

EXTRACTION AND SEPARATION IN POWDER COATING PROCESSES

THE TASK

One of the disadvantages in the application of powder coating is that the entire powder supply doesn't end up coating the item. There's also the possibility of a build-up on the parts to be painted because of overspray and this impacts the quality of the finish. In addition, the interior of the paint booth becomes contaminated, further affecting the continuity of the production process. Combustible and explosive powder could lead to fire and explosions. Limited recycling possibilities create high powder consumption and its corresponding costs. Long system downtimes for manual cleaning of conventional filter media are not economical.

In view of these disadvantages, the overspray must be reliably collected and extracted for acceptable results. Clean air ventilation, a long filter service life, as well as a constant air flow volume must be assured for a longer time period. One requirement is optimal cleaning of the filter elements. Recycling of the pigments is not possible if foreign matter contaminates the process, and filter material must be absolutely free of silicone. If the powder needs to be changed, filter elements should be cleaned manually by either the wet or dry method.



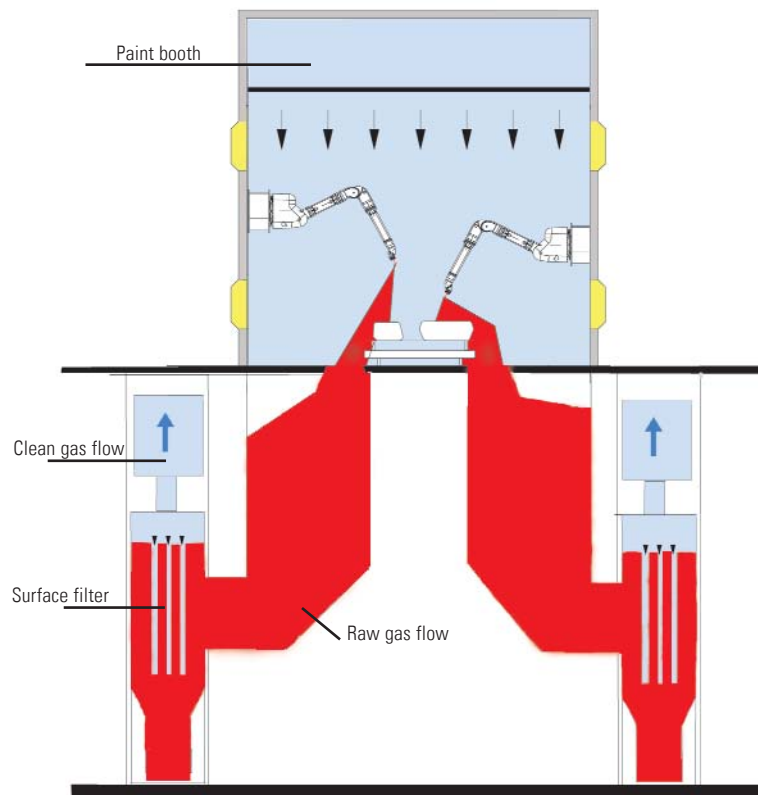
SURFACE FILTER TYPE PT

THE SOLUTION

Keller Lufttechnik has a variety of strict requirements in place for effective dust collection in powder coating processes. Our long-standing experience and extensive knowledge of the treatment of very fine dust ensure reliability, long filter life, as well as cost savings.

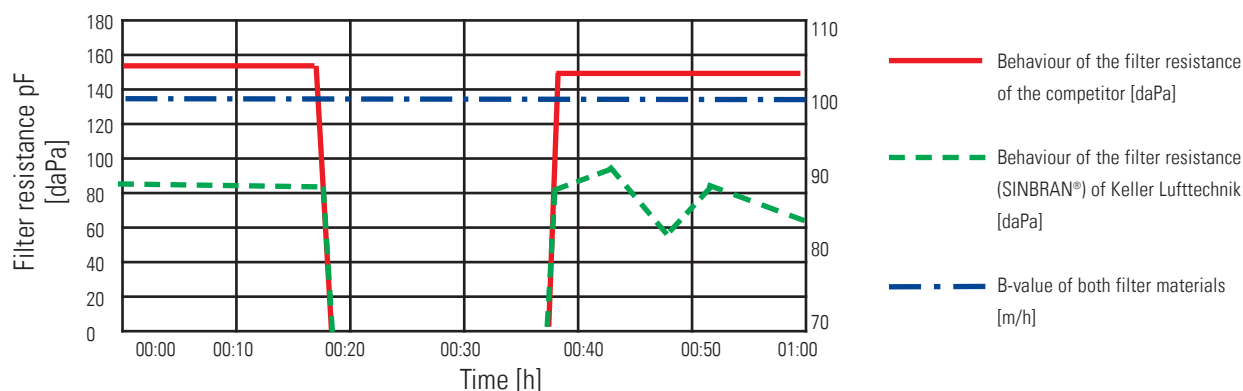
Collection of overspray occurs in work booths or in collection elements that are adapted for the production process. The design of those components is supported by flow simulations to achieve optimal results.

Separation is accomplished with our high-quality SINBRAN® filter elements. SINBRAN® is a sintered rigid body filter with a porous polyethylene membrane laminated onto it to ensure perfect surface filtration without silicone. This combines all the advantages of a long service life, a continuous volume flow, an optimal cleaning operation, manual cleaning with low filter resistances and resultant energy savings. Automatic washing of individual filters in lieu of entire filter units presents a viable alternative solution.



