

AMTROL Improves Filter Press Reliability and Efficiency with Wilden® Pro-Flo® SHIFT

NEW WILDEN AIR DISTRIBUTION SYSTEM (ADS) IMPROVES WASTE PROCESSING YIELD 40% AND CUTS OPERATING COSTS 60%



AMTROL's West Warwick, RI, USA, manufacturing facility produces metal tanks for plumbing, heating, Freon, propane and water storage generating metal particulate waste that requires safe, efficient, economical disposal.

When you produce the most reliable, longest-lasting products in your market, you come to expect the equipment used in your manufacturing processes will have the same reliability to allow top operational efficiency.

At the West Warwick, RI, USA, manufacturing facility of AMTROL, the efficiency of waste processing through newly installed filter presses had become adversely affected by poor reliability of their existing air-operated double-diaphragm (AODD) pumps caused by 30-year-old air distribution system (ADS) technology. By replacing the older ADS technology with new pumps equipped with the Pro-Flo® SHIFT ADS from Wilden®, Grand Terrace, CA, USA, AMTROL not only eliminated reliability issues, but also decreased pump maintenance, reduced waste processing operating costs by 60 percent and improved pump productivity by 40 percent.

Founded in 1946 and headquartered since then in West Warwick, AMTROL is the market leader in thermal expansion tanks, well tanks, indirect water heaters, refrigerant and chemical cylinders, propane tanks, and plumbing and HVAC accessories for use by the residential, commercial and industrial markets.

QUICK FACTS

- Company:** AMTROL
- Location:** West Warwick, RI, USA
- Market:** Metal tanks for plumbing, heating, Freon, propane and water storage
- Challenge:** Assuring reliable Air-Operated Double-Diaphragm (AODD) pump operation for their new filter presses
- Solutions:** Replacing existing 30-year-old Air Distribution System (ADS) technology and pumps with new Wilden® PS8 pumps equipped with the Pro-Flo® SHIFT ADS, which also improved processing yield and reduced operating costs.

At the West Warwick AMTROL manufacturing facility, nine production lines produce metal tanks for plumbing, heating, Freon, propane and water storage on a seven-acre site. Tank production involves punch forming, hole punching, welding, grooving, assembling, testing, buffing, etching, painting and packaging.



The largest quantity of waste generated during their manufacturing process is metal particulates containing primarily iron hydroxide, along with carbon steel, copper, brass, zinc, caustic acid and alkaline chemicals.

Responsible Waste Management

As in all manufacturing processes of this type, various kinds of waste products are generated in each step that must be collected and disposed of properly.

At the West Warwick facility, the largest quantity of waste generated is metal particulates containing primarily iron hydroxide, along with carbon steel, copper, brass, zinc, caustic acid and alkaline chemicals.

Processing of this waste begins by collecting the particulates and chemicals in slurry tanks for pretreatment to separate oils and neutralize caustic components. Wilden AODD

pumps then transfer the resulting sludge to holding tanks in a laboratory for final processing by three large recently installed filter presses to separate the sludge into solids and water for proper disposal. Each filter press has eight two-inch wide chambers, and each chamber is equipped with two 24-inch by 24-inch membrane plates.



AMTROL's filter presses receive sludge containing water and metal particulate waste pumped by Wilden AODD pumps for separation into solid "sludge cakes" and water for safe, convenient disposal.

To facilitate the process, three Wilden AODD pumps are used to pump the waste-laden sludge into the filter press chambers. AMTROL utilizes Wilden AODD pumps exclusively for all fluid-transfer applications at its manufacturing facilities, including filter presses because of their proven effectiveness in a variety of demanding applications.

The treated sludge containing water and metal particulate waste is pumped into the chambers until they become full with solid "sludge cakes" formed from the concentrated waste. During the process, water in the sludge is separated from the waste materials as it is filtered through the filter press membranes. Upon exiting the membranes, the now-clean water is disposed of in the municipal sewer system while "sludge cakes" drop into a bin to be carried away for disposal.

Overall, the facility's filter presses process up to 9,600 gallons (36,340 liters) of waste sludge per day and produce more than 100 tons of "sludge cakes" per year.



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Optimizing Process Improvement

While AMTROL's 30-year-old Wilden M8 AODD pumps had been faithful workhorses over the years, their older technology was a limiting factor in utilizing the new filter press' full potential.

