

## **51-Day Return-on-Investment for Hydroforming Plant -- A Real World Documented Case Study**

*A supplier of pickup truck side-rail frames wanted to reduce their operating costs and increase profitability. They knew that their current process was not cost effective or environmentally friendly, mainly due to the need to dispose of their entire 1,100-gallon coolant system on a weekly basis. The cost associated with this waste was becoming enormous. In addition, the future impact to the environment due to the coolant/lubricant waste was unknown.*

*This prompted the Production Manager to contact Ronningen-Petter due to an article he saw on the Internet. After a consultation of their complete process, they got more than they bargained for! They installed a Magnetically Coupled Filter (MCF) on their Hydroforming operation -- and in addition to a safer process for their workers and environment -- they got a 51-day return on investment!*

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### **SITUATION**

The pickup truck frame manufacturer (the customer) was using press technology to convert a straight mild steel tube into a side-rail, otherwise known as Hydroforming.

As part of the process, coolant is pumped inside of the tube to counteract the forces of the presses to bend and shape the tube into the final product.

After each operation, the coolant goes to an accumulator pit along with oil and metal debris created by the Hydroforming.

This coolant is collected and then put through a series of filtration steps to remove the oil, and then the collected metallic particles from the process.

Periodically, the coolant is pumped out of the pit to a paper-band filter, where the larger metallic particles are removed.

After this first stage, the coolant goes to a series of cartridge filters to remove the smaller metallic particles. This is known as a staged-filtration process.

The customer had a number of challenges for the Ronningen-Petter MCF filter. First and foremost, the system had to be able to withstand the rigors of this 24/7 operation.

Initially, the customer sought to have the MCF -- with 25-micron slotted elements -- replace the cartridge filter. As with any disposable media filter, the cartridge costs were high, as well as the labor costs to change out the media.

In addition, there were the cost to refill the system with chemicals and water -- upwards of \$500 each time --



and the disposal costs. All of which were eating in to the bottom line.

Most importantly, the oil and debris content of the coolant system were such that the customer had to dispose of their entire 1,100-gallon system on a weekly basis.

This meant downtime to the manufacturing process to enable them to pump out the system capacity, and subsequently refill the system with fresh coolant.

## SOLUTION

The customer decided to install a single Ronningen-Petter MCF filter on the front-end of the process ahead of the first stage, or paper band filter.

Although the ultimate goal was to replace the cartridge filter, the customer wanted to see what influence the MCF might have on the entire system if it was installed at the beginning.

If that challenge was not enough, the customer installed the filter when the coolant system was at its dirtiest, and would normally need replacing.

Clearly, the customer was going to give the MCF a rigorous test.

## RESULTS

To the customer's surprise, after eight-weeks of operation, they had not replaced a single cartridge filter.

In addition, the customer was able to disconnect the paper-band filter altogether because the coolant quality coming out of the MCF rendered the paper-band filter useless.

If that was not enough, according to the Production Manager the coolant in the system was "the cleanest we had ever seen." Moreover, they had "not needed to replace the coolant in the system during the entire time the MCF was installed."

This meant that over the eight-week operating time, the customer had saved approximately 8,800 gallons of coolant!

An added benefit -- in the customer's eyes -- was the amount of oil the MCF was removing.

The oil was agglomerating to the metallic debris in the coolant, and when the debris was removed from the screen, and ultimately purged from the filter, the oil was purged along with it. As a result, the buildup of oils in the coolant was reduced significantly.

Due to this very successful installation, the customer realized measurable savings on:

- The reduced usage of cartridge filter elements.
- The elimination of the labor to change out the cartridges.
- The reduced disposal costs for the cartridges.



- The extended life of the coolant system ( 8 weeks + vs. 1 week ).
- Machine uptime as a result of the extended coolant life.

This truly was a case where the performance of a Ronningen-Petter MCF industrial filter exceeded our customer's expectations!

--by Ask Filter Man

For questions about industrial filtration, please visit the Ask Filter Man forum at <http://www.ronningen-petter.com/Ask-Filter-Man-Blog.asp>.

If you would like to discuss this filtration solution with one of our highly trained Applications Specialists, please visit <http://www.ronningen-petter.com/ContactUs/Contact-Us.asp>.

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