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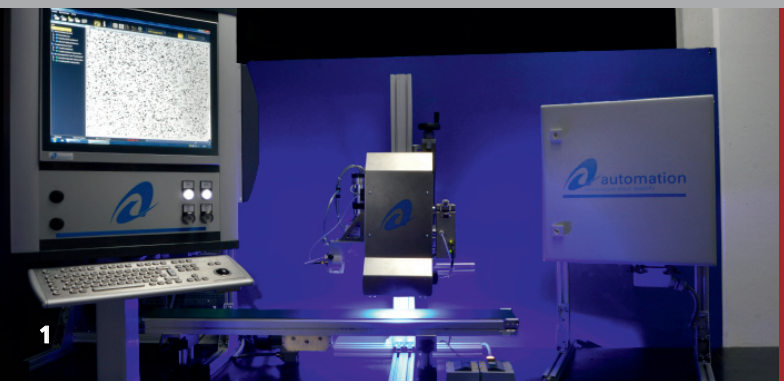
FRAUNHOFER INSTITUTE FOR MANUFACTURING TECHNOLOGY AND ADVANCED MATERIALS IFAM



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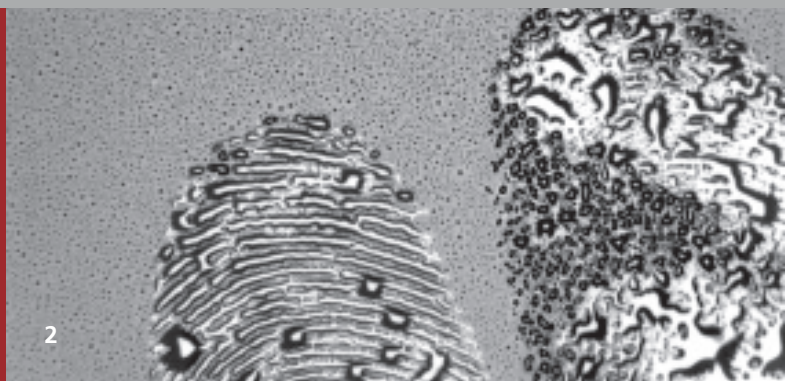
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1 *Aerosol Wetting Test as lab-setup.*
2 *Detection of fingerprints on surface.*

AEROSOL WETTING TEST OF FRAUNHOFER IFAM

The patented Aerosol Wetting Test, developed by Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, can be used for automatic monitoring of the wetting properties of surfaces in industrial production and also for laboratory studies.

Process monitoring using the Aerosol Wetting Test

An ultrasonic atomizer produces a defined water aerosol and, depending on the surface energy of the substrate, a specific droplet pattern forms on the surface under test. The droplets are automatically detected by a camera system and displayed using imaging software.

For a defined liquid volume, the droplet size depends directly on the contact angle. This means that the ability of a surface to be wetted is characterized by the droplet size distribution.

By specifying target values it is possible to evaluate and monitor the effectiveness of a pre-treatment process, for example, flame treatment or plasma treatment for cleaning or activating the surface.

Advantages of the Aerosol Wetting Test of Fraunhofer IFAM

Compared to conventional methods such as test inks, water run-off test, and contact angle measurements for determining the wetting properties of surfaces, the Aerosol Wetting Test offers a number of advantages:

- The test can not only be used on large, but on all individually defined small surfaces. It is possible to test the whole surface also of large components in a short period of time.
- The evaluation of droplet size is objective and is automated using software.

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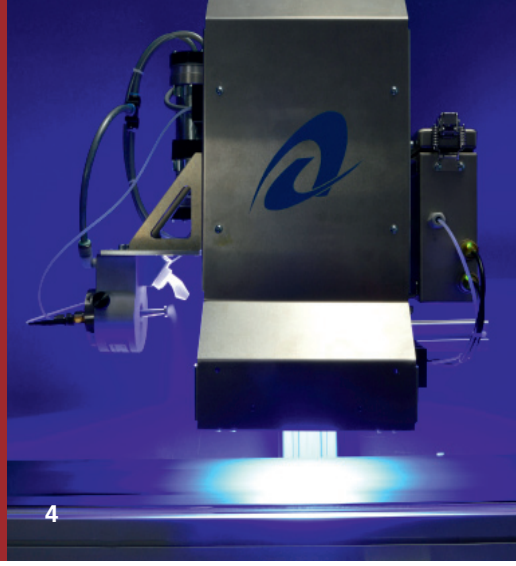

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- The use of a water aerosol means that there is re-drying of the surface within a short time without leaving behind none residues. This means that the component is available for further processing immediately after the test.
- The test can be directly integrated into production processes.

Integration into production processes

The adaptation of the test method for integration into industrial production processes is being carried out in collaboration with the test instrument manufacturer Automation W+R. A measuring head (BonNDTinspect©) is available for use in automated production processes.

3 *Automated inspection of the wetting behavior of a CFRP part by using the BonNDTinspect© system.*

4 *Aerosol Wetting Test as robot head for automated inspection.*