



Wet painting

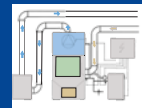
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Filter technology with long term experience



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Wet painting processes



Energy efficiency

Painting processes



KL Information

Keller Lufttechnik is a worldwide technology company specializing in the capture and separation of a variety of air pollutants, as well as the reduction of emissions in industrial applications. The family-owned company was founded in 1903 and is now run by the fourth generation, combining both tradition and innovation.

All industrial manufacturing processes produce air polluting substances. These substances are released during mechanical machining processes, thermal processes, in treatment technology, during the handling of cleaning agents and solvents, or during painting and refinishing processes.

Surface treatment is required for almost all manufactured products. This affects the physical and functional characteristics such as hardness, corrosion and wear resistance, as well as color or brightness. To meet those different requirements, surface engineering processes and coating technology are necessary for many applications. Keller Lufttechnik is able to offer innovative solutions such as energy-efficient filtration systems for coating processes, or the latest extraction systems for the blasting of components

Foreign substances in the air have an adverse effect on the manufacturing process and the final product. They must, therefore, be captured, separated and exhausted effectively and reliably. Keller Lufttechnik develops, plans and manufactures exhaust systems that present an appropriate solution for air quality control. To this end we rely on an extended and proven product range to solve problems in the fields of dry and wet separation, as well as in oil/emulsion mist separation. By utilizing innovative filtration technologies and systematic planning, we achieve optimum separation results. This way, Keller Lufttechnik provides custom tailored systems of the highest quality that include solutions to individual problems.

In addition, Keller Lufttechnik offers complete service packages covering the entire service life of all aspects of our exhaust systems: from the first draft, the approval and permit processes, the installation and commissioning, to after-sales and service.

Additional information: www.kl-direkt.de.



Surface filters, VARIO and ModuLine CR



Surface filters, L-CUT



Wet scrubbers, VDN



Oil mist separator, OENA



Emulsion mist separator, ENA



ModuLine CLB



Moduline CL



Work booths



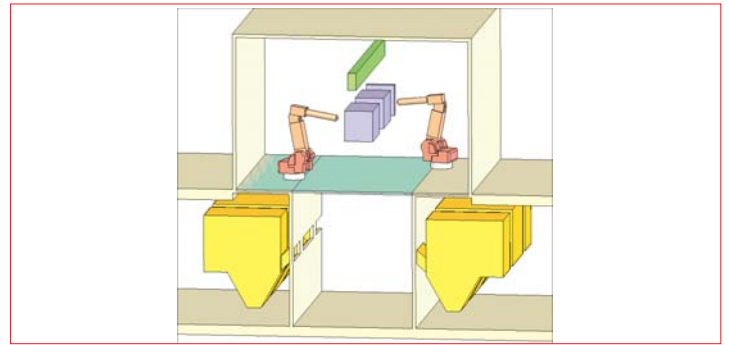
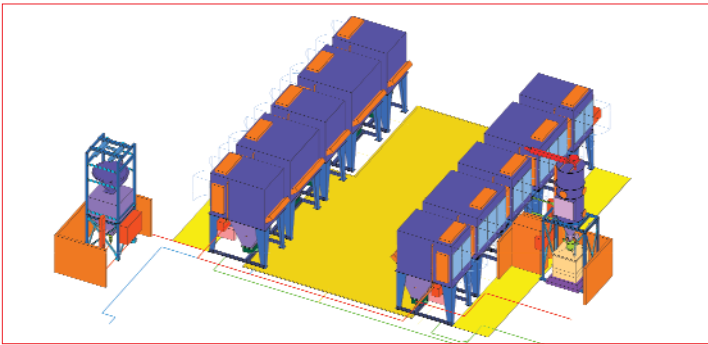
Cyclone filters



KL-WETVAC

KL-References wet paint overspray

Well-engineered filtration technology through long standing experience



Keller Lufttechnik has employed renewable separation technology for wet paint overspray for more than 15 years. Overspray is created by solvents or water-based paints. Our experience is built on more than 200 filtration systems. Depending on the customers' requirements, we can not only deliver a single

filtration system but entire systems, from collection enclosures to treatment processes. All filtration systems are completely automated, from the supply to disposal.

