

User Story

Jaguar Land Rover (JLR)

FARO



Inspecting thickness of body panel using the ceramics stylus.

Jaguar Gains Speed and Precision

AUTOMOTIVE/ INSPECTION *Already an enthusiastic user of the FARO measuring arm, Jaguar Cars' manufacturing facility at Castle Bromwich has invested in advanced FaroArm Platinum and Laser Line Probe for use in its Body in White (BIW) department.*

FARO develops and markets portable CMMs (Coordinate Measuring Machines) and 3D imaging devices to solve dimensional metrology problems. Technology from FARO permits high-precision 3D measurement, imaging and comparison of parts and compound structures within production and quality assurance processes. FARO

devices are used for inspecting components and assemblies, production planning, documenting large volume spaces or structures in 3D, and more. FARO's 3D measurement technology allows companies to maximise efficiencies and improve processes.

Jaguar Land Rover (JLR) is the UK's larg-

est automotive design, engineering and manufacturing employer and operates from 5 sites in the Midlands and the North of England. To help satisfy the rapidly growing global demand for its cars, JLR plans to deliver 40 significant product actions over the next five years.

Currently exporting almost 80% of >>

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Laser scanning rear lamp cluster for comparison to CAD model.

>> its production to 101 markets worldwide, Jaguar Cars' impressive Castle Bromwich factory handles body stamping operations, body assembly, paint and trim and final assembly for the Jaguar XF, XK and XJ models.

The meticulous quality standards administered throughout the Castle Bromwich site are reflected in the thorough dimensional inspection routines undertaken on the facilities manufactured car bodies. Jaguar Cars, Castle Bromwich BIW Supervisor, Martyn Smith explained. "In addition to displaying the required aesthetic and aerodynamic qualities, modern automotive bodies are critical structural members. They perform a wide range of important functions, from helping to reduce noise and vibration, to protecting the car's occupants in the event of a crash."

"The monocoque nature of modern car bod-

ies also means that they act as the platform from which major components such as the suspension, engine, gearbox and axle are attached. Also, as a car's body is its largest component, any slight inaccuracy or miss-alignment in a given position can be greatly magnified in other locations."

"To help guarantee the highest standards of quality and to ensure strict adherence to dimensional specification, we remove a percentage of assembled bodies that are fitted with doors, boots and bonnets, from our production lines, we then carry-out detailed dimensional inspection routines. In addition to using our FARO equipment for the validation of BIW structures, it is also used for measuring panels in both pre-production and production runs. The outstanding levels of accuracy and repeatability that we are able to achieve through our use of FAROArm Platinum and FARO

Laser Line Probe, ensures that we can detect micron deviations from our CAD models."

"In addition to the advantages gained by using the FAROArm Platinum tactile probe, we are able to quickly attach our FARO Laser Line Probe to the FAROArm, this gives us high-precision, non-contact 3D scanning capabilities. The advanced ScanArm combination is able to rapidly take millions of data points, then, as well as showing numeric values, FARO's user-friendly software displays any deviation from our CAD models. This information is provided in a colour graphic format that is extremely easy to interpret. In essence, the areas of the measured part that are shown in green are within tolerance, whilst red indicates high points and blue low points.

"An example of the use of our FAROArm Platinum and ScanArm: following a di- >>

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Check of BIW (body in white) panel on PCF (part checking fixture).

>> mensional inspection, a mounting bracket for a rear seat was found to have been located marginally from its nominal position. Although still within tolerance, we have been able to take immediate remedial action. In this instance, the portability of our measurement arm allows us to take the equipment to the shop-floor and precisely measure the relevant mounting bracket fixture. We can then make the necessary adjustments to the fixture to ensure that all subsequent brackets are attached in the nominal position. Other uses include ensuring the optimal gap and flush condition of doors, boots and bonnets.”

“The planned launch of new Jaguar models and the anticipated introduction of variants of existing cars means that the company’s already rapid speed of change is due to accelerate even quicker. In addition to their accuracy and ease

of use, the speed of our FARO Platinum Measuring Arms and ScanArms help us to keep pace with our current throughput of work and will help ensure that we are able to handle the expected volumes of future inspection routines.”

