PRESS RELEASE

Quality control for e-mobility

Inspection of surface cleanliness for bonding and welding processes

Modern joining and bonding processes such as welding or gluing can produce very strong and durable connections. However, this is only possible if the corresponding surface areas are very clean – in particular, free of organic residues. The F-Scanner from Fraunhofer IPM detects even the slightest contamination and inspects surfaces across large areas, completely and fully automatically – currently, for example, at three manufacturers of electric vehicle components. Fraunhofer IPM is presenting its F-Scanner at the EuroBLECH trade fair.

Contaminants on component surfaces – such as residues of lubricants or release agents – can disrupt downstream steps in the production process. Modern welding, bonding and sealing processes, in particular, are highly sensitive to organic contamination. The laser scanners from Fraunhofer IPM use fluorescence measurement technology to check the cleanliness of surfaces. "We have recently developed special F-scanner systems for two very different applications and introduced them in the customers' production processes," says Dr. Alexander Blättermann, Group Manager of the Optical Surface Analytics Group at Fraunhofer IPM.

For perfect welding joints

In the field of power electronics, the F-Scanner enables 100 percent inspection of components before welding. The system checks several power electronics components with a total of up to 100 welding points for cleanliness in a single step. The decision as to whether a component is acceptable or not is made automatically by the algorithm on the basis of application-specific criteria. This ensures the quality of the spot welds and thus the long-term reliability of the components. The system is already in use at a German automotive supplier and is to be implemented at several locations worldwide in the coming year.

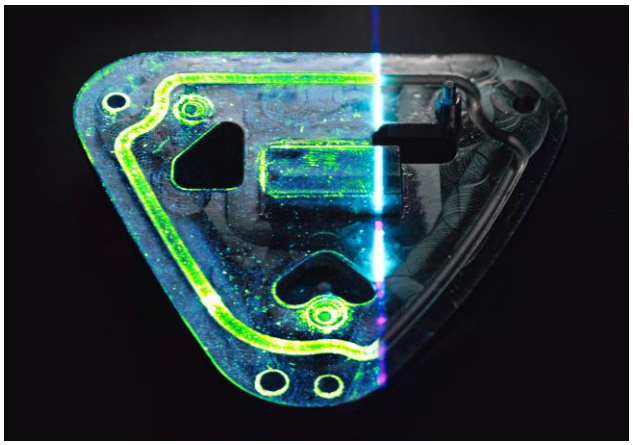
For perfect bonding

High-performance electric engines can generate enormous forces. Therefore, adhesive bonds must meet particularly high standards. To ensure the quality of the surface before bonding, a German car manufacturer and its supplier rely on large-area inspection using F-Scanners. The inspection systems are specially designed for use in

Editor
Holger Kock | Communications and Media | Fraunhofer Institute for Physical Measurement Techniques IPM
Georges-Köhler-Allee 301 | 79110 Freiburg | Phone +49 761 8857-129 | holger.kock@ipm.fraunhofer.de | www.ipm.fraunhofer.de/en

production environments and each has a modular, dust-tight and splash-proof housing with active cooling. Together with automatic calibration, this ensures maximum stability and data quality as well as minimum maintenance and downtime of the systems. The complete integration of several scanners into the production lines is planned in follow-up projects.

Find out more about our fluorescence scanners and their applications at the EuroBLECH trade fair in Hanover from October 22 to 25, 2024. You will find us in Hall H27 at Booth D142.



Organic substances fluoresce in laser light. The F-scanner scans the entire component surface in a matter of seconds, seamlessly detecting even the slightest contamination. © Fraunhofer IPM

Other contacts
Dr. Alexander Blättermann | Group Manager Optical Surface Analytics | Phone +49 761 8857-249 |
alexander.blaettermann@ipm.fraunhofer.de
Fraunhofer Institute for Physical Measurement Techniques IPM, Freiburg | www.ipm.fraunhofer.de/en