

RONNINGEN-PETTER®

Multiple Filtering Solutions Aid Major Automobile Manufacturer

More Cost Effective
Easier to Operate and Maintain
Friendlier to Our Environment

A major automobile manufacturer was faced with the challenge of reducing its environmental waste, reducing labor costs, and improving efficiency. Manufacturing automobiles requires the ability to filter large quantities of a variety of liquids for many different applications. A quick look around any plant will reveal a number of filtering applications, including cleaning the solution used for washing components, cleaning machine-cutting coolant, and protecting the high-pressure nozzles used for cutting and deburring operations.

In the past, most of these activities have used either bag or cartridge filters. These filters will do the job, but they're not always the best solution. And they can be a costly choice both in labor and environmental waste. Ronningen-Petter has worked with a number of major manufacturers in the automobile industry replacing existing filter systems with more efficient and environmentally friendly systems such as the Ronningen-Petter F-Series, DCF, and AFR™ filter systems. This case study examines Ronningen-Petter solutions for one such plant.

■ SITUATION

This manufacturer had four specific applications that were targeted for either improvement or were new installations: parts washing, machine tool cooling, transmission washing, and machine coolant. Most of their applications typically were designed to use either bag or cartridge type filters. These methods require a labor commitment for changing the media and a method for disposing of the media.

Systems that use disposable filters, such as bags and cartridges, present large and costly waste problems. Landfill charges are generally based on volume. Because the amount of particles and debris filtered is relatively small compared to the size of the bags and cartridges, it was obvious that the elimination of disposal filters could result in significant cost savings. Additionally, the use of reusable filters is a key to meeting environmental "green" standard QS 14000.

■ EATON SOLUTION

Parts washing requires a high-pressure flow to separate debris from the parts. The cleaning solution is then circulated through a filter to separate the particles from the cleaning solution for reuse in the operation. This type of application is ideal for the Ronningen-Petter F-Series backwash filter. Two F-Series four-



RESULTS (see complete results on back)

Reduced labor costs, improved process flow and reduced environmental impact.

Labor savings: Clean-in-place filters and backwashing filters clean themselves.

Material savings: Saves the dollars spent on bags.

Waste reduction: Eliminates the waste of bag filters.

tube filters, filtering at the 25-micron level with slotted Tri-cluster elements, have replaced the disposable filter system.

The F-Series is a tubular backwash filter system comprised of a number of tubular filters working as a unit. The number of tubes is related to the desired flow rate, the liquid being filtered, and the debris being removed. Internal or external backwashing is possible. Internal backwashing is preferred if the liquid is plentiful, inexpensive, free flowing, and under sufficient pressure to clean the media.

Separating cutting and grinding debris from the tool cooling solution is required for machine tool coolant applications. A third F-Series at 25-micron now filters coolant from the central reclaim machining center. At four other critical sites within the machining center, additional filtration is required. Their use of coolant is an ideal situation for the

SOLUTION *continued*

Ronningen-Petter DCF-400. The reusable, clean-in-place DCF filter system eliminates the labor and waste concerns associated with typical bag or cartridge filter systems.

Ronningen-Petter engineers determined that four DCF-400 filters would meet the operational requirements of 25-micron particle retention at a flow of 15 gallons (75 l/min) per minute.

The DCF uses a mechanical means to clean the surface of the permanent filter media. The liquid flows down and through the filter, leaving the debris on the inside of the filter. A one-piece circular disc moves up and down the filter, removing debris.

New to the plant was a transmission washing system. The system was designed as a final wash for up to eight assembled transmission cases just prior to shipping. The auto plant needed a filter to protect the 500 gpm (1890 l/min) low-

pressure nozzle, which cleaned the cases. The Ronningen-Petter AFR filter system was selected to provide optimum performance. The AFR is a tubular backwashing system that uses a self-cleaning filter. For this application, Ronningen-Petter slotted Tri-cluster filter elements will filter the solution at a 50 micron retention level.

The final change in this particular plant was in the machining coolant line. In an effort to reduce labor costs, improve process, and reduce the environmental impact, a bag system was targeted for replacement. It was determined that a DCF-1600 system would best fit this application. This installation is similar to the DCF-400 installation described earlier, only with a higher volume and a retention of 25–50 microns. The retention size is dependent on the size of the openings the coolant must pass through to effectively cool the machinery to produce quality products.

RESULTS

These four applications represent different uses for reusable filter systems. In each case, operational costs were reduced. Additionally, each installation helps the plant meet the environmental or “green” guidelines in quality standard QS 14000.

Reusable, clean-in-place filter systems and backwashing systems have several inherent advantages over traditional bag or cartridge replacement systems.

Waste Reduction: This clearly was the driving force in this particular plant. Bag and cartridge systems generate a great deal of waste that must be handled and disposed. In most applications the particles that are separated from the solution represent a relatively low volume waste. The problem arises when the particulate

waste is trapped in bags or cartridges.

Labor Savings: Clean-in-place filters and backwashing filters basically clean themselves. You cannot get much more labor efficient than that. The DCF uses a mechanical disk to remove particles from the filter while the AFR and F-Series use either internal or external sources of solution to provide the backwash to clean the filter. In either case, no shut down for bag or cartridge removal is required.

Material/Inventory Savings: As soon as these filter systems were installed, the plant started generating savings through the elimination of bags and cartridges. These systems don't require the purchase, handling, or storage of replacement bags and cartridges.

CONCLUSION

This case study is but one example of the many benefits offered through Ronningen-Petter filter systems. Reusable, clean-in-place, automatic filtration systems (both mechanical and backwashing) will help reduce labor and waste costs and result in improved environmental compliance.



Ronningen-Petter F-Series filters were installed to help meet environmental “green” standards.

INFORMATION

For more information visit

www.filtration.eaton.com, e-mail
at info@eaton.com.

RONNINGEN-PETTER[®]

9151 Shaver Road, Portage, MI 49024 USA • toll-free tel: +1-800-656-3344
tel: +1-269-323-1313 • fax: +1-269-323-0065 • e-mail: info@eaton.com

www.filtration.eaton.com

EATON