FAROArms are a range of portable coordinate measuring machines (CMMs) that allows easy verification of product quality by performing 3D inspections, tool certifications, CAD comparison, dimensional analysis, reverse engineering, and more.

Used extensively throughout the automotive industry, FAROArm Platinum’s ± 0.029 mm accuracy renders traditional CMMs, hand tools and other portable inspection equipment obsolete. Anyone, anywhere can now inspect, reverse engineer or perform CAD-to-Part analysis on components, fixtures and assemblies with previously unheard of levels of precision.

The addition of the FARO Laser Line Probe to the FAROArm adds unparalleled non-contact 3D scanning capabilities. This arrangement provides detailed measurement of surface form, making the ScanArm the perfect combination of a contact and non-contact portable CMM.

Portable CMMs from FARO simplify the implementation of geometric dimensioning and tolerance (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 geometry against design or CAD comparison to evaluate deviations in surface form and ensure that every part is machined to an exacting tolerance. >>

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Confirming hole diameter & position to CAD.

>> Martyn Smith concludes. “Before the use of our original FAROArms we inspected our range of bodies and panels in a traditional, relatively labour intense manner, by using a range of fixtures and measuring instruments. Following our implementation of FARO products we were able to vastly improve our accuracy capability and slash our inspection times. In fact, routines that previously took 8 hours to complete could be done in 1 – 2 hours with the help of ‘Gold’ FAROArms. Prompted by the success of our first FAROArms, our purchase and use of our premium quality Platinum FAROArms and ScanArms has further improved both our accuracy capability and speed of operation.

“FARO products continue to make a significant contribution towards upholding Jaguar Car’s exacting quality standards. They have also proven to be an ideal, reliable link between our design, analysis and manufacturing departments. As the introduction of new models increases our BIW workload, to

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MARTYN SMITH, CASTLE BROMWICH BIW
SUPERVISOR AT JAGUAR CARS

make certain that we are able to keep up with the increased throughput we intend to purchase further FARO systems.”

Commenting on the company’s current success and anticipated growth, Dr Ralf Speth, Jaguar Land Rover CEO, recently said, “Innovation in design, engineering and technology is at the core of our business and for the UK, this means we will continue to invest in new products, develop new technologies and enhance the skills of our employees.”

“The launch of our latest Jaguar models, including the new XF Sportbrake and F-TYPE, means it is a very exciting time for Jaguar. These new models will attract new customers to the brand as we look to expand our global reach and further enhance our position in the market.”

COMPANY NAME

Jaguar Land Rover (JLR) is the UK’s largest automotive design, engineering and manufacturing employer and operates from 5 sites in the Midlands and the North of England. Jaguar Land Rover is a business built around two great British car brands that design, engineer and manufacture in the UK. Jaguar Land Rover is part of Tata Motors, India’s largest automobile company.

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– FOUR GOOD REASONS –

- 1 Quality Control: To guarantee highest quality standards detailed dimensional inspection routines are carried out with FARO equipment.
- 2 High accuracy: The outstanding levels of accuracy and repeatability are achieved with FaroArm Platinum and Laser Line Probe.
- 3 High precision 3D scanning: By adding the FARO Laser Line Probe to the FAROArm non-contact 3D scanning capabilities can be achieved quickly.
- 4 Userfriendly Software: Any deviation from CAD models is displayed and the information is provided in a colour graphic which is extremely easy to interpret.

SUMMARY

Martyn Smith: “Before the use of our original FaroArm we inspected our range of bodies and panels in a traditional, relatively labour intense manner, by using a range of fixtures and measuring instruments. Following our implementation of FARO products we were able to vastly improve our accuracy capability and slash our inspection times. In fact, routines that previously took 8 hours to complete could be done in 1 – 2 hours with the help of our previous FaroArm. Prompted by the success of our first FaroArm, our purchase and use of our premium quality FaroArm Platinum with the Laser Line Probe has further improved both our accuracy capability and speed of operation.”