



Avtec Finishing Systems



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Organization Background

Avtec Finishing Systems Inc. is a metal finishing company located in New Hope, MN. There are currently 116 employees at their 100,000 square-foot facility. Avtec Finishing and its sister company Nico Products constitute The Lindgren Group, which has served as a leader in the plating industry since 1971. At Avtec, heavy investments have been made in their operations to provide customers with a world class metal finishing experience. These investments have resulted in approvals to ISO, Nadcap, ITAR, Federal Firearms Licensing Requirements, and RoHS/REACH Requirements. Some industries served by Avtec include aerospace, defense, agriculture, and general manufacturing.



"I am grateful to MnTAP and Avtec for providing me the opportunity for this internship. I was able to apply my skills to reduce water and chemical usage in a metal finishing shop, a field I was very unfamiliar with. Over the summer, I became well-versed in the plating process and was made aware of how great water use is on an industrial scale. My greatest takeaway from the summer was learning of all the conservation and pollution prevention opportunities that are available in the industries served by MnTAP." ~ LCB

Project Background

Avtec operates for 20 hours a day, four days a week. During operation hours, rinse tanks receive a continuous flow of water governed only by flow restrictors. Rinse tanks are vital to the metal finishing process as they allow for excess chemicals to wash off parts before they pass to the next process. However, rinse tanks with low flows may experience a build-up of chemicals that are dragged in and negatively affect the quality of parts over time. As a result, many tanks may be receiving far more water than is needed to adequately rinse parts in an effort to avoid a decrease in quality. In total, Avtec uses about 9.85 million gallons of water per year, almost exclusively for rinsing parts.

Incentives To Change

The Lindgren Group was specifically interested in investigating water conservation efforts and reducing overall resource consumption. Avtec Finishing Systems had installed water metering across the facility in advance of this project which provided background information on water use and an increased interest in learning more about how this water was being used in the facility and where there were opportunities to improve.

SOLUTIONS

Conductivity Controlled Rinses

Conductivity is a measurement that can be used to estimate the quality of water. Conductivity controls for rinses regulate the flow of water to the tanks by automatically adding fresh water and flushing contaminated water once a certain, pre-determined conductivity set point is reached. This enables water to only be used when it is needed. By adding conductivity controls to the six lines with the highest water use, 3.34 million gallons of water and 11,900 lbs of solid waste per year could be saved, with an annual savings of \$45,200.

Solutions

Tank Covers/Drain Boards

As a rack moves from one tank to the next, it may pass over several other process tanks and unwanted chemicals may drip off the parts and cause cross contamination in the other baths. Similarly, uncovered baths experience heat loss and evaporation. To address these issues, this project recommended installing hinged sheets of PVC affixed to tanks to serve as hurdles and covers in the open and closed positions, respectively. In the open position, these hurdles require operators to extend the drain time over the baths by increasing the time it takes to raise the racks and move it to the next bath. In the closed position, these sheets serve as covers and prevent cross contamination and increase the lifespan of the process baths. Implementation of tank covers to 31 tanks has the potential to save 1.04 million gallons of water, 3,850 lbs of solid waste and \$15,500 annually.



“Our MnTAP [project] was a great help expanding our existing water control plan. It is always good to get another set of eyes in the shop and the case studies shared ...were a great resource. The MnTAP program has a schedule to ensure that everyone is on track and is well managed by the supervision team. Overall, a great experience”

*~ Travis Johnson, Lab Manager
Avtec Finishing Systems*

Recommendation	Annual Reduction	Annual Savings	Status
Conductivity Controlled Rinse	3,340,000 gal water 11,900 lbs waste	\$45,200	Recommended
Tank Covers/Drain Boards	1,044,000 gal water 3,850 lbs waste	\$15,500	Recommended

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