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Marriage made simple: laser profile sensors from Micro-Epsilon enable precise alignment and positioning of vehicle instrument panels

Fully or semi-automatic assembly of instrument panels in the automotive production process require the gripper tool to precisely position the panel in accordance with the vehicle chassis. With each chassis potentially having a different variant or position, knowing where the tool is in relation to the chassis allows for smooth marriage of the two parts. Due to their compact design, for easy installation on a robot or manipulator and their integrated 2D/3D profile measurement capabilities, non-contact laser profile sensors from Micro-Epsilon are used for this task.

During assembly, the gripper docks with the instrument panel module on the vehicle chassis. When the module is successfully docked on both sides, laser profile scanners from Micro-Epsilon measure the current position of the module in the Y- and Z-axes against the vehicle coordinate system. In order to determine the measurement values, reference points on the instrument panel skin are used, which are defined via specific intersections. Subsequently, these measured values are compared with predefined set point values in order to determine whether the instrument panel has been positioned correctly.

When the values are calculated, an actuator is activated, which correctly aligns the instrument panel based on the reference points. In the next step, the instrument panel is fastened onto the car body. As the laser scanners perform the measurement and positioning tasks, each instrument panel module can be individually adapted to the respective car body. A laser profile scanner from Micro-Epsilon then evaluates the complete profile and transmits these measurement values via Ethernet to the control system. This enables the actuators to change the axis positions on the gripper in order to assemble the instrument panel in the ideal position in the car body. After the module is fixed in place, the sensor then determines the installation position of the instrument panel, which serves as proof of quality for each vehicle. For the entire process, including the fitting of the instrument panel, a cycle time of less than one minute is required. Measuring independent of surface conditions, the laser profile sensors provide reliable measurement values regardless of whether bright or dark paints are used, different gloss levels, variable surface structures and in changing ambient light conditions.

For more information on the scanCONTROL series of non-contact laser profile scanners, please call the Micro-Epsilon sales department on 0151 355 6070 or email [info@micro-epsilon.co.uk](mailto:info@micro-epsilon.co.uk)

**– ENDS – [406 words]**

**Photos and captions:**

**A close up of a device

Description automatically generated**

**The scanCONTROL series of laser profile sensors is being used by vehicle makers in the automated assembly of instrument panels.**

**Note to Editors:**

Manufacturing processes throughout all industries are evolving at a rapid pace, and the quality and tolerances expected from the end user are forever increasing. Thus the need for smarter measurement solutions is continuously growing. Micro-Epsilon ([www.micro-epsilon.co.uk](http://www.micro-epsilon.co.uk)) is renowned globally for being at the forefront of measurement technology.

For more than 50 years we have continuously offered reliable, high performance, unique solutions particularly when high precision measurement or inspection is required. Our product range covers sensors for the measurement of distance and displacement, sensors for IR temperature measurement and colour detection, as well as turnkey systems for dimensional measurement and defect detection.

We understand that our customers are our business partners and aim to develop long term relationships with them.

We work closely with our customers to fully understand their requirements; our salespeople are engineers and understand more than just the sensor performance. We are problem solvers.

We operate a fair working policy, which results in excellent customer service and support even post sale.

Our high performance products and way of working provide our customers with a genuine competitive advantage.

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