



# **Olympic Manufacturing Toxics Use Reduction Case Study Recycles Metalworking Coolant**

## **Summary**

By installing a recycling system for the coolant used on their roll threading machines, Olympic Manufacturing was able to reduce coolant disposal by 75% and solid waste disposal by approximately 88%. Prior to installation and operation of this recycling system, Olympic was discarding machining coolant after two days of use, generating roughly 600 gallons of waste coolant and two 55-gallon barrels of solid waste each week. The reduction in waste saved the company about \$38,000 annually.

## **Background**

Olympic Manufacturing, a 200-employee company located in Agawam, MA, produces commercial construction fasteners (screws) of varying diameter and length. Roll threading machines are used to carve the appropriate thread into the screws. During this process, a water-soluble coolant is applied to the screws, primarily to help protect the threading tool from heat, which causes excess wear. The performance of this coolant is greatly reduced as it mixes with machine oil, various coatings on the screws themselves, and the fine metal powder (or "swarf") generated during the threading process.

## **Toxics Use Reduction Planning**

Faced with excessive disposal costs for coolant and swarf, Olympic's engineering department, production personnel, and facilities manager began searching for a viable coolant recycling system. The company had already investigated various types of filtering media, as well as centrifuge and vacuum systems. All of them had ended up clogging or tearing under the weight of the coolant/swarf sludge.

The company finally settled on a system that was able to filter the paste-like sludge and produce high-grade, recycled coolant. This system combines a mobile sump cleaning device with a stationary recycling center. The mobile unit has two compartments, one for transferring dirty coolant and sludge from the roll threading machines to the recycling center, and another for delivering clean coolant back to the machines. The dirty coolant and sludge are vacuumed from the machines, larger solid particles are filtered out, and the remaining material is stored in the mobile unit. Clean coolant is pumped into the machines and they are ready to run again.

When full, the mobile unit is wheeled over to the recycling center and the dirty material is discharged into a settling tank. After allowing 24 hours for the remaining solids to separate out, the dirty coolant is sent through a magnetic drum to remove any metal particles, then through a series of oil separators, and finally "polished" using a 5 micron filter. The recycled coolant is then fortified with a fresh coolant concentrate and pumped back into the mobile unit.

## **Results**

*Reductions:* The new system has reduced the need for coolant concentrate from four 55-gallon barrels per month to one barrel per month, providing monthly cost savings of \$1,600. Disposal of liquid waste has decreased 75%, from 600 gallons per week to 150 gallons per week, saving Olympic \$1,800 per month. Disposal of solid waste has decreased 88% from two barrels per week to 1/4 barrel per week, saving the company \$1,365 per month. In addition, the recycling system has reduced the risk and liability associated with waste disposal.

*Economics:* Not only have the reductions, as mentioned above, resulted in savings, but the coolant recycling system has also eliminated the need for replacement vacuum heads, saving Olympic \$300 per month. The total savings Olympic achieved by installing the system are an estimated \$5065 per month.

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