

«The FaroArm represented an investment from which we have reaped the rewards on a daily basis: we are no longer dependant on external suppliers».

PIERLUCA MAGALDI, QUALITY MANAGER, SCUDERIA TORO ROSSO
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The FARO Laser ScanArm is being used to measure the wing profiles, the bodywork and the gearbox housing

FARO measures the aerodynamic profiles for Scuderia Toro Rosso

MOTORSPORT Nearly all the parts used to make a Formula 1 car need to be measured with precision and accuracy, starting from the models and equipment, even before the part has been manufactured (just think of the wing profiles, the bodywork, and casting the gearbox housing).

This is why it is critical for a competitive team to equip itself with the most advanced tools, to enable it to gain control

of processes that can provide enhanced performance during the race. The quality department of Scuderia Toro Rosso, which has been at work since early 2007, having outsourced the monitoring of the process of creating aerodynamic profiles for models, moulds and parts, then decided to carry out the measurements in-house.

They chose the portable measuring system FaroArm Platinum powered by Geomagic software, thus making measurement possible anywhere without the need for a fixed, bulky work station. Today in the quality department four people (all

trained by a FARO technician using practical exercises) use the measuring arm, primarily to check three-dimensional surfaces (such as aerodynamic surfaces) in conjunction with the Laser Line Probe for non-contact measurements.

CAD-designed surfaces, mathematical entities derived from theoretical calculations, are optimised in the wind tunnel. The process involves the development of a model, the preparation of a carbon mould followed by the production of the part in an autoclave

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4 GOOD REASONS

The measuring arm can be mounted and operated very easily, regardless of the surface being worked on.

1 Mobility: Large and heavy components must no longer be transported to the measuring machine. Quality control can be completed on-site with the measuring arm. A patented temperature compensator assures reliable measurement results.

2 Flexibility: Thanks to the use of multiple rotary axes, the measuring probe can be positioned at the point to be measured, even if it is difficult to reach.

3 Counterbalance: The internal weight counterbalance in the FaroArm enables measurements to be completed beneath its clamping frame and allows unencumbered work.

4 Universal mounting: The measuring arm can be mounted and operated very easily, regardless of the surface being worked on.



IN BRIEF

The Scuderia Toro Rosso team bought the FARO Laser ScanArm – consisting of the FaroArm and the Laser Line Probe to control the process of creating aerodynamic profiles for the cars, thus carrying out a series of measurements previously outsourced to external suppliers. The Quality department has enhanced its performance and measurement accuracy, acquired a reverse engineering analysis capability and can use the measuring arm directly in the pits alongside the cars.

 REVERSE ENGINEERING



WHAT THE FARO LASER SCANARM CAN DO

The measuring arm also enables reverse engineering and has been used to that end to measure seats, steering wheel grips and the inside of the body. The FaroArm can be mounted on a trailer, making it easily transportable both within the garages at the Composites facility at Faenza and in the pits during a race.



It is easy to maintain and is resistant to impacts and moderately aggressive environments.

As a tool for monitoring the conformance of models and parts, the FaroArm brings the benefits of measurement accuracy, conformance to tolerances and speed of execution.

Pierluca Magaldi, Team Quality Manager, comments: "Although introducing the FaroArm represented a major initial investment, we have since reaped the rewards on a daily basis: we no longer need



In Formula 1, the precision of each individual part makes its own contribution to team success

to depend on suppliers for this particular type of work. At the same time, the number of parts and models that can be measured has risen tremendously. Control of the geometrical properties of carbon parts has also improved".

THE DRIVERS FOR THIS SUCCESS

"The fact that our quality department can rely on the support of the FaroArm has changed many aspects of our work for the better: our control capabilities have improved, bringing enhanced reliability; our operators' knowledge of CAD-specific issues has grown; and reverse engineering has brought new perspectives to

the measurement process. We also have greater control over the aerodynamical details, which used to be measured by the suppliers. The importance of the accuracy and precision of each individual part cannot be overstated, in Formula 1 more than in any other sport, when it comes to Grand Prix success

ABOUT FARO

With more than 20,000 installations and 9,000 customers worldwide, FARO develops and markets computer-aided measuring equipment and software for creating digital 3D models. The equipment enables highly precise 3D measurements, 3D comparisons of small and large parts and components directly in production, factory planning, and as-built documentation - like specialised applications in mechanical engineering. Today, approximately 9,000 customers worldwide with more than 20,000 installations have put their trust in the company's measurement systems.

THE SCUDERIA TORO ROSSO

Taking over from Minardi after the buy-out by the Austrian company Red Bull, the team made its Formula 1 debut in the 2006 season. The team may be small but packs a punch, with drivers Sebastien Bourdais and Sebastian Vettel, and is based in Faenza, Italy. The Team Principal is Franz Tost. The cars use Ferrari engines and Bridgestone tyres.

The team's recent all-round performance has improved for a number of reasons. The quality department has helped to achieved this result, assisted in no small measure by the enhanced analytical capabilities offered by the FaroArm.

More Information:
 WWW.SCUDERIATOROROSSO.COM

 WWW.FARO.COM