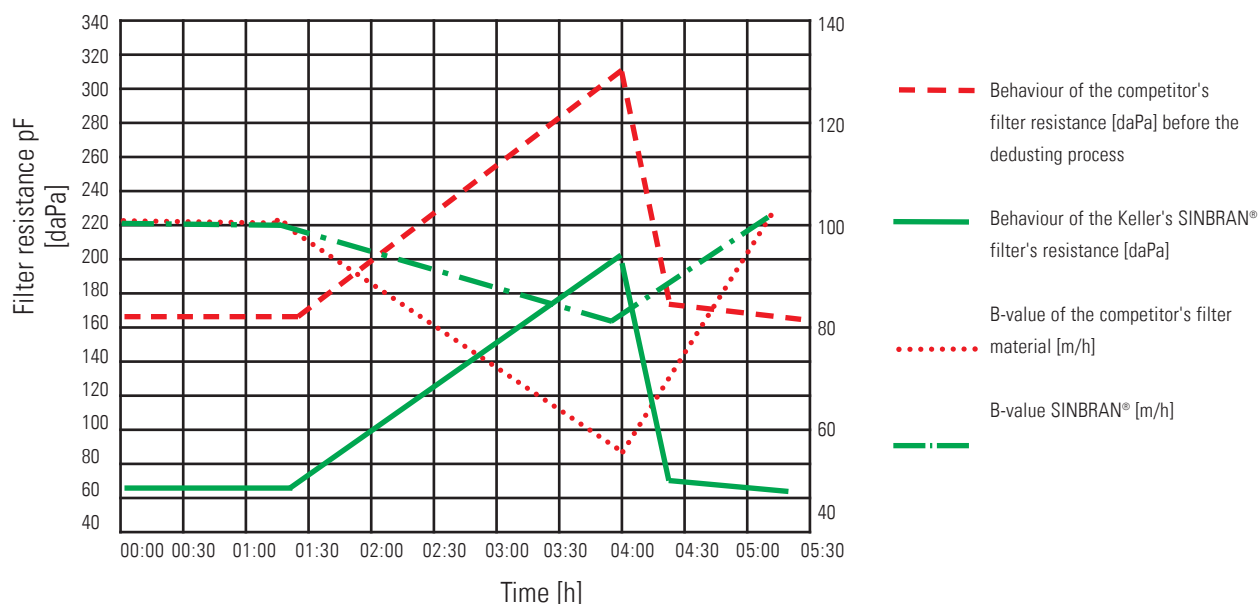
ADVANTAGES OF THE FILTER MEDIA

The diagrams show a comparison of the SINBRAN® filter material from Keller Lufttechnik and the filter material of a competitor.



Dust coating different filter materials at the same surface load:

The characteristic lines show, that with the same filter surface load - that means at the same volume flow for each m² of filter surface, the SINBRAN® filter material shows approx. 50 % lower filter resistance, compared to the material of the tested competitor. This indicates a considerable reduction in the operating costs of the filter system.



We further tested a simulated "crash behaviour" of both filter materials. Automatic dedusting ceased at a predetermined time, while maintaining the same dust level. This attempt indicated that the competitor's flow volume decreased by about approx. 50 %, in comparison to SINBRAN® technology with a decrease of only approx. 20 % (please see curves B-value). This means that during malfunctions such as the breakdown of a compressed air supply, Keller's filter material retains considerably more reserve capacity, and that the entire system is less prone to shutdown.

AIR FILTRATION

SYSTEM SOLUTIONS



REFERENCE APPLICATIONS

Final stage filter - ITW GEMA

Chain cleaning approx. 15 filter systems - Eisenmann

VARIO 1.3 for brass dust at the painting from paperboard containers approx. 20 filter systems - Dreissig

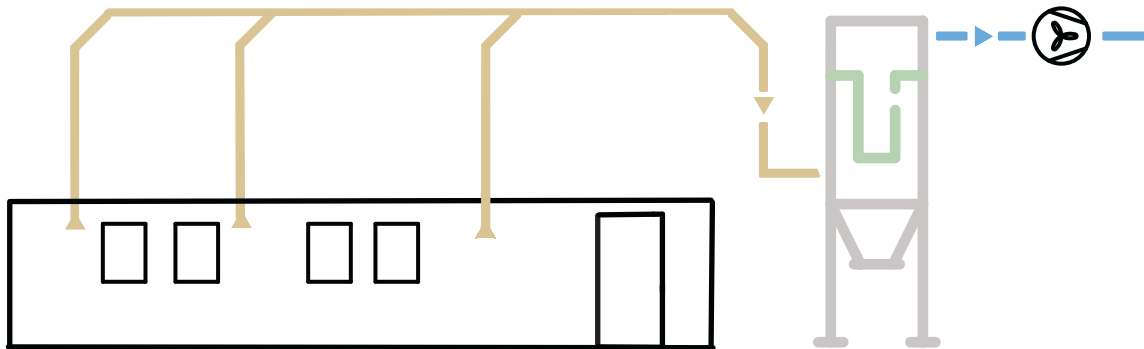
Filter elements for filter modules - BMW

Vacuum suction unit - Dürr (SGM)

Final stage extraction of residual powder - Neumaier & Sohn

Final stage extraction of residual powder - DU-Pont Pulverlack

Final stage extraction of residual powder - Leistner



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