



CASE HISTORY:

Paint de-tack program using centrifuge as the solids control and removal system

ACCOUNT:

Manufacture of diesel engines

PAINT TYPE:

Water base paint using water miscible solvents

PAINT LOAD:

Spraying 100-gallons of paint per day

TRANSFER EFFICIENCY:

50%

DESIGN:

Very old recovered downdraft paint booth built by George Koch & Sons. Manifold pipes delivered water spray to the eliminators using fan spray jet style nozzles. The sump is located directly below the floor grates and has a rectangular shape with side extensions and a flat bottom. A vertical re-circulating pump is installed in a pump well box attached to the side corner of the sump tank. The water draw to this pump came from the area near this corner. No other sump agitation was present and most of the water in this sump was "quiet". The system lacked any paint recovery system. They started with a manual spray operation painting 230 engines per day and later invested in robots that helped increase production to 300 engines per day.

PROBLEMS:

Water-based paint saturating the booth water.

Manifolds constantly plugging up with paint solids.

Heavy paint sludge build-up in the booth sump pan.

Exhaust stacks and fans blocked up with paint solids. It was so severe that they had to cut bypasses in the roof exhaust stack before the fans to relieve the overload.

High production levels limited the maintenance time on the booth, however the stacks and fans were being cleaned once per week, and the sump was being manually shoveled out every three to four weeks.

Once the original retrofit designs were in-place an automatic centrifuge system was installed, but a competitor implemented the wrong paint kill program and no paint solids were being removed.

SOLUTIONS:

1. Modified the booth pans to eliminate "dead areas" of booth water agitation.
2. Mass water flow system was designed below water surface in sump pan to "drive" the suspended paint particles to the centrifuge pick-up point.
3. High efficiency manifolds with less clogging spray nozzles installed.
4. Main booth exhaust fans were upgraded.
5. A larger more efficient automatic centrifuge was installed when increased engine production added excess solids to the system.
6. Replaced our competitor's polymers with our paint kill polymer program and immediately started to remove paint solids from the booth water. Utilized the proper polymer for charge neutralization, which broke the paint molecule from the water and coagulated it into the proper micron size for improved centrifugal separation.

RESULTS:

Sump clean outs scheduled only once per year now.

Exhaust fans, stacks, and booth manifolds are remaining sludge free.

Successfully removing paint solids, generating one drum of dry land fill able solid waste every day and a half.

Very little maintenance time (clean-ups) devoted to downdraft paint booth. Only maintenance is floor grate, robot and good quality preventative maintenance.

- **LESS BOOTH MAINTENANCE**
- **DRYER SLUDGE CAKE**
- **REDUCED SLUDGE VOLUME**
- **MORE PRODUCTION**
- **CLEANER EMISSIONS**
- **REDUCED OPERATING COST**

Water Wash Paint Booth Application Questionnaire

Company		Contact	
Address		Phone #	
City		Fax #	
State & Zip		E-Mail	

Product Manufactured			

US Centrifuge Representative	Date	
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Application Information

Booth Style and Original Manufacturer	Water volume in booth or pit	Robot or manual	Paint type	Gallons of paint sprayed per day	Paint solids	Transfer efficiency	Production hrs per day
1.					%	%	
2.					%	%	
3.					%	%	
4.					%	%	
5.					%	%	

Chemical Supplier		Chemical Rep		Phone #	
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Chemical Treatment Program	None	Floating	Suspend	Sinking
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Describe the booth agitation				
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Current method of booth or pit filtration				
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Current method of solids de-watering				
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Sludge volume generated per day		Sludge dryness	%
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Sludge classification	Hazardous	Non hazardous	Other
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Sludge disposal method	Landfill	Incineration	Other
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Sludge disposal cost	\$ / month	\$ / year
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Liquid classification	Hazardous	Non hazardous	Other
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Liquid disposal method	City sewer	Plant waste treatment	Other
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Liquid disposal cost	\$ / month	\$ / year
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Goals and objectives of potential centrifuge installation: (please circle all that apply)

Reduce sludge volume	Reduce booth maintenance time	Reduce booth maintenance labor	Increase production up time	Increase production capacity	Minimize floor space requirements
Reduce sludge disposal costs	Reduce liquid disposal costs	Improve booth water quality	Reduce chemical costs	Eliminate filter media costs	Minimize handling costs

Other desired benefits			
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Plant voltage	Available floor space and ceiling height		
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Please fax completed survey to US Centrifuge @ 317-299-2284 or call 800-899-2040