Branch of industry	Painted components	Air volumes
Automotive industry	Gears	89.000 Bm ³ /h
Automotive industry	Axles	680.000 Bm ³ /h
Automotive suppliers	Dashboards	2.500 - 5.000 Bm ³ /h
Automotive suppliers	Bumpers	30.000 - 44.000 Bm ³ /h
Construction industry	Claddings	45.000 Bm ³ /h
Electrical industry	Razor housings	7.000 - 24.000 Bm ³ /h
Electrical industry	Flat screen housings	7.700 Bm ³ /h
Aircraft industry	Tail wings and Tail assemblies	50.000 Bm ³ /h
Aircraft industry	Interior Struts and Reinforcements, Window Assemblies	17.000 Bm ³ /h
Leisure and camping	Window frames	10.000 Bm ³ /h
Container industry	5 liter barrels	5.000 Bm ³ /h
Furniture and music industry	Pianos	50.000 Bm ³ /h
Steel manufacturing and trade	Sub-assemblies and structures	4.000 - 14.000 Bm ³ /h
Textile and cloth industry	Cloth impregnation and textile coatings	7.000 Bm ³ /h
Alternative energies	Wind turbines	50.000 Bm ³ /h

Separating system for adhesive dusts



Until recently aerosols created during wet painting processes could only be filtered with expensive mechanical methods such as wet scrubbers, storage filters, or comparable systems.

Because adhesive overspray normally clogs a filter's surface, a secondary filtration layer must be created on top of the filter element with the application of an additive. This prevents clogging of the filter's surface. We utilize a standardized additive as a filtration supplement. After starting the fan, the additive is introduced and distributed evenly across the entire filter surface. An intermediate layer of additive is thereby created directly on the surface of the filter element, which prevents clogging of the filter's surface.

Blockage of the filter pores by adhesive and humid particles is avoided, since the filtered substances do not directly impact the filter's surface. In addition, effective fire protection is created through the inertization of the separated substances.

The dry additive which becomes saturated with adhesive aerosols must eventually be cleaned, which is accomplished by means of compressed air pulses. During the cleaning process, the additive in the filter unit is simultaneously diffused and extracted. An additional protective layer is continuously created. This procedure is repeated during the entire painting process. It is necessary to introduce new filtration additive from time to time, because dust and aerosols can accumulate.

We can also ensure a constant airflow volume for a 24-hour operation. It is possible to adjust each parameter to the respective operating conditions, if necessary, with an electrical switch and control systems that we supply.

