TRANSLATION
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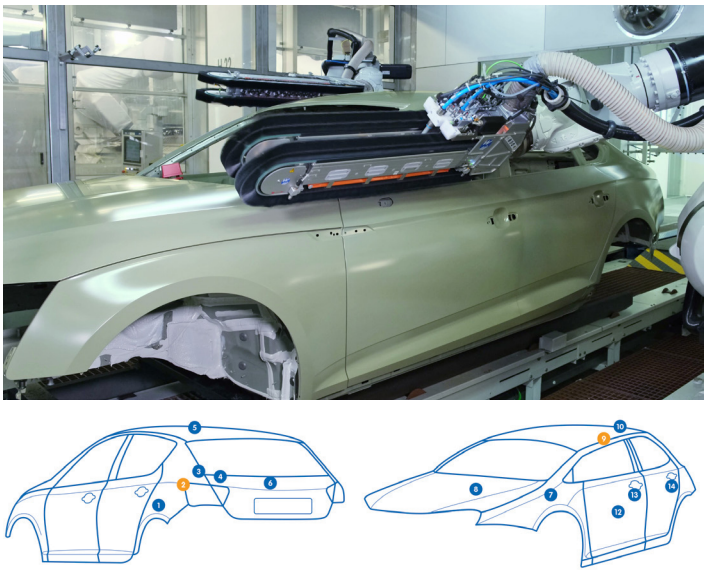
Measurable cleaning performance

Cleaning car bodies effectively with a Robot Sword Brush

A cleaning trial on car bodies at the Technology Centre of Wandres GmbH micro-cleaning shows the Robot Sword Brush 'Laura' is now delivering outstanding results according to a report from the manufacturer. Using the dust tape method compliant to the standard DIN EN ISO 8502-3, the degree of contamination remaining after cleaning and the cleaning performance can be determined.

To create surface contamination, test dust with a specified particle size distribution is dabbed onto the various test areas on the surface of the car body using a sponge. Alternatively, sanding dust can be created by sanding the layer of paint at critical points. After applying test dust to the test areas or sanding the paintwork there, the entire car body is cleaned.



Two Robot Sword Brushes clean a bodyshell. The images depict the various test areas on the car body during a cleaning trial in the Technology Centre. Two particularly hard-to-clean areas, the rear tail light pocket and roof seam, are highlighted in orange.
Photo/Images: Wandres

Classification of dust particles

To assess the quantity and size of dust particles on the car body after cleaning, a standardised dust particle test kit is used. A strip of colourless, transparent adhesive tape is applied to each respective test area and firmly pressed onto the surface. The adhesive tape with the dust still attached is then carefully removed and fixed to a transparent test strip. The test strip is placed on an assessment plate of a contrasting colour to the colour of the dust particles. A visual comparison determines the quantity of dust and classifies the size of the particles. Level 1 describes light contamination, levels 2 and 3 moderate and levels 4 and 5 severe contamination. At Level 0 no residual dust particles are visible under 10 x magnification which corresponds to a 100% rating for the cleaning result. In the cleaning trial at the Technology Centre the car bodyshell, provided by a German automotive manufacturer, was contaminated with dust at specified test areas and then cleaned by the Robot Sword Brush 'Laura'.

Cleaning trial on the bodyshell

The cleaning procedure involved air technology and Tornado Nozzles as well as brush cleaning technology using micro-moistened filaments made of polyamide. The Robot Sword Brush 'Laura' achieved a 100% rating for the best possible cleaning results on 12 out of 14 test areas. The rear tail light pocket which has wet PVC seam sealing (area 2) is a particularly hard-to-clean test area as the brush filaments must avoid contact with the sticky sealing material. Emu-feather rollers are forced to exclude any areas that have freshly applied seam sealing from the cleaning process to avoid the feathers sticking. The Robot Sword Brush adapts well to the lines of the vehicle body and, thanks to high-precision robot control, can be accurately guided right up to the area with tacky PVC seam sealing. Tornado Nozzles clean the rear tail light pocket utilising air technology and achieve remarkable cleaning results.

Due to the additional cleaning step involving air technology and Tornado Nozzles, the Robot Sword Brush also performs well when cleaning the roof seams (area 9). Thanks to the ability of the Robot Sword Brush to follow the lines of the vehicle body precisely while cleaning with air technology, it outperforms any blower.

At Wandres GmbH micro-cleaning, located close to Freiburg im Breisgau, a six-axis robot complete with a seventh axis positioning track is available to carry out cleaning trials on car bodies or on other sample parts simulating real-world conditions. On-site cleaning trials can be conducted at varying speeds to define the key parameters required to achieve optimal cleaning results.

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