

SUSTAINABLE AND COST-EFFECTIVE: NEW PAINT MIST SEPARATION SYSTEM AT JLG'S TIANJIN SITE

Founded in 1969, the American company JLG Industries Inc. specializes in the production of work platforms and is the world's largest developer and manufacturer in this field. During painting, large amounts of paint mist are generated, which was placing an increasing strain on the exhaust systems of the painting booths. Looking for an economical and sustainable solution, the JLG site in Tianjin, China, decided to equip its exhaust air systems with filtration solutions from Freudenberg Filtration Technologies: A system based on edrizzi® paint mist separators and Viledon® compact pocket filters. Freudenberg Filtration Technologies has been distributing the edrizzi® system since April 2016 to the worldwide automotive industry, in many countries to all surface material processing industries.

Initial situation

– Low service life and a high amount of paint sludge

A strong orange paint finish gives JLG lifting platforms and articulated telescopic booms their distinctive appearance. However, large amounts of overspray and paint sludge were being produced in the two coating booths (base paint and finish paint) of the Chinese site in Tianjin. Even with efficient painting processes, up to 35 percent of the paint failed to reach the surface, more than 100 kilograms of paint sludge accumulated per cabin and day. The consequence was clogged filters and reduced exhaust air volumes. Filters had to be changed frequently, the paint sludge disposal was time-consuming and expensive. JLG were therefore looking for a reliable solution to filter their exhaust air, collect the excess paint and prevent paint accumulations in shafts and fans.

The solution

– A system of edrizzi® paint mist separators and Viledon® pocket filters

Freudenberg Filtration Technologies presented an efficient solution for dry separation due to the edrizzi® paint mist separators, which convince with high absorption capacity, economic efficiency and sustainability. The system is based on a handy cube made of corrugated cardboard, which can be cost-effectively disposed of at incineration plants in most cases and is very compactly transported and stored, since the boxes can be disassembled. It has the capacity to absorb up to 100 kilograms of paint per square meter at a nominal volume flow rate of 2,000 to 3,000 m³ per hour. As usual when using floor extraction, the new system was assembled just under the grid gratings, which allows the edrizzi® boxes to be easily accessed from below, regardless of the painting area. For the initial treatment, edrizzi® Vario medium paint mist separators are used. The post-filtration of the exhaust air takes place via moisture-resistant Viledon® Compact pocket filters made from synthetic-organic fibers. To increase performance, the system was converted to edrizzi® Vario S fine modules after a test phase. In addition, three Viledon® WinAir 50 pocket filters ensure clean air within the VOC system.

Customer benefit

– An economic, clean and energy-saving painting system

Compared to the previous system, the JLG site now saves more than 40 percent of the costs for the exhaust air filtration of its paint booths. Higher absorption capacities ensure longer filter life and a considerably more economical dry separation system. Thanks to the modular design, the exchange and disposal of individual filters and paint mist separators requires considerably less time and effort. Switching to the Freudenberg Filtration Technologies system with edrizzi® has not only reduced overall costs, but also increased the sustainability of production process at the site.

Technical data of the reconstruction	
Location	JLG Industries Inc., Tianjin (China)
Installation	September 2016
Filtration solution	Paint mist separation: 72 edrizzi® Vario S fine Post-filtration: 72 Viledon® Compact pocket filters Exhaust air: 3 Viledon® WinAir 50 pocket filters
Absorption performance	100 kg/m ² at a nominal air flow rate of 2,000 to 3,000 m ³ /h
Service life	On 26 working days per month and a two-shift working model, Viledon® pocket filters and the edrizzi® system are changed 3.9 times per month on average in the primer booth and 2.7 times per month in the topcoat booth.
Cost savings	more than 40% of cost savings due to the system based on edrizzi® paint mist separation with two-stage Viledon® post filtration.

Pictures



Image: FFT_Case_study_JLG_Tianjin_High-volume_overspray_collection_Image_1

Caption: Freudenberg Filtration Technologies equipped the exhaust air filtration system at the Chinese JLG site in Tianjin with an economical dry separation system with edrizzi® paint mist separators and Viledon® pocket filters to reach a extended filter lifetime, while reducing time, labor and costs involved in changing and disposal.

Image source: Freudenberg Filtration Technologies



Image: FFT_Case_study_JLG_Tianjin_High-volume_overspray_collection_Image_2

Caption: The 36 edrizzi® boxes, used in the primer booth, collect more than 100 kilograms of paint in two shifts daily.

Image source: Freudenberg Filtration Technologies



Image: FFT_Case_study_JLG_Tianjin_High-volume_overspray_collection_Image_3

Caption: The innovative edrizzi® system is based on a handy cube made of corrugated cardboard, which can be cost-effectively disposed of at incineration plants and very compactly transported and stored, since the boxes can be disassembled.

Image source: Freudenberg Filtration Technologies