

# NEVADA SMALL BUSINESS DEVELOPMENT CENTER BUSINESS ENVIRONMENTAL PROGRAM

CS-FY9501007

## MACHINING COOLANT RECYCLING AT DURA-BOND BEARING COMPANY

### Waste Reduction Case Study

#### PROJECT

Dura-Bond Bearing Company, a 88 employee manufacturing firm located in Carson City, Nevada received grant funding from the Nevada Division of Environmental Protection (NDEP) to purchase a coolant oil recycling system to recycle spent machining coolant generated from their manufacturing operations on-site. Dura-Bond is saving \$33,120 in raw material purchase and waste disposal costs per year.

#### BACKGROUND

Dura-Bond is a manufacturer of automotive camshaft sleeve bearings. Manufacturing camshaft bearings involves various processes including cleaning of raw steel tubes (Koleneing), casting babbitt alloy (Babbitting), sizing, machine cutting and grinding. Water based machining coolant oil is used in their sizers, screw machines, grinders and final bores. Water is mixed with fresh coolant at a ratio of 25 parts water to one part fresh coolant before it is used in their machining operations.

In the past, Dura-Bond had used a mobile recycling service for their coolant oil but experienced reliability problems with service due to transportation delays and weather problems in the winter months. Because of these problems, Dura-Bond had switched to off-site management of their spent coolant oil under the provisions of the used oil regulations.

Dura-Bond was generating about 2,610 gallons of spent coolant per month which was picked up for off-site management. The engineers at Dura-Bond realized the potential cost savings in reclaiming the coolant for reuse and proposed to purchase an on-site coolant recycling system.

#### TECHNOLOGY

Dura-Bond purchased Puritan Coolant Recovery System manufactured by Sanborn Technologies. The Puritan system is an integrated system that allows heat pasteurization along with high speed centrifugation. The vendor claims a solids removal of 99% by volume; it is designed to remove tramp oils. Pasteurization is accomplished by an immersion heater and helps control bacteria, mold, yeast, fungi and spore forms that cause coolant rancidity. Heating also removes dissolved gases, including hydrogen sulfide which causes odor. "We were familiar with the Sanborn system," says Ken Chambers, an engineer at Dura-Bond commenting on their choice to purchase the Puritan system, "it is simple to operate and the manufacturer has a great customer support team."

The Puritan system purchased by Dura-Bond has a maximum capacity of 2,160 gallons per day; however, Dura-Bond found the process capacity to be about one gallon per minute. The centrifuge system is a high speed, disc type centrifuge and needs manual solids removal. The process tank is approximately 500 gallons in capacity and split into two compartments for clean and spent coolant oils.

#### COST SAVINGS

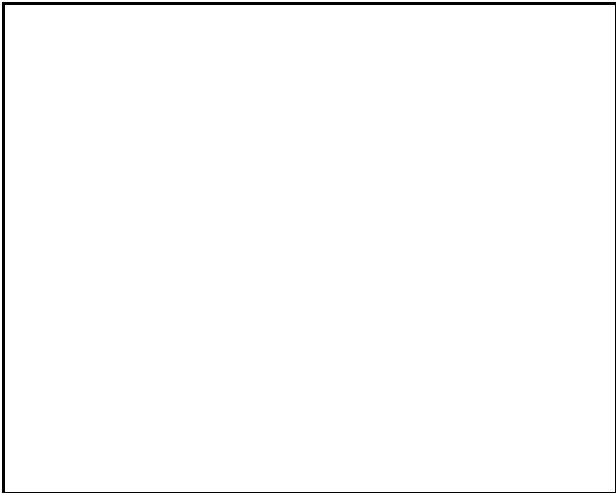
*This case study was developed by the Business Environmental Program of the Nevada Small Business Development Center with funding provided by the Nevada Division of Environmental Protection.*



The Puritan system cost \$38,379 including shipping and installation and NDEP provided half the amount through grant. Dura-Bond generates 2,160 gallons of spent metal working coolant per month and prior to installing the recycling unit spent \$3,240 per month for off-site management. With the new system on-line, spent coolant generation has been reduced to about 1,280 gallons per month that needs off-site management. Recycling coolant on-site saves \$1,640 per month in avoided disposal costs.

Coolant recycling on-site has reduced their coolant material purchase costs. Prior to installing the system, Dura-Bond purchased 275 gallons of fresh coolant at a cost of \$1400 per month. By recycling coolant on-site, the coolant purchase is reduced to one 55 gallon drum per month, costing \$280. Dura-Bond is saving \$1,120 in avoided material purchase costs per month.

Cost Savings Per Year	
Waste Disposal (\$1,640 x 12)	\$19,680
Material Purchase (\$1,120 x 12)	\$13,440
<b>TOTAL</b>	<b>\$33,120</b>



*The Sanborn Puritan Coolant Recovery System at Dura-Bond*

The initial installation costs were \$38,379; with a yearly savings of \$33,120, the equipment costs will be recovered in 1.2 years. Once the equipment costs are recovered, Dura-Bond will save an additional \$33,120 a year. "We are very happy with the Sanborn's Puritan System," says Ken Chambers, "it was a good project to pursue; we encourage other machine shops to look into it." Congratulations to Dura-Bond on a fine job; Ken Chambers can be reached at (702) 883-8998.

**SUPPLIERS OF COOLANT RECYCLING SYSTEMS**

Sanborn Technologies  
(800) 343-3381

Scrap Tech., Inc.  
(616) 628-2026

Alfa Laval Separation Inc.  
(215) 443-4000

Dynatech  
(414) 781-4088

*Note: The above listing of vendors and manufacturers is provided for informational purposes only. This list is provided as a service to Nevada businesses in order to assist them with waste minimization. This listing of businesses is not to be construed as an actual or implied endorsement of their products or services. Additionally, other businesses which provide similar products and services may not be listed; this omission is not to be construed as an actual or implied denouncement of those businesses.*