



For the questions that
won't go away

Where else but The Lab at Brookes Bell
for tailor-made forensic testing

Home of forensic investigations

 **The Lab**
at Brookes Bell

A woman with short brown hair, wearing safety glasses and purple nitrile gloves, is focused on her work in a laboratory. She is using a pipette to transfer liquid into a multi-well plate. The background is a clean, modern lab with various pieces of equipment. The text 'The truth is here' is overlaid on the left side of the image in a bold, dark green font.

The truth is here

Home of forensic investigations

The Lab at Brookes Bell gives the Marine, Energy, Industrial and Manufacturing industries access to world-class forensic analysis and investigative services. We question further and dig deeper to arrive at the truth. With impartial experts on hand throughout every investigation and cutting-edge testing technology, we satisfy the need to understand. We are proud of The Lab we have built. We are confident you will be more than satisfied with the results we deliver.

Metallurgy and Inspection

By understanding the fundamental behaviour of metals, our metallurgists can determine how a component or structure should react in any given environment or under certain mechanical loads.

The team at The Lab have a wealth of experience and understanding within metallurgy, ensuring that whatever your problem – whether it's corrosion, component failure or quality control – we can quickly get to the root cause, saving you time and money.

Capabilities

Forensic Engineering and Metallurgical Consultancy

Investigation of engineering components and systems to determine mechanisms of failure. Advice on selection and suitability of materials.

Material Identification

Material analysis and identification using a range of analytical equipment, sample preparation and microscopy techniques.

On-site Inspection and Analysis

Site inspection and analysis of material using a range of portable analysis techniques.

Laboratory Inspection and Testing

Inspection and testing of metals using advanced inspection techniques including advanced digital microscopy and scanning electron microscopy.

Non-Destructive Testing and Evaluation



The Lab at Brookes Bell understands that knowledge is power and that the better the quality of data we provide, the more accurate and effective critical decision-making can be. Making your choices as straightforward as possible.

Non-destructive Testing (NDT) of critical components is fundamental to safety and integrity management in industries such as Marine, Oil & Gas, Nuclear, Power Generation, Renewables and Aerospace.

Our advanced NDT team specialise in Electromagnetic Testing (ET) and Ultrasonic Testing (UT) techniques for a variety of critical structures and components.

By utilising these two fields of engineering and their scientific principles in combination, we are able to non-destructively test and evaluate a range of materials and components. Our NDT techniques are particularly suited to the inspection of heat exchangers (HX) and boilers, and the surface inspection of structural plate, pressurised pipe, welding, castings and forgings.

Our NDT services include Level 3 NDT expertise and PhD metallurgical support to provide industry-leading expertise. We use best-in-class technologies, aligned with our bespoke analytical software systems, to provide you with the most advanced range of non-destructive Asset Integrity Solutions available on the market today.

Qualified to work onshore and offshore, our specialist skills include knowing which technique or combination of techniques is best suited for the inspection of critical assets in any materials, situation and physical location.

This combination of experience and in-depth knowledge of global manufacturing and quality standards provides asset owners with a best-in-class service that is tailored to your individual needs. Internationally accredited to ISO 9001:2015, we operate across multiple industries worldwide, helping you to detect problems before they impact on operations, thereby increasing asset reliability and reducing unplanned downtime.

Capabilities

- Advanced NDT, Testing and Evaluation Services
- Electromagnetic Technologies for Tubing
- Electromagnetic Technologies for Surface Inspection
- Interactive 3D data analysis scans and reports
- Advanced PAUT and TOFD ultrasonic testing of plate, pipe and bespoke components

Fuel and Liquid Cargo Services



Our modern analytical chemistry laboratory is equipped to carry out a range of routine and investigative tests. These include detailed analysis programmes such as those designed to assess compliance with ISO 8217 Table 2 test requirements.

The necessity for further investigation is increasing with the rise of fuels being problematic, despite having met all specifications. We can detect and identify unknown compounds to assist in the exploration of causal damage mechanisms, and we can go as far as damage prevention.

