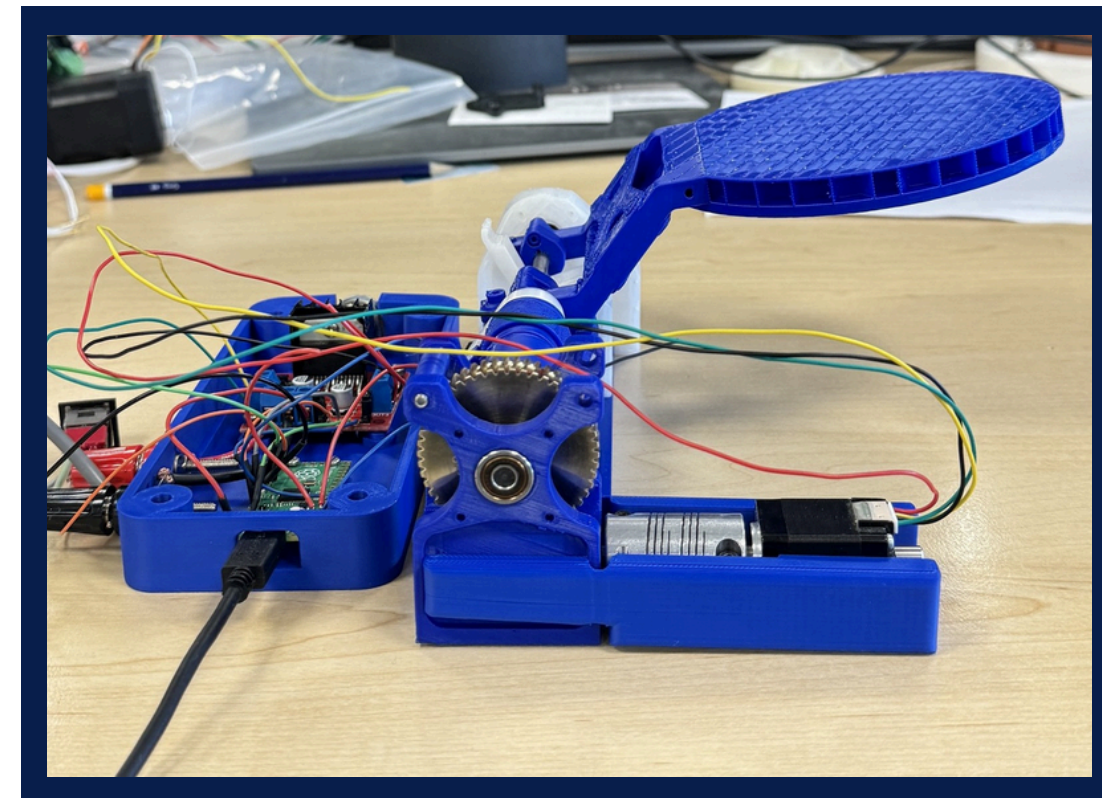
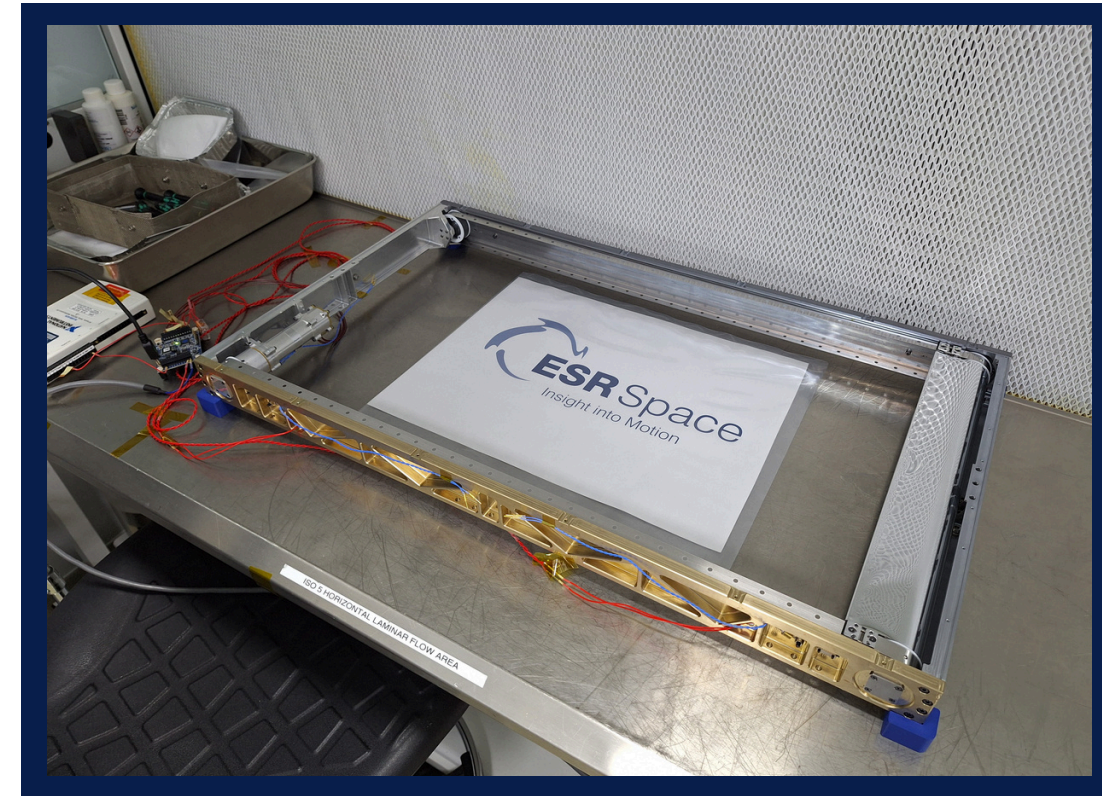
ESR SPACE

