



# CAIRNHILL

**Metrology &  
Inspection**

**Solutions in Steel**

**At Cairnhill, we provide comprehensive inspection, quality assurance, metrology, and engineering consultancy services designed to meet the evolving needs of the manufacturing industry.**

Our expertise ensures that products, components, and processes adhere to the highest standards of precision, compliance, and reliability. With a team of highly qualified professionals holding internationally recognised certifications, we bring extensive industry knowledge and cutting-edge techniques to every project.

Our advanced metrology solutions enhance measurement accuracy, helping manufacturers maintain consistency, optimise performance, and reduce defects. By integrating state-of-the-art technology and best practices, we support businesses in achieving operational excellence, regulatory compliance, and long-term success in an increasingly competitive market.







## OUR ETHOS

To be the **industry leader** in precision-driven **quality assurance**, ensuring every project meets the highest standards of safety, durability, and excellence. **We strive to build trust** through rigorous inspection, innovative solutions, and an unwavering **commitment to quality** in every detail.

## OUR MISSION

**Our mission** is to provide precise, reliable, and efficient **quality assurance** and inspection services that prevent defects, reduce risks, and **enhance project performance**. Through cutting-edge technology, industry expertise, and a **commitment to excellence**, we ensure that every project we inspect meets the **highest standards** of safety, compliance, and durability. We partner with clients to **build a future** of quality, efficiency, and trust.





## Cairnhill has expert engineering consultants holding IIW, EWF, and CSWIP Senior Welding Inspector certifications, ensuring compliance with industry standards.

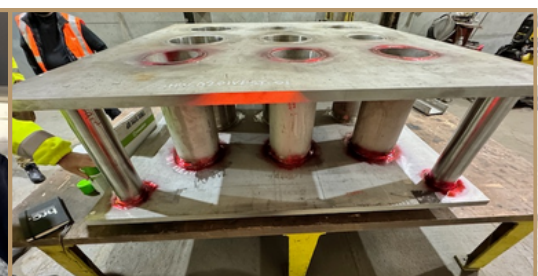
We conduct welding inspections, ISO 3834-2 Welding Quality Management audits alongside 1-to-1 training in our brand new Welding School using the latest welding technology from ESAB and our new Warrior Edge 500 DX multi-process welding sets.

ISO 1090-2 Factory Production Control (FPC) audits, alongside the ability to perform compliance checks to enhance structural integrity and manufacturing efficiency. We also offer a full suite of system and internal audits to ensure compliance with ISO 9001, 14001, and 45001.

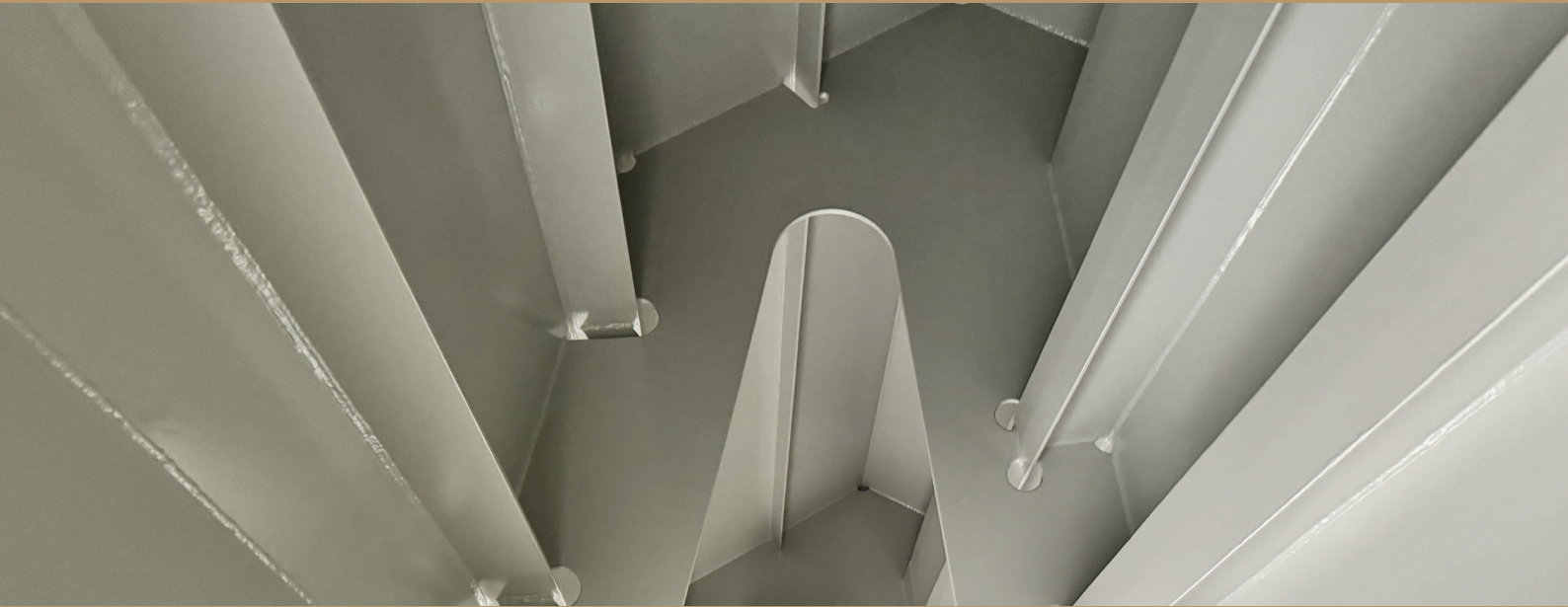
Prior to any welding procedure being implemented, we conduct thorough reviews to ensure compliance with industry codes, project specifications, and client requirements.