Our high-end analytical equipment includes GCMS, ICP-OES, FTIR, XRF and SEM-EDX.

Capabilities

Our capabilities go further than fuel analysis to include environmental, forensic and cargo analysis.

The combination of our specialist equipment and extensive experience allows us the scope and flexibility to tailor analysis to your specific needs, carrying out research and development projects as well as impartial, third-party testing.

Crude Oil and Petroleum Products

We have extensive experience in the analysis of crude oil and petroleum products. We are also involved in a range of other types of fuel and scientific investigations.

Bunker Fuel Oil Quality Disputes

Our services include the investigation of ship-board engine operating difficulties and fuel handling issues. We can provide a multidisciplinary team including technicians, expert fuel chemists, marine engineers and metallurgists.

Analysis of Fuel Samples

We can design the relevant testing regime to trace the nature, extent and cause of contamination and to ensure the continued provenance of the samples and results throughout.

Paint and Coatings

The Lab at Brookes Bell offers expert advice on flake sampling and coating failure inspection. Using our modern inspection equipment, we can identify the key causes of coating breakdown in a sample.

Paint flake samples can be measured and examined using advanced digital microscopy. This includes documenting the profile of the top and bottom surfaces of the sample to identify contamination, inclusions and the presence of rust and scale. Powerful information can be obtained from microscopic samples, such as the degree of surface preparation used during the initial application of the paint.

Cross-section of the flakes examined show the number of coats, colour and individual coating thicknesses. Voids, vacuoles and penetration of rust staining, if present, can also be seen.

Capabilities

We can respond to any investigative, analytical and troubleshooting enquiries providing independent, accurate advice on:

- Root cause analysis of coating failures on yachts and ships. Specific areas include underwater hull, chemical tanks, cargo holds, ballast tanks and grey water tanks
- Vessel inspections and surveys
- Maintenance and repair coating recommendation
- Technology advice
- Coating selection and specification
- Cleaning technologies i.e., hull cleaning
- Regulatory advice e.g., BPR
- Expert witness testimony at arbitrations

Further investigatory analysis of coating samples, including paint flake and blister fluid composition, can be carried out in-house utilising our SEM, FTIR and GCMS equipment.

Our state-of-the-art laboratory enables us to independently inspect, test and analyse your paint and coating samples, whether in The Lab or on your site, in a quick and efficient way saving you valuable resource on costly and time-consuming methods where plating or panels need to be removed before inspection can take place.

About Brookes Bell

The Lab at Brookes Bell builds upon the Brookes Bell reputation as a leading multi-disciplinary technical and scientific consultancy. By developing state-of-the-art laboratory applications, we provide analysis services to the marine, energy, industrial and manufacturing sectors.

Founded in Liverpool in 1903, Brookes Bell also operates in London, Glasgow, Shanghai, Hong Kong, Singapore and Houston. We have a well-established presence in the field of forensic analysis, technical dispute resolution and expert witness work.

The Lab at Brookes Bell provides world class, bespoke and independent services across metallurgy, non-destructive testing, fuel and liquid cargo analysis and coating inspection. These services are provided in support of our existing marine inspection and technical consultancy capabilities, across the marine and many other industries. We have some of the most advanced laboratory and portable inspection equipment available globally, supported by our highly qualified technicians and in-house experts. Whatever you need to know, you can be assured of the highest quality service that will effectively and efficiently uncover the truth.

Brookes Bell's reputation for excellence is founded upon integrity and proficiency. With The Lab at Brookes Bell, we are proud to include many of the world's most eminent large scale engineering companies, asset managers and insurance firms as our clients.



The truth is here:
The Lab at Brookes Bell
Home of forensic investigations

Metallurgy / Fuel
NDT / Paint and coatings

Marine / Energy
Industrial / Manufacturing

Lab number: +44 151 652 0641
Email: labenquiries@brookesbell.com

brookesbell.com

 **The Lab**
at Brookes Bell