Successes and Insights

Lunar Thermal Shutter – This ESA thermal mechanism development project is nearing completion, having achieved TRL 4 following successful thermal and dusty vacuum test campaigns, which were successfully completed in 2024.

PMI/Vigil Door Mechanism – This flight mechanism development is underway to support an ESA science mission, currently at the PDR stage - the project kicked off early in 2024 to produce a fail-safe instrument door mechanism for a solar orbiting spacecraft, which will orbit at the L5 Lagrange point.

Solar Array Drive Mechanism (SADM) Baseplate/Shaft Assemblies – final batch of units from Batch 6 delivered to our UK client early in 2024, where this batch involved 20 flight sub-assemblies.



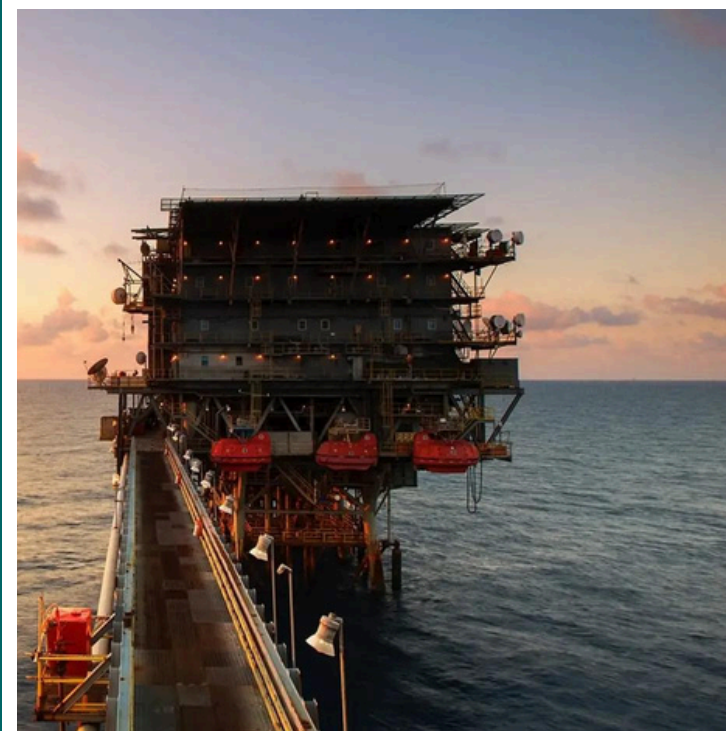
SAFETY AND RISK MANAGEMENT

Design and operate safely. Manage hazards reliably. Protect people and facilities, effectively.