Wet painting processes

created by wet painting processes

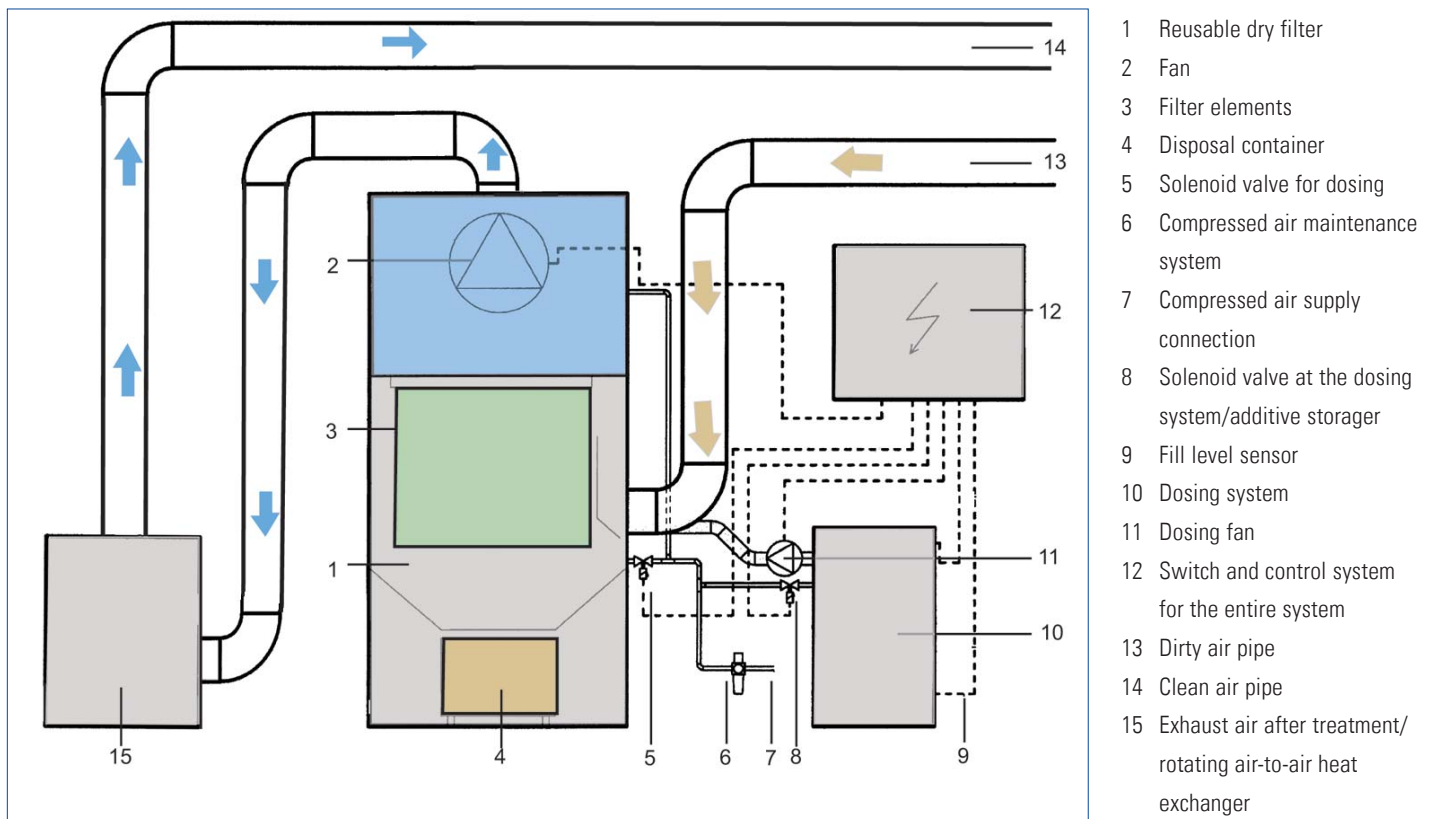


Diagram of extraction from wet painting processes

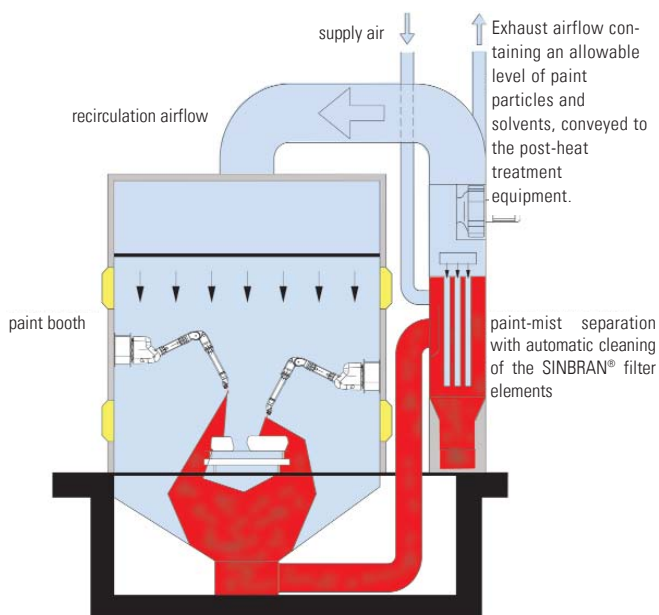
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Energy efficiency

Energy efficiency:



A future energy crisis development will likely be that all industrial waste must be significantly reduced. For example, a Keller dry filtration system with re-circulated air reduces the energy consumption of paint booths by 80%. The original purchase price of the system can be recovered in 1.5 to 3 years.

EU Energy Commissioner Andris Piebalgs recently described the following scenario: Energy demand will increase dramatically until 2030 by more than 50%. In contrast, oil demand will exceed supply within the next 20 years. "We may be assured that the shortfall between increasing demand and decreasing supply is going to increase by more than 4%. We could have a shortfall of more than 20% in only five years. You can hardly imagine the effects on economy. I do not think we should take a chance". Based on this forecast, energy efficiency is becoming an important topic for industry. Keller Lufttechnik supports its customers in reducing energy costs and is engaged in energy efficiency through air pollution control technology. An example of series painting is provided in the following:

Innovative solution for painting systems

Painting is a production process that requires considerable energy consumption. Up to 50% of the energy input goes into industrial painting processes. This rate is much higher in the automotive industry. The Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Stuttgart, Germany, determined that about 70% of energy is consumed by painting processes. Keller Lufttechnik discovered a solution that reduces heat energy by 80-90% with the use of a reusable dry filtration system providing air recirculation.

An important topic for industry



Diagram left: Dry separation by wet painting
Photo center: Separated overspray of water based paint
Photo right: Separated overspray of clear paint

No heat wastage

Re-circulating air ensures significant cost savings because large air volumes, heated and often humidified, flow through the booths to ensure a consistent quality. The warming of supply air with an average ambient temperature of 9 °C on 22 °C working temperature necessitates an air drop speed of 0,1 m/s heat energy of approx. 1,7 kW per square meter booth surface. This value increases even at 3 kW if the air increases to a relative humidity of 60% (according to the German IPA standard). Heat recovery by means of air re-circulation thereby achieves greater importance.

Wet separation can cause problems

Customary solutions for proper air circulation are frequently based on wet operating filtration systems. This solution, however, can lead to other problems. One of the most serious problems is contamination of the air flow, which can result in dust accumulation on the painted surface. Paint malfunctions and material waste are the results. Downstream storage filters require high cost maintenance and cleaning efforts. In addition, unnecessary humidity is let into the booth unless prior dehumidification measures are taken. Humidity can lead to increased growth of bacteria and necessitates the use of chemicals.