### Our WPS Review Services include:

- **Verification Against Standards** - Ensuring WPS aligns with applicable codes (ISO, ASME, AWS, API, EN).
- **Assessment of Essential and Non-Essential Variables** - Reviewing parameters such as welding position, joint design, filler material, preheat/post-weld heat treatment, and shielding gas selection.
- **Comparative Analysis** - Checking WPS against approved PQRs to ensure qualification validity.
- **Remote Visual Inspection** - Using our inspection robot, in tandem with our 30x optical/12x digital zoom capabilities for enhanced views. We can offer exceptionally detailed, visual inspection services, undertaking advanced inspection where it is either impossible to assess by humans or the safety risk is unacceptably high.







**Cairnhill offers a full suite of On-Call, Non-Destructive Testing (NDT) services, utilising cutting-edge techniques to detect flaws and defects without compromising the integrity of materials.**

**Our certified ICorr Corrosion Inspectors specialise in corrosion prevention and coating integrity assessments, ensuring long-term protection against environmental and operational damage.**

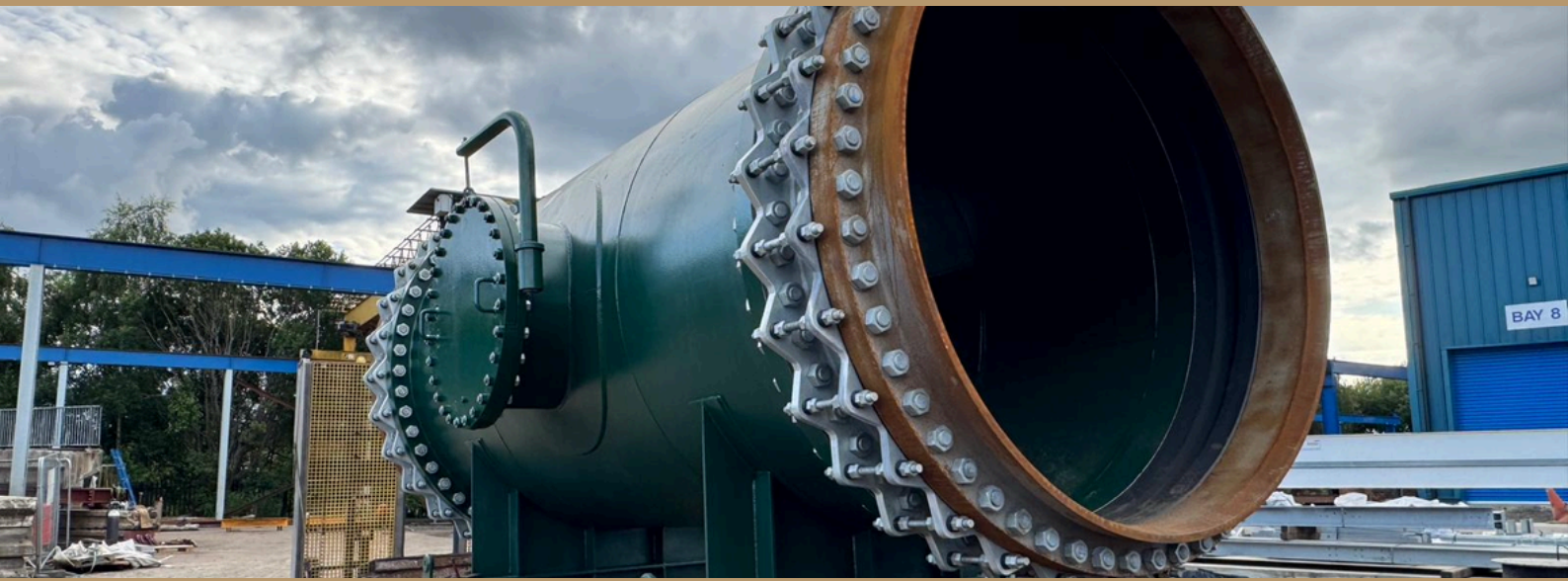
- Verification of surface preparation, coating application, and curing processes.
- Inspection during manufacture or in-service surveying of protective coatings, linings, and cathodic protection systems.
- Compliance assessments based on international standards (ISO, NACE, ASTM, SSPC).