We're a globally-leading engineering, safety and risk consultancy specialising in high-hazard industries and complex environments.

Our people understand your environments, your operations, your hazards, and your priorities. We work closely with owners, operators and designers of major infrastructure and assets, delivering clarity and confidence when it comes to effectively controlling your potential hazards, and their management.

From design to decommissioning, we support the entire lifecycle of assets, to ensure safety and reliability both offshore and onshore –throughout the UK, and the world. Our advice and support help clients to thrive, while protecting people, facilities, and the environment.



SAFETY AND RISK MANAGEMENT

Successes and Insights

Design safety studies for the world's largest Liquefied Natural Gas (LNG) production facilities in Qatar. Studies include consequence modelling for flammable, toxic and cryogenic hazards, quantified risk assessment and ALARP reviews at FEED (initial design phase) and EPC (detailed design and commissioning Phase).

CFD Gas Dispersion and Explosion modelling for major greenfield projects, existing operating installations, helideck turbulence studies, offshore wind power substations, carbon capture and storage offshore.

Development and long-term support of the DRIFT gas dispersion software on behalf of the UK Health and Safety Executive (HSE). DRIFT is mainly used for the purpose of assessing toxic and flammable dispersion for major hazards. It has recently been validated for the modelling of hydrogen, carbon dioxide and ammonia as presented at the IChemE Hazards 31 Conference and is being increasingly used in a range of Energy Transition projects. The DRIFT software is also available to license and ESR Technology provides a full maintenance, support and consultancy service for the tool.



INDUSTRIAL TRIBOLOGY

Engineering expertise to protect operations and maximise performance.

At the National Centre of Tribology, our team solves the friction, lubrication and wear challenges that no one else can. We deliver engineering support, testing, consultancy, and tribological research and development across many sectors.

Using our fundamental understanding of bearings, gears, engineering materials and surfaces we support tribological design, asset performance, life extension and mechanical failure investigations of many kinds . We work in the rail, defence, energy, wider transport, nuclear sectors – and many more.

With more than 50 years of heritage as a national authority in tribology, we take time to properly understand your needs and tailor our offering to your specific tribological aims and constraints – whether you need immediate on-site response, or longer term design or operational studies.



INDUSTRIAL TRIBOLOGY

Successes and Insights

Design of a lubricant health sensor as part of a research programme with ESA: Concept designs and R&D was performed at NCT to produce a novel sensor design that could detect incipient failure of lubricant in vacuum pumps, this would save money on downtime and costly pump maintenance. NCT also carried out a full market analysis and determined sectors to target.

Development of a data driven condition monitoring system, Polytrack: An instrumentation system was developed to monitor tramways for defects, this system utilized an array of accelerometers connected to a central unit using software designed by NCT to continuously collect data on the tramway condition and upload it to the cloud. An ESR developed app will then be used to plan maintenance on the tramway.

Failure investigations utilising sophisticated statistical analysis: For bearings, electrical units, rail tracks, and other components, NCT has experience using statistical analysis methods such as Weibull, and Rainfall utilising bespoke software to investigate failures and make judgements on critical safety cases.



INSPECTION CONSULTANCY

We'll help you drive down risk, and maximise inspection value

Our world-class team of engineers combine expertise, innovation, and a data-driven approach; to deliver insights into advanced inspection and non-destructive testing, that help our clients to thrive.

We offer integrity and inspection consultancy services that help protect people and assets. This work offers greater insights into the current and future integrity states of your assets, improving risk profiles and inspection efficiencies, and helping reduce unplanned outages and more effectively plan maintenance.