Dry operating filter system as optimal solution for painting processes


Keller engineers focus on reusable dry operating filtration systems with SINBRAN FILTERS. They can be used universally and offer many advantages. The filter elements are cleaned continuously and automatically, ensuring a constant air flow. The quality of the purified air corresponds to category H12, which is superior to common supply air standards. The clean air is

directed back into the paint booth via a channel, while the paint dust falls into a container which is discharged either manually or automatically. A pre-defined exhaust air and fresh air rate remains constant, and any unwelcome concentration of solvents is prevented. The fresh air flow can also be directed through the SINBRAN filters, which makes an additional filtration stage unnecessary. An additional supply air filter level ensures constant air distribution. At more than 20,000 hours we can attain a very long service life.

An example of a painting system

A sample painting system with an intake volume of 16.000 m³/h and a worktime of 4,000 hours annually runs with exhaust air and storage filters. Retrofitting to a dry filtration system by Keller Lufttechnik with 80 % recirculating air operation and 20 % exhaust air operation leads to cost savings of 26.6000 € every year. The payback period in this case would be under 3 years.

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SOLUTIONS FOR YOUR APPLICATIONS

Iron and steel/Non-ferrous Metals			
Buffing	•		
Lathes	•		•
Pressure die casting	•		•
Spring grinding	•		
Hot-dip galvanizing	•	•	
Milling machines	•		•
Shot-blasting	•		
Hardening	•		
Drilling	•		
Cooling	•		
Machining	•		
Polishing machines	•	•	
Fettling shops	•	•	
Sand reclamation	•	•	
Grinding machines	•	•	•
Melting furnaces (cupola, induction)	•	•	
Welding processes	•		
Abrasive-blasting machines	•	•	
Thermal spraying	•		
Thermal cutting	•		
Transfer machines	•		•
Machines tools (cooling lubricants)			•
Machines tools (minimum quantity lubrication)	•		•
De-scaling	•	•	
Chemical, pharmaceutical and food industries			
Biomedical	•		
Genetic engineering	•	•	
Laboratory equipment	•	•	
Painting	•		
Surface technology	•	•	
Pharmaceutical production	•	•	
Pneumatic transport systems	•		
Drying	•		
Finishing		•	
Recycling	•		
Material sorting	•		
Plastics and rubber			
Rubber cylinder processing	•		
Plastics extruders		•	
Tire buffing	•		

The separating technologies:

- dry separation
- wet separation
- oil/emulsion mist separation

Electrical and electronics			
Electrical and electronic industry	•		
Electronic parts production	•		
Semiconductor industry	•		
Pulp, paper, printing			
Balers	•	•	
Book binding	•		
Printing shops	•	•	
Guillotine-type cutters	•		
Sheeters	•		
Winders	•		
Pulp and paper products	•	•	
Wood processing			
Building component processing	•		
Fibreboard processing	•		
Flax processing	•		
Wood panel processing	•		
Insulation material processing	•	•	
MDF processing	•	•	
Pneumatic transport systems	•		
Chipboard processing	•	•	
Disposal and recycling of waste			
Waste recovery	•		
Asbestos disposal facilities	•		
Sorting of refuse and special waste	•		
Building material, quarries			
Mining and tunnelling	•		
Drilling engineering	•		
Glass production	•		
Glass processing	•		
Ceramics production	•		
Kilns	•		
Mineral	•	•	
Grinding	•		
Miscellaneous			
Air conditioning and ventilation	•		
Coal reclamation	•		
Coke plants	•		
Exhaust systems for large-scale catering establishments	•		
Leather processing	•	•	
Textile processing	•	•	

Trade shows

We take part in the following national trade shows in 2010:

- Int. Machinery Industry Exhibition Shanghai 18.-21.3.
- POWTECH Nürnberg 27.-29.4.
- Beijing Essen Welding & Cutting 2010, Beijing 27.-30.5.
- O & S Stuttgart 8.-10.6.
- Préventica Lille 15.-17.06.
- Intern. Casting & Forging Industry Exhibition, Ningbo 24.-27.6.
- IPB 2010, Shanghai 27.-29.9.
- Recycling Goringhem NL 28.-30.9.
- AMB Stuttgart 28.9.-2.10.
- Surface Hertogenbosch NL 12.-14.10.
- Contactdagen Warem NL 25.-27.11.
- K 2010 Düsseldorf 27.10.-3.11.
- Swisstech Basel 16.-19.11.

Impressum

kl-direkt

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The information given in the leaflet does not have the function to convey a defined idea. Due to the application range variety, an individual advice by our engineers is absolutely necessary. We remain at your service for any additional questions you may have.