#### **Our services include:**

- Eddy Current Testing
- Drone Inspection
- Certification (PNC-certified professionals under ISO 9712)
- Ultrasonic Testing
- Phased Array Ultrasonic Testing
- Magnetic Particle Inspection
- Dye Penetrant Inspection



# Dimensional Verification & Metrology Services



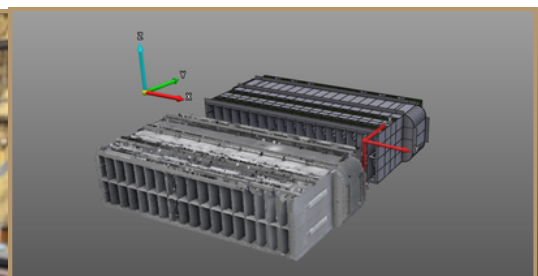
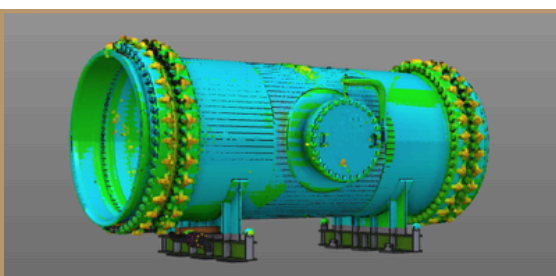
**Cairnhill ensures that components meet exact specifications to maintain quality, functionality, and compliance in manufacturing and engineering applications.**

Our dimensional verification and metrology services use state-of-the-art measurement technologies to provide highly accurate assessments, ensuring that parts conform to design tolerances, industry standards, and customer requirements.

- **Component Validation for Manufacturing Accuracy**
- **Geometric Dimensioning & Tolerancing (GD&T) assessments.**

Using state-of-the-art FARO equipment, we deliver highly accurate surveying and reverse engineering solutions, including:

- **FARO Focus 3D Scanner** - High Resolution 3D scanning for large-scale site analysis and modeling up to +/-1mm at 70m per scan.
- **FARO Vantage Laser Tracker** - High accuracy, portable, large volume measurements. 6 Degrees of Freedom measurement of hidden geometries with 6DoF probe. MPE (Maximum Permissible Error) 16um/m verified to 75m. Precision measurement and alignment for large-scale components.
- **FARO Arm Quantum X** - Best in class accuracy, dimensional control, and reverse engineering. Advanced coordinate measuring technology for detailed inspections of smaller components.
- **FARO Geomagic Design X, BuiltIT & CAM2 Spatial Analysis Software** - Engineering software that can create and edit high-quality meshes and CAD surfaces from 3D point clouds for reverse-engineering workflows.
- **Lecia TS16 Total Station** - The best in class automated total station for any challenge, task, or project, the Lecia TS16 automated total station will deliver accurate data when and where you need it.