We develop and implement industry guidance and good practice for HOIS, and author guidance for institutes, such as The Energy Institute, EEMUA and NZTC. Our knowledgeable, diverse and experienced team can provide you with independent advice to address your NDT needs and challenges.



INSPECTION CONSULTANCY

Successes and Insights

Trusted by international organisations including EEMUA and the Energy Institute to author guidance documents on their behalf on topics ranging from tank floor inspection to Cost-Benefit Analysis of Anomaly Management.

Key role in allowing organisations to adopt new inspection strategies, such as **Non-Intrusive Inspection (NII)**, that reduce the shutdown costs and disruption caused by invasive inspection whilst reducing the exposure of inspectors to hazardous environments.

Selected to manage a trial programme on behalf of the North Sea Transition Authority and Net Zero Technology Centre

Consistent and ongoing work with technology developers to assess **emerging NDT technologies**.



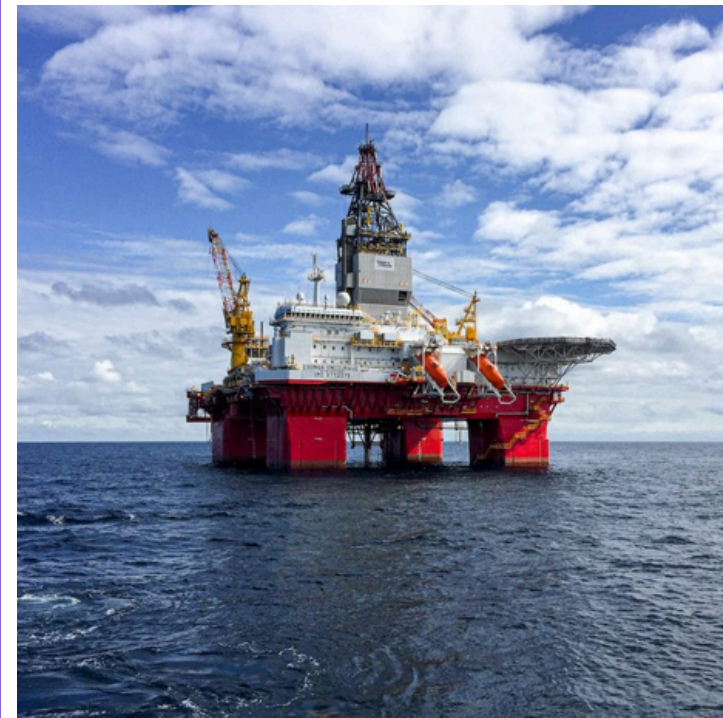
HOIS

Shaping the future of non-destructive testing, together.

HOIS is the flagship joint-industry partnership advancing in-service non-destructive testing. Our global membership spearhead industry guidance and inspection; evolving operations in the energy sector and beyond.

Our team manage and lead the technical programme, delivering independent guidance, and supporting the development of international standards. We've built an NDT intelligence pool over 40 years, with contributions from leading and innovative members.

With our members, we explore and evaluate current and emerging inspection techniques for challenging inspection issues aligned with industry priorities.



HOIS

Successes and Insights

Joint Industry Project (JIP) established in 1982 on good practice for in-service NDT in the energy industry managed by ESR Technology.

HOIS consists of **40 members** and has an annual budget of over **£800k**.

Published more than 25 industry leading guidance and recommended practice document for the application of NDT in the energy sector to address real issues of HOIS members

Host of the globally recognised online **HOIS Digitalisation Forum** for more than three years with average attendance of around 80 to share developments in digital NDT.





OUR CLIENTS

KONGSBERG

NASA



GASSCO



British Nuclear Group

beyond gravity

ALMATECH



angel Trains



OXFORD SPACE SYSTEMS



myonic MinebeaMitsumi Group



ExxonMobil



First Great Western





CONTACT US

Tell us about your project and develop a partnership with our world-leading team.



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