CLOW VALVE COMPANY

COMPANY BACKGROUND

Clow Valve Company dates back to 1878. Today, Clow Valve of Oskaloosa, Iowa has become a much larger company, producing valves and fire hydrants for clients around the world. The Oskaloosa site consists of two separate facilities: the machine shop and the metal casting facility. Clow has become increasingly committed to reducing its environmental footprint. In addition to participating in the Pollution Prevention Intern Program, Clow has been working with its electricity distributor on energy-saving techniques at both of its facilities within Oskaloosa.

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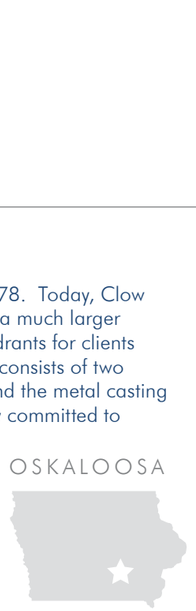

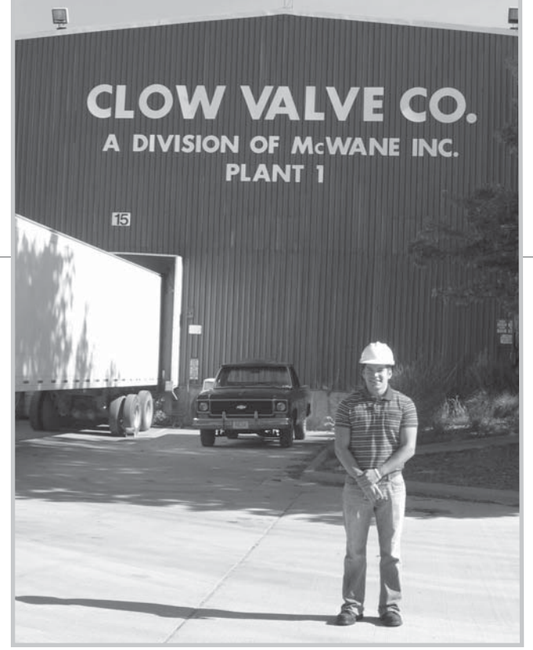

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PROJECT BACKGROUND

This summer, Clow looked to improve the company's efficiency by reducing the volume of hazardous waste caused by machine coolant sludge, reducing the amount of cleaner used in a parts washer, and reducing/reusing non-contact single-pass cooling water in core-making machines and oil cooling.

INCENTIVES FOR CHANGE

Clow's increasing costs of machining coolant disposal and parts cleaning solution drove the company to research options to improve upon its techniques and procedures. Clow also had high annual costs and expected price inflations for water, which motivated the company to investigate opportunities to cut back on usage and to recycle the water that was still used.

RESULTS

Coolant Waste Volume Reduction: Through the use of ultrafiltration, Clow can reduce the amount of waste sent out as "hazardous" by 90 percent per shipment. Extrapolating the current hazardous waste disposal costs from this situation, would save roughly $10,260 each year. In addition, the use of a reverse osmosis unit would reduce the volume from the source. The reverse osmosis unit could reduce or prevent coolant sludge volumes needed to be run through the ultrafiltration system.

Cleaner Reduction: With the use of ultrafiltration, reverse osmosis, air blades and an automatic controller, Clow can save approximately 1,293 gallons of cleaner annually. Ultrafiltration and reverse osmosis keep the cleaning solution clear of unwanted solids and oils. The air blades help retain solution, so it is not carried out of the station by parts on the conveyor. The automatic controller would maintain the concentration of the cleaner in solution throughout the day, replacing manual adjustment. Finally, turning off water and cleaner pumps during downtime will cut back on unnecessary operation costs. Cost savings realized by the reduced volume of cleaner would be approximately $21,577.

Water Reduction/Reuse: Through experimentation and observation, it was found that flow rates cooling certain machinery in Clow's metal casting facility could be lowered by 3.5 gallons per minute, on average. Using the tested rate on ten machines, there would be a savings of over 2,400,000 gallons of water per year. The volume of water saved equals $9,713 annually. In addition, the reduced water still in use was proposed to be piped to a furnace for further use. Roughly $1,051 would be saved by reusing the single-pass water.

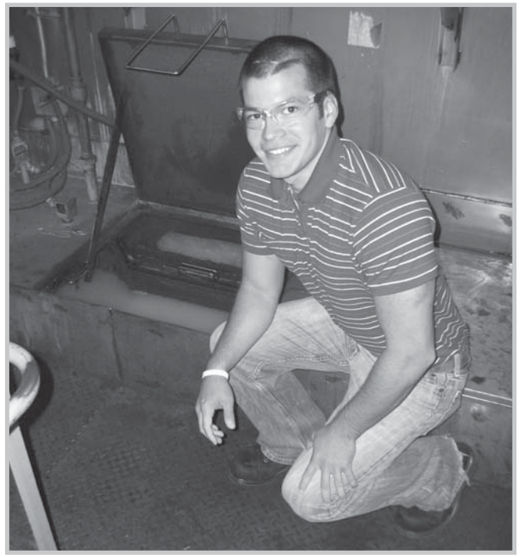
After building modifications were made to the metal casting facility, discussions with the maintenance supervisor resulted in a proposal to further reduce the required volume of cooling water. These building modifications indirectly alleviated the need of the cooling water for oil cooling. Experimentally, the water was turned off and the oil never reached an overheating status. This solution would save over 5,100,000 gallons of water a year, which results in $20,806 worth of savings. However, if the experiment runs into any trouble, a cooling tower could be installed to limit the amount of water that is used in the system. The cooling tower system would still cut down on usage, by only demanding approximately .75 gallon of water per minute, saving $19,722 annually.

Air Pollutants Diverted in Tons

	Total for all sectors
SO2	0.106
CO	0.135
NOX	0.064
VOC	0.142
PM	0.011

Green House Gases Diverted in Tons (CO_2 Equivalent)

	Total for all sectors
CO2	46.161
CH4	158.761
N2O	82.473
CFCS	0.740



PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
COOLANT VOLUME REDUCTION	$10,260	3,217 GALLONS OF HAZARDOUS WASTE	RECOMMENDED
CLEANER REDUCTION	$21,577	1,293 GALLONS OF CLEANER	RECOMMENDED
WATER REDUCTION IN CORE ROOM	$10,764	2,429,545 GALLONS OF WATER	RECOMMENDED
WATER REDUCTION FOR OIL COOLER	$20,806	5,187,600 GALLONS OF WATER	IMPLEMENTED