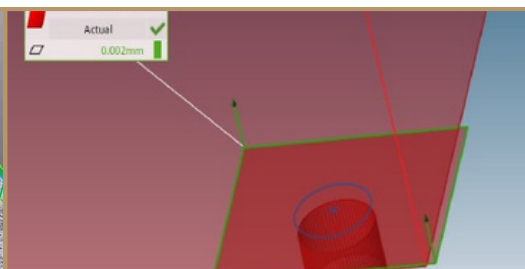
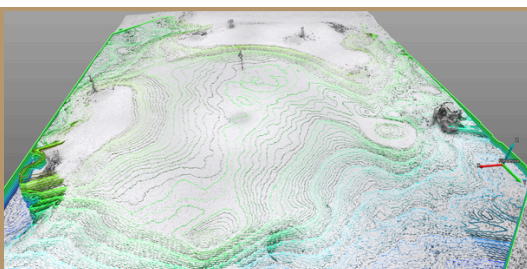
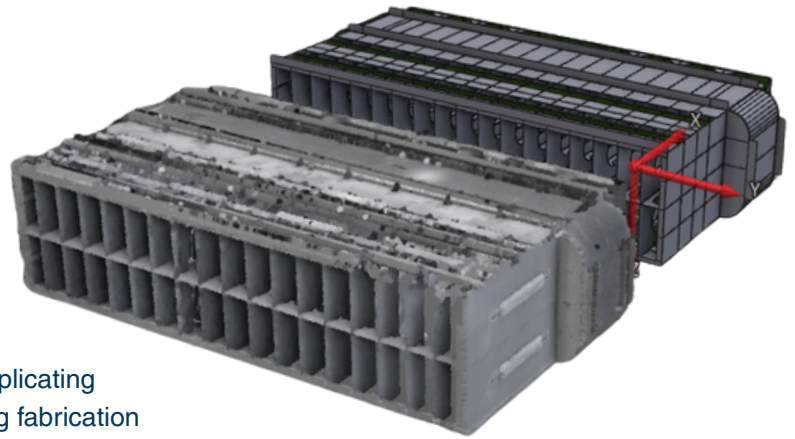




**Allowing engineers to analyse existing structures, components, or machinery, reverse engineering enables the understanding of their design, material properties, and performance characteristics.**

**By scanning or modelling existing steel structures, a detailed blueprint can be created to identify potential flaws and improve upon original designs.**

Particularly useful for retrofitting aging infrastructure, replicating outdated/ under-documented components, or optimising fabrication techniques, this process ensures compliance with modern safety and efficiency standards whilst cost-reducing by eliminating the requirement for entirely new designs.





## Cairnhill is investing in advanced inspection, metrology equipment, and training to enhance accuracy, efficiency, and reliability for higher-quality results to be delivered.

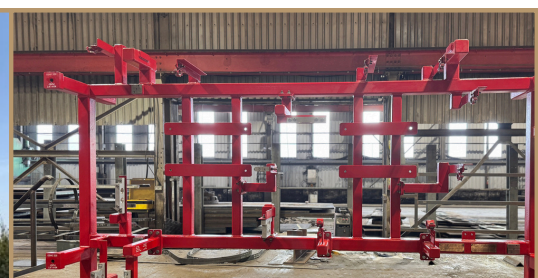
Cutting-edge tools, such as 3D scanners, laser trackers, NDT equipment, and coating inspection devices, improve measurement precision, time-effective processes, and ensure compliance with industry standards.

This not only increases operational efficiency but also strengthens our reputation and competitiveness for highly complex projects.

Using state-of-the-art FARO equipment, we deliver highly accurate surveying and reverse engineering solutions, including:

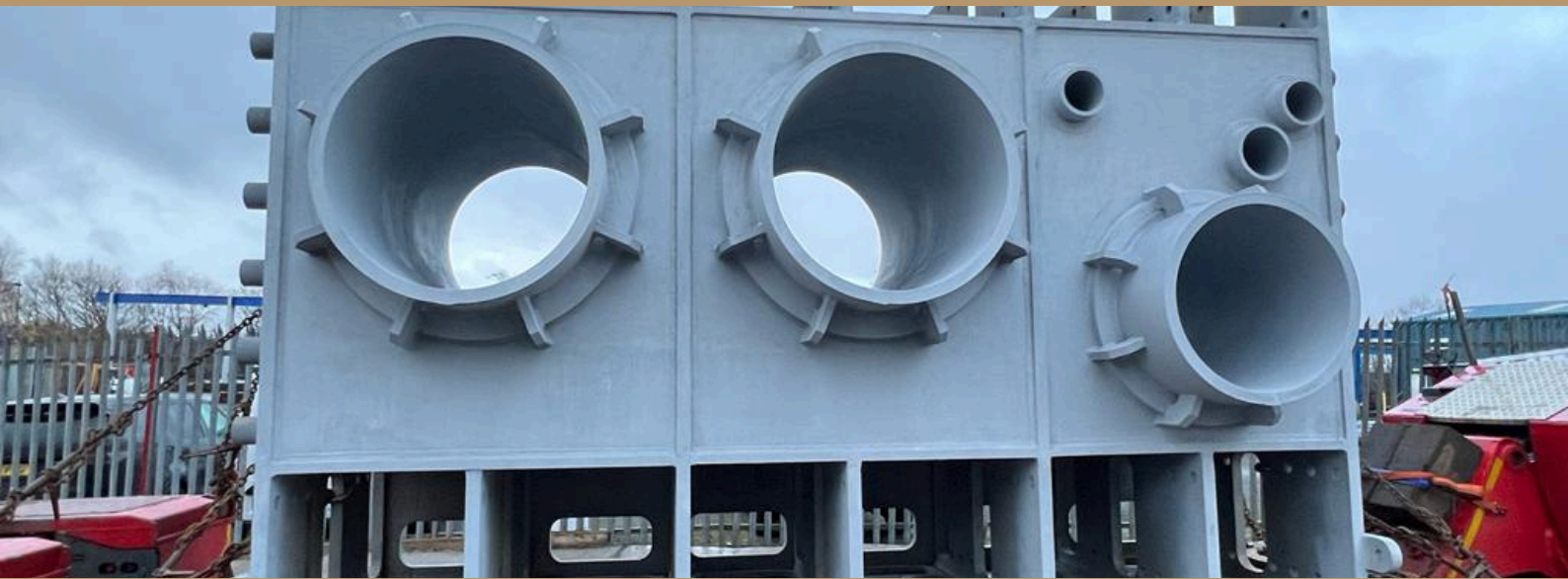
### FARO Dimensional Equipment:

- **FARO Focus 3D Scanner** - Delivering high-precision laser scanning for accurate measurement and documentation, its fast data capture reduces manual effort whilst enhancing quality control. With millimeter-level accuracy and versatile portability, it streamlines inspections, minimises errors, and improves efficiency across various industries.
- **FARO Vantage Laser Tracker** - Delivering a high-precision measurement for large-scale projects, this ensures accuracy in alignment, calibration, and inspection. Its advanced technology enhances efficiency, reduces errors, and improves quality control.
- **FARO CMM Arms** - The Quantum X Best-in-class arm boasts impressive specifications, including accuracy levels of up to  $\pm 0.018\text{mm}$  ( $0.0007\text{in}$ ) and a volumetric accuracy of up to  $\pm 0.064\text{mm/m}$  ( $0.0008\text{in/ft}$ ).





# Metrology & Dimensional Verification



## Case Study

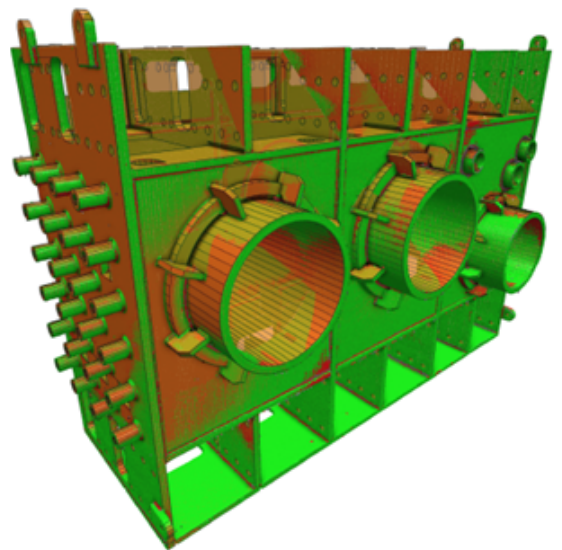
### Hinkley Point C - Fixed-Point Frames

#### Metrology Inspection Involvement

Cairnhill used the Faro Focus 3D LiDAR scanner to capture multiple scans of the Fixed-Point Frames from various positions, ensuring full coverage was obtained. The scans were processed in FARO SCENE software to create a detailed point cloud model of the as-built structure.

The CAD model was then accurately aligned with the point cloud, allowing precise visual and dimensional comparison between the design and the finished installation. Measurements confirmed the structure was within specified tolerances, with only minor deviations well inside acceptable limits.

This verified that the build was executed in line with design intent and provided reliable quality assurance data. The ability to verify dimensions visually throughout fabrication saved time at final inspection and ensured no details were missed before welding. This approach delivered a high level of accuracy and confidence in the completed structure.





# Cairnhill Sun Works Factory

160,000 square foot facility with crane capacity of 120 tonnes



Cairnhill operates within a number of market sectors:



Storage tanks &  
Petrochemical



Legacy Energy



Clean Energy



Metalwork



Rail



Steel Framing



Bridges &  
Infrastructure



Subsea &  
Offshore



Clean Energy



Marine Renewables

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Cairnhill is certified to UKCA/CE mark to BS EN 1090-2 up to Execution Class 4. The highest Class Achievable.

Cairnhill is also certified to BS EN ISO 3834: Continual Investment in Quality Requirements for Welding.

