

User Story

Alstom Power Services

FARO



Measurement training with the FARO Edge ScanArm within the Alstom Power Service generator training school at Stafford

FARO – the “Power to Generate” accurate Measurements

POWER GENERATION/REVERSE ENGINEERING *The accuracy and flexibility of FARO Edge ScanArm has helped improve the quality and repeatability of the critical measuring tasks performed by Alstom Power Services and negated the need for expensive jigs and fixtures.*

As the world leader in the construction and maintenance of integrated power stations, Alstom estimates that one in four of the world's light bulbs are currently powered by its technologies. Alstom has solutions for all energy sources (coal, gas, nuclear, fuel-oil, hydropower, wind, marine) and is a leader in the development of innovative technologies for the protection of the environment.

The company has multiple facilities throughout the world, amongst them four sites located in Stafford, UK. Employing approximately 1,700 staff, Alstom is Stafford's largest private sector employer and boasts a heritage of more than 100 years and 100GW of generator experience.

Alstom is currently the No. 1 service provider

for Generator Service, Monitoring and Life Extension in the UK, Alstom's Service Area Centre (SAC) and the Local Service Centre (LSC), provide a full range of power support and services, including field service, spare parts, repair, consulting and performance improvement. In addition, Alstom's Stafford based Generator Service Factory repairs, restores and services Generators for customers throughout the world. The impressive Generator Service facility has been designated a global "centre of excellence" for rotor coil manufacture and boasts a comprehensive customer range of specialist services. Alstom's Stafford facility encompasses all rotor coil designs, including hard copper hollow conductor and consolidated coils,

rotor revalidation, winding and assembly of generator rotors of up to 1,200 MW, with corebuilding and winding of stators of up to 350 tonnes. In addition, the factory has an advanced balance and overspeed facility capable of balancing generator rotors of up to 100 tonnes.

David Evans, Alstom Power Services Design Engineer, explained: "Our comprehensive services catalogue caters for a wide array of power plant equipment, from key components, such as turbines or generators, to instrumentation and control units."

He adds, "As our customers demand high quality parts for power plant maintenance, we strive to continuously improve our range >>

Alstom Power Services

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>> of manufacturing, measurement and repair techniques. We wanted to achieve higher levels of precision and speed of data capture so we invited FARO to perform a demonstration on some of our most awkward to measure, tight tolerance components and assemblies.”

“We were very impressed by the outcome of the demonstration, in terms of ease of use, accuracy and speed, we bench-marked FARO’s products against those of other measuring arm / scanning equipment manufacturers, with the FARO system proving to be the ideal contact/non-contact system for our specific needs. Following a short training period, the five team members who now use the Edge ScanArm have become extremely proficient in the use of our new FARO measuring equipment. As we have a diverse mix of measuring routines to undertake we make regular use of the ScanArm’s advanced scanning capability, as well as its tactile probing system” highlighted Mr Evans.

“As a Design Engineer with Stafford’s Design Concept team, I have found the ScanArm invaluable for the accurate reverse engineering of a wide range of complex parts and surfaces when upgrading or repairing other manufacturers’ equipment. Faro’s easy to use software is also invaluable for part verification and for undertaking measured data comparisons against CAD models” said David Evans.

FARO PROVIDES A COMPETITIVE EDGE WITH LASER LINE SCANNING

The FARO ScanArm combines all of the advantages of the globally popular FaroArm with the benefits of an accurate, hand-held laser scanner and provides the perfect contact/non-contact measurement system. Unlike other scanning systems, the ScanArm’s hard probe and the Laser Line Probe is able to digitise interchangeably without having to remove either component. Users can accurately measure prismatic features with the hard probe, then laser scan sections requiring larger volumes of data with one simple tool.

Non-contact measurement devices are becoming increasingly popular. Handheld laser scanners provide a quick and effective way to inspect and reverse engineer complex parts and surfaces. The advanced technology is able to translate everyday objects into digital computer models. Soft, deformable, and complex shapes can be easily inspected – without the equipment user ever coming into contact with the measured part.

Throughout the world, industries such as the power generation, aerospace, automotive, metal fabrication and tool & die manufacturing use the FAROs ScanArm for rapid non-contact inspection and quality control tasks. The range of diverse applications include CAD-based inspection, rapid prototyping, first article inspection, and reverse engineering.

Portable CMMs from FARO simplify the implementation of geometric dimensioning and tolerancing (GD&T) and provide efficient, easy-to-use solutions for CAD-based 3D inspections and nominal comparisons.

With their versatile contact and non-contact measuring capabilities, tools such as the FaroArm, FARO ScanArm and FARO Laser Tracker can utilise CAD overlays to check complex geometries against design or CAD comparison to evaluate deviations in



Measurement for checking and redesign of generators or their components to receive a greater accuracy

surface form and ensure that every part is machined to an exacting tolerance.

David Evans concludes “Given that our FARO ScanArm is relatively lightweight and portable, we are able to use the equipment within the most remote parts of our factory, and when necessary, we can transport it to our customers’ sites in the UK and overseas. Not only is it now providing enhanced levels of measuring accuracy and repeatability, our use of FARO’s ScanArm has negated the need for expensive jigs and fixtures.”

ALSTOM POWER SERVICES

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Alstom’s UK presence can be traced back to 1889 with the formation of the General Electric Company Ltd, the merger of GEC and Compagnie D’Electricite (CGE) in 1989 - to become GEC Alstom - and the eventual formation as Alstom in 1998. Today Alstom operates out of more than 30 key locations across the country and employs around 6,500 people within its Transport, Power and Grid Sectors, helping to develop the UK’s power, transmission and transport infrastructure to meet the challenges ahead.

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– FOUR GOOD REASONS –

David Evans, Design Engineer, Alstom Power Services

- 1** Quality Control: “The ScanArm is invaluable for the accurate reverse engineering of a wide range of complex parts and surfaces when upgrading or repairing other manufacturers’ equipment”
- 2** High Accuracy: The ScanArm has negated the need of expensive jigs and fixtures and provides enhanced levels of measuring accuracy.
- 3** Speed and flexibility: “The FARO system proving to be the ideal contact/non-contact system for our specific needs due to the ease of use, accuracy and speed.”
- 4** Userfriendly Software: “FARO’s easy-to-use software is also invaluable for part verification and for undertaking measured data comparisons against CAD models.”



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SUMMARY

FARO Edge ScanArm has helped to improve the quality and repeatability of the critical measuring tasks performed by Alstom Power Services and negated the need for expensive jigs and fixtures.