A crucial part of an AODD pump is the ADS. This component directs pressurized air to the diaphragms that convert it into mechanical motion that push and retract the pump's diaphragms, causing it to pump fluid. AMTROL was using 30-year-old Wilden M8 AODD pumps equipped with ADS technology also dating back more than three decades. The poor reliability of these older pumps and ADS units under the demanding conditions of the filter presses resulted in periodic waste processing halts and downtime for pump disassembly, repair, reassembly and restarting. While the Wilden AODD pumps were the best technology for the filter press, a newer solution for ADS reliability was needed.

AMTROL didn't need to look far for a solution. By replacing the 30-year-old ADS technology with the revolutionary new patent-pending Wilden Pro-Flo SHIFT ADS, they were able to reduce the downtime of their AODD pumps, streamline the waste-management process, conserve energy, save money and reduce the total cost of ownership, all at the same time.

"Pump stalling was a problem," said AMTROL Environmental and Production Manager Bob Perrotti.

"Because the new filter presses were automated, they operated mostly unattended. As a result, if a pump stalled, it may not be discovered for a long period of time during which no waste was processed. While our existing Wilden pumps had provided us with great performance throughout the plant over the past 30 years, their older ADS technology was clearly the weak link in the new filter press process."

Perrotti discussed this issue with Dave Buckless, Account Manager at the F.W. Webb Commercial and Industrial Pump Division, AMTROL's pump supplier. "Reliability is key for their operation," said Buckless. "Unfortunately, 30-year-old ADS technology has limitations in an extremely demanding application like a filter press, and that's what was causing their issues."

As a solution, Buckless suggested that AMTROL compare the operation of Wilden AODD pumps utilizing the new Wilden Pro-Flo SHIFT ADS with the existing pump/ADS equipment. "I recommended pumps with the Pro-Flo SHIFT ADS because their cutting-edge technology provides extremely reliable, efficient operation and they could be easily piped into their existing installation," he said. "This provided an opportunity to evaluate the Pro-Flo SHIFT side-by-side with their current ADS technology."

AMTROL installed new Wilden PS8 50-mm (2-inch) Original® Series clamped AODD pumps equipped with the Pro-Flo SHIFT ADS and immediately noticed improved pump reliability.

"The results were astounding," said Perrotti. "The Pro-Flo SHIFT eliminated all mid-process stalling. Now, when a pump is not running, we know that the filter press' chambers are full. This incredible leap in ADS technology solved several major issues. The additional unexpected benefit was decreased maintenance. Because the SHIFT doesn't need oil, the bothersome maintenance tasks of monitoring ADS-unit oil levels and adding it when they run low has been eliminated. In addition, we've cut maintenance costs considerably since we no longer need to disassemble the pumps in order to restart them every time they stall."

AMTROL Paint and Environmental Supervisor Josh Hytinen commented, "The Pro-Flo SHIFT also increased our efficiency. Our cycle time has been reduced by nearly 40 percent, so we can expand our waste-processing capacity without additional equipment. The SHIFT has been a major benefit in improving our waste-processing capabilities without major capital investments."



Wilden® AODD pumps with Pro-Flo® SHIFT™ Air Distribution Systems meet the heavy demands of forcing waste-laden sludge into the filter press chambers for water/waste separation. AMTROL utilizes Wilden AODD pumps exclusively for all fluid-transfer applications at its manufacturing facilities because of their proven effectiveness in a variety of demanding applications.

The secret to the Wilden Pro-Flo SHIFT's revolutionary operation is a unique air control spool that automatically meters the air and prevents overfilling without reducing performance. By limiting the air used to the amount needed to maintain the pumping process, air consumption is lowered by up to 60%. The result is more product yield per standard cubic foot per minute of air consumption for maximum operational efficiency and energy savings. The Pro-Flo SHIFT technology also increases pump reliability for added maintenance savings. In addition, the Wilden Pro-Flo SHIFT can be retrofitted to existing Wilden AODD pumps to improve performance while retaining the original pump investment.

Conclusion

As operations at AMTROL's West Warwick facility continue to expand, the enhanced reliability and processing capacity of its filter presses will be key in handling the increasing volume of waste products efficiently, cost effectively and on schedule. For AMTROL, the Wilden Pro-Flo SHIFT ADS will play a key role in assuring optimum filter-press operation with its ability to deliver the required power, reliability and efficiency in high-demand operations such as filter presses.

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