



# Co-operative Plating Co.



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## Organization Background

Co-operative Plating is a single shop in St. Paul, MN that plates various parts for customers from aerospace to agriculture. With 18 lines ranging from anodized to zinc nickel, Co-operative tries to offer all options to its customers. Started in 1923, the shop was purchased by the Rosenblum family in the 1940s who moved it to its current location off Snelling Ave in the late 1960s. The Rosenblum's still own the 39,000 sq ft shop which now employs around 125 people and plates over 100 million parts annually.



Top Quality, On Time

*My experience working with MnTAP and Co-operative Plating has helped me gain experience in a professional setting as well as a reassurance that I am moving down the right career path. It also opened my eyes to the countless saving opportunities beyond energy in an industrial setting, giving me an appreciation for the coordination and people that it takes to implement those savings.” ~ RG*

## Project Background

The plating and preparation processes consume a large quantity of water and chemicals, with much of this water used for the 3-5 rinse tanks on each line. Each of these rinse tanks uses a steady flow of water to clean off parts and reduce chemical buildup in the tank. The rinse tanks use approximately 25.4 million gallons per year.

Opportunities were also identified to save water, gas, and chemicals in the pre-plating and post-plating processes. A major focus is the replacement of a vapor degreaser that uses 405,000 gallons of water, 92 therms, and 14,500 pounds of solvent each year.

## Incentives To Change

Co-operative, like many other companies before, strives to improve its operations and overall sustainability. Reducing resource utilization, minimizing waste generation, or upgrading equipment and processes, can also lower costs and increase profitability.

Co-operative's residential location in St. Paul also brings an added responsibility, encompassing not only the well-being of its employees but also the welfare of the surrounding neighborhood it is a part of.

## SOLUTIONS

### Switch to an Aqueous Cleaning Solution

Currently a vapor degreaser is used to remove oil/grease from incoming parts as well as to remove a red stop-off lacquer used in the parts masking process. This machine uses n-Propyl Bromide (nPB), a costly chemical, recently designated as a hazardous air pollutant. It is recommended to switch to AquaVantage® 815 QR-NF aqueous detergent in a heated ultrasonic immersion parts washer for removing oil/grease, and a small, unheated acetone tank for removing the masking lacquer. Testing of a peelable masking lacquer is in progress, which may eventually eliminate the need for the acetone solvent.

*“In partnership with MnTAP and Ryan Goepfrich (intern), several key improvement projects were developed. As a result, we expect lower usage levels of water and cleaning solvents in our metal finishing processes. The MnTAP intern program has provided significant benefits to our business going forward.”*

*~ David Birkemeier, President & CEO  
Co-operative Plating*

# Solutions

This recommendation will save 14,400 pounds of chemicals and 225,000 gallons of water. It will result in a reduction in both chemical quantity and chemical hazard level.

## Insulate Exposed Steam Pipes

Steam pipes are used throughout the shop to heat up plating and rinse tanks. It was estimated that there are 930 feet of exposed steam pipes around the facility, with pipes ranging from 1 to 3 inches in diameter. It is recommended that pipes be insulated, saving 11,300 therms and \$11,500 annually with a payback time of 5 months.

## Increase Drain Time

During the plating process, dragout of chemical and water on the rack or parts can occur if there is insufficient drain time spent over the process tank. This dragout can lead to tanks being cross contaminated, which increases chemical and waste disposal costs.

Increasing drain times over the identified tanks to at least 15 seconds will save 6,400 lbs of chemical and \$16,300 dollars in chemical purchasing and waste disposal costs and also allow for more consistency in the plating process.

## Fix Compressed Air Leaks

Compressed air is used to dry off parts after the plating process. Nine audible leaks were identified and addressed. These fixes have an estimated savings of 48,600 kWh and \$6,300 with an implementation cost of only \$400.

## Add Counterflow Rinse

It was identified that a counterflow rinse tank could be added to the zinc nickel hand line. The addition of the new rinse tank allowed for an overall flow rate reduction on the line from 0.625 gallons per minute (gpm) on one tank to 0.325 gpm on both tanks combined. This change would save 90,000 gallons of water, and \$1,200 per year. Further investigation is needed to determine implementation cost for the project.



Recommendation	Annual Reduction	Annual Savings	Status
Switch to Aqueous Cleaning	14,400 lbs of nPB 225,000 gal water	\$59,500	Recommended
Insulate Exposed Steam Pipes	11,300 therms	\$11,500	Recommended
Increase Drain Time	6,400 lbs chemical 780 gal water	\$16,300	Recommended
Fix Compressed Air Leaks	48,600 kWh	\$6,300	Implemented
Addition of a Counterflow Rinse	90,000 gal water	\$1,200	Needs Further Investigation

MnTAP Advisor: Jane Paulson, Senior Engineer