

# New robotic laser measurement system improves and accelerates automotive quality inspection

August 8 2019, by Alice Scott

---



Credit: University of Warwick

Engineers at WMG at the University of Warwick have developed and installed a new, robotic measuring system, capable of accurately and repeatedly measuring large objects on the production line, such as car body-shells, in a fraction of the time traditionally taken to measure them on co-ordinate measuring machines (CMMs).

The system, installed in WMG's International Manufacturing Centre, comprises of a large long reach [robotic arm](#)—supplied by Kuka—mounted on a 5m track, and is designed to accept a range of different, non-contact measurement technologies.

This is the first of such technologies to be trialled has been Nikon Metrology's Laser Radar—a long stand-off laser measurement system, capable of accuracies of better than a hundredth of a millimeter, over distances of several meters.

The two technologies combined, offer a fast and accurate solution for automotive quality control, with particular relevance to car body-shell measurement, whether in a metrology lab or, as is becoming increasingly desirable, on the actual production line itself.

Professor Mark Williams, head of the Product Evaluation Technologies Group at WMG commented:

"The scale and flexibility of our new robotic measurement system, housed in the same metrology lab as our benchmark twin column CMM, gives us a unique capability within a UK university. Not only can we trial state of the art measurement technologies in a real-world application, but we can also verify system performance against what is currently the gold-standard (for automotive measurement), fully ISO calibrated CMM. This means that we can work with our industry research partners to both integrate technologies and trial solutions, in a controlled and independent environment, and ultimately, help them select and deploy the right measurement solutions for their businesses."



Credit: University of Warwick

Lead Engineer Ercihan Kiraci, responsible for the delivery of the project, explains:

"With increasing levels of automation in high value manufacturing, vehicle producers are focusing significant effort on collection and use of data for process optimization. WMG offers a range of relevant measurement technologies, 10+ years of experience in the field, and a strong focus on Industry 4.0 methodologies, making it an ideal testbed for new in-process inspection solutions. The set-up at WMG provides a unique opportunity for collaboration between OEMs, technology providers and researchers, to address manufacturing quality challenges."

The speed, accuracy and flexibility of the new system, combined, have the potential to bring metrology lab measurement capabilities to the shop floor without slowing down or disrupting the production line, along with real-time quality data aiding rapid decision making and issue resolution.

In the future, this could be taken a step further, with the measurement data being fed directly back into the manufacturing process, which would in turn, self-correct and optimize without the need for human intervention. But this will only be possible with the speed of measurement that the new system (and others like it) will deliver.

Whilst the self-optimizing production line may still be a few years away, in the short term car manufacturers (and those in other industry sectors, such as aerospace) can expect to significantly reduce the number of out-of-spec vehicles needing re-work at the end of the [production line](#), or making their way to the customer, only to be recalled at great expense.



Credit: University of Warwick

Provided by University of Warwick

Citation: New robotic laser measurement system improves and accelerates automotive quality inspection (2019, August 8) retrieved 19 April 2024 from <https://techxplore.com/news/2019-08-robotic-laser-automotive-quality.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.