



## REFERENCE

viledon®

### PAINT DEFECT ANALYSIS WITH VILEDON FILTERCAIR IN THE BAVARIAN BMW GROUP FACTORY

German car manufacturer BMW has always been measured in terms of the highest quality standards. Even the smallest surface imperfections on plastic components, barely visible to the naked eye, are precisely detected and not permitted to appear on the final products. If errors are discovered in the painting process, the causes need to be quickly identified and the production process optimized accordingly. To achieve this, the BMW Group relies on the long-term expertise of Freudenberg Filtration Technologies to deal with components affected by paint damage at the company's plant in Bavaria.

#### Initial situation

BMW's Bavarian factory was complaining about surface defects on certain plastic components, the cause of which was unclear. Components showing surface defects were not permitted to be used for assembly. Fast action was required. Because the filtration solution for air purification is provided by Freudenberg Filtration Technologies, BMW used the "Basic + Dirt in Paint" module of the Viledon® filterCair service to perform a root cause analysis. This customizable service can – as in this case – be employed outside fixed service contracts.

#### The Viledon® solution

The first step was to perform an extensive status analysis, which systematically examined the plant for vulnerabilities and sources of error. To progressively reduce the number of potential risk factors, various measurements were made of temperature and humidity, the particle spectrum in the spray booth and the volume flow. The result revealed that the filtration system was working perfectly and the air balance was absolutely fine.

For step two, therefore, we went into the laboratory. Both the paint damage and the material were examined more closely. Under the microscope, it was

found that the surface of the paint was inhomogeneous. In some places the basecoat was missing altogether. Due to a uniformly applied clear coat, however, a wetting disorder could be excluded. Electron microscopy of the affected areas led to the analysis of the plastic granules used in the components. Here it transpired that, in some places, quartz particles in the granulate were too coarsely grained and were causing surface defects in the paint.

#### Customer benefits

Thanks to the rapid root cause analysis, the production process at the site was quickly adapted and optimized. Expensive conversions of the filtration system and lengthy test runs of the paint line were eliminated thanks to the laboratory tests included in the service module "Basic + Dirt in Paint". Downtime and the loss of production due to paint defects were thus kept to a minimum.

#### TECHNICAL DATA

|             |  |
|-------------|--|
| Location    | Germany  |
| Industry    | Automotive   |
| Description | Root cause analysis of surface defects on certain plastic components. Solution delivered via the Viledon® filterCair service module "Basic + Dirt in Paint". |



Comprehensive analyzes of the painting process and the paint defects were carried out directly on site



Raster measurement of sink rates in the spray booth

## MODULE BASIC + DIRT IN PAINT

### INTENSIVE DIRT ANALYSIS

Process-specific paint damage analysis – root cause analysis of contamination in the painting process

#### Scope of services:

- Extensive ProSim particle measurement
- Determination of cabin balance
- Temperature and humidity measurement
- Checking the pressure difference of all relevant filter stages
- Comprehensive volumetric flow measurement of all process-relevant areas
- Raster measurement of sink rates in a complete painting line
- Need-based incident light microscopy
- Problem-specific electron microscopy (SEM/EDX) or infrared microscopy analysis (FTIR) in the Viledon® laboratory
- Careful filter analysis and evaluation
- Accurate weak point analysis
- Local dirt analysis
- Detailed interactive report
- Individual optimization potential
- Expert advice on site



If you have any questions about our Viledon® filterCair service, simply get in touch:

 +49 (0) 6201 80-6264

 filtercair@freudenberg-filter.com

We will be pleased to advise you.

You can find detailed information about our Viledon® filterCair service on:

 [www.freudenberg-filter.com](http://www.freudenberg-filter.com)  
 > Air Filtration  
 > Applications  
 > Surface Treatment  
 > filterCair Service

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**Freudenberg Filtration Technologies SE & Co. KG**  
 69465 Weinheim, Germany  
 Phone +49 (0) 6201 80-6264 | Fax +49 (0) 6201 88-6299  
 viledon@freudenberg-filter.com | www.freudenberg-filter.com

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