

# CASE STUDY

Milling of automotive models



## EFFICIENT DUST EXTRACTION IN A MILLING MACHINE USED FOR THE MANUFACTURE OF MODELS

### PRODUCT

<b>Product:</b>	Handte MF-Ultra (4 units)
<b>Model:</b>	194.3.1.
<b>Air Volume:</b>	12.500m <sup>3</sup> /h each unit
<b>Product:</b>	Handte MF-R
<b>Model:</b>	30/5/1
<b>Application:</b>	Automotive industry - Extraction dusts from PU/PE synthetics, timber, clay and loam
<b>Customer:</b>	Daimler AG, Designcenter Sindelfingen

### CHALLENGE

Daimler is one of the most successful automotive companies worldwide. With Mercedes-Benz passenger cars, Daimler trucks, Mercedes-Benz vans and Daimler coaches, Daimler AG is a major provider of premium cars and the largest globally active manufacturer of commercial vehicles. Sustainability and use of energy efficient processes are among the key requirements set down for the suppliers involved in the manufacture of all these products.

Like a number of other projects implemented by Camfil APC for Daimler AG over previous years, this project was commissioned by the Designcenter in Sindelfingen.

The extraction unit (four Handte MF-ULTRA units - size 194.3.1) combined with a high-pressure vacuum filter (Handte MF-R 30/5/1) was used to collect and remove the dusts produced during machining of clay and plastic blocks in the manufacture car body parts and other relevant components in various milling centers. After more than 10 years of use, the existing extraction system was no longer up to the demanding commitments the company made in terms of safety and an environmentally compatible use of resources. The unit did not comply with the ATEX directives, for example, and was not sufficiently dimensioned for the extraction from two milling lines with three milling centers each. Independently of the actual load, the unit always ran at approximately 110 KwH. For comparison, today the unit is operated in a demand-controlled manner at 30-50 KwH. The disposal of the dust and chips was particularly prone to frequent faults, due to the large number of mechanical components such as the chips chain conveyor.



Common maintenance platform high-pressure vacuum filter and filter module milling machine extraction



High-pressure vacuum filter for extraction of dust and chips

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## SOLUTION

The new unit was implemented using equipment from the compact Handte Micro Filter line as well as frequency-controlled fans which make it possible to extract the dust in compliance with the actual requirements. Furthermore, the number of mechanical components in the chips disposal system was reduced to a minimum, which significantly improves the fail-safety of the unit.

A highly successfully project, implemented within a mere three months from order placement to final realization, validated the Camfil APC team's equipment selection for pneumatic delivery for dust and chip handling. The total extraction volume of the unit is 50.000 m<sup>3</sup>/h. Obviously, the extraction and disposal system meets the current directives and standards, particularly the ATEX directives.

Optimum dust disposal was achieved in a state-of-the-art unit with a filter element lifetime of three years.

The result is significantly less maintenance work, high machine availability, and a dramatic reduction in operating costs (among others, energy cost savings of more than 50%). The additional benefit: A higher degree of purity in the return air! Compared to the old unit with residual dust values of 5-10 mg, the new Camfil APC unit reduced the residual dust values to under 0.1 mg. This made a safe use of the return air possible, which further reduces the costs in ongoing operation.



Four modular MF-ULTRA 194.3.1 units, each with 12.500m<sup>3</sup>/h volume for extraction of the milling machines with pneumatic dust and chips removal system



Central high-pressure vacuum filters with integrated compactor press and briquette conveyor

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