

RPA Process Technologies

Colorants Manufacturer Eliminates Volatile Emissions with DCF Filter

Stop Release of VOC's into Filling Area

End Burst Filter Bags

Achieve Constant Differential Pressure

Colorants manufacturer, Color Corporation of America in Louisville, Kentucky, needed a solution for its open bag filter used to remove undispersed pigments and contaminants from its products. A Ronningen-Petter Mechanically-Cleaned DCF filter was installed to provide a closed system specifically designed to address the special challenges of filtering viscous liquids.

■ **SITUATION**

Fed by gravity through a bag filter at the base of a blending vessel (let-down tank), colorant was deposited into an accumulating vessel. From there, a pump transferred the product to the designated filling line. Both the bag and accumulating vessel were open to the atmosphere and although the release of Volatile Organic Compounds (VOCs) from the bag and vessel were well below local, state and federal regulations, Color Corporation's process engineers sought a goal of zero emissions.

The bag filters also had trouble handling increases in product solids or viscosity. These situations resulted in faster blinding of the filter bag and an increase in differential pressure across the bag. Increased differential pressure sometimes led to burst bags — resulting in product contamination, system shutdown, lost productivity and increased labor costs.

■ **RPA PROCESS TECHNOLOGIES SOLUTION**

Color Corporation's process engineer, Shawn O'Donnell looked at available alternatives to the bag filter system, and consultations with RPA Process Technologies led to the installation of a closed system Ronningen-Petter Mechanically-Cleaned DCF-800 filter. The DCF filter and a pump are mounted on a mobile cart. The suction of the pump is connected to the base of the let-down tank. The discharge of the pump, including a pulsation dampener, is directed to the filter inlet. The outlet of the filter is connected to a filling machine, and the entire colorant filling process is closed to the atmosphere.

The filling machine controls the mobile pump and filter unit. To begin a fill, the operator pushes a button to open the compressed air supply to an air-operated double diaphragm pump, which sends the colorant through the DCF-800 filter and filling machine head. When the system recognizes a



▶ **Eliminate VOC's:** Color corporation's process engineers sought a goal of zero emissions.

▶ **Labor savings:** Before DCF, Color Corporation had to shut down a fill line to change filter bags.

▶ **Higher quality:** The DCF filter provides uninterrupted filtering for a better quality colorant product.

container is full, it automatically stops the air supply to the mobile unit. The DCF filter performs its self-cleaning cycle when instructed by the filling machine.

■ **RESULTS**

Installation of the Ronningen-Petter DCF-800 Mechanically-Cleaned filter has eliminated the release of VOC's in the filling process by completely enclosing the filtering of colorant before sending it to the designated filling line. The patented DCF filter is uniquely able to handle the feed variables of the viscous colorants, and maintain a low differential pressure across the filter, thereby producing higher flow rates in the system.

Color Corporation is no longer faced with shutting down a fill line to change loaded filter bags, or the problems of filter bags bursting or blowing off their retainer. The DCF filter provides uninterrupted filtering and a better quality colorant product.

RONNINGEN-PETTER DCF MECHANICALLY-CLEANED FILTER



The DCF-800 filter has a patented cleaning disc that moves up and down the filtering screen, scraping debris from the screen and collecting it in a chamber at the bottom of the filter. Debris is periodically purged from the collection chamber by a discharge valve, in a process that takes less than seven-tenths of a second — with no interruption in production.

DCF is the closed filter system specifically designed for paint, coating, ink, adhesive, resin and other viscous liquid applications

Because the DCF filter's unique traveling cleaning disc maintains a low, constant differential pressure, you get maximum throughput. And you collect and discharge only the contaminants, not a filter bag or cartridge loaded with your valuable product. so you retain more product in the process for increased profitability.

DCF eliminates media replacement, reduces worker exposure, labor and disposal costs...so you will achieve more consistent solids removal, more consistent product flow and get better housekeeping, too.

DCF filters can also be used as a stand alone solution or in combination with backwashing filters to concentrate effluent and simplify waste management.

CONCLUSION

The Ronningen-Petter DCF Mechanically-Cleaned filter has eliminated an open bag filter and accumulating vessel before the fill line, and the problems associated with the open bag filter system. With the help of the completely enclosed DCF filter, Color Corporation is gaining on its process engineer's goal of zero VOC emissions.

APPLICATION DETAILS

Filter Model: Ronningen-Petter DCF-800

Type of liquid: Colorant

Pressure: 10 psig (.69 bar) average, 40 psig (2.76 bar) maximum

Temperature: 130°F maximum (55°C)

Viscosity: 650 to 1100 cps

Flow Rate: 30 gpm (6.8 m³/h)

Particles removed: Undispersed pigments, airborne dust and dirt

Filtration required: 25 micron

Duty Cycle: Intermittent 200/600 gallon (756/2,268 liter) batches

DCF MODELS AVAILABLE

DCF-400 flow up to 30 gpm (6.8 m³/h)

DCF-800 flow up to 60 gpm (13.6 m³/h)

DCF-1600 flow up to 200 gpm (45.4 m³/h)

INFORMATION

For more information visit

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