Sustainable Acquisition Success Story

Product Spotlight on Brookhaven National Laboratory

BNL's Turbo-Separator Reduces Industrial Waste and Purchasing Costs

Brookhaven National Laboratory's (BNL) purchase of a turbo-separator paid for itself in less than a year. The purchase of the turbo-separator gave BNL the opportunity to reduce their purchase of water-soluble cutting oil-- virgin Blasocut 2000 produced by Blaser Swisslube—as well as reduce labor costs. BNL's Fabrication Services Division uses the cutting oil when machining, milling, and fabricating specialized metallic parts for beam steering devices, cooling cavities, wire trays, oil tank supports, bulk tank hatches, etc. This cutting oil is essential to cool and lubricate the metal part being machined, as well as the blades and drill bits, extending their life as well as maximizing the life of the fabricating equipment.

BNL originally disposed of used Blasocut 2000 per New York State Used Oil regulations. In the mid-1990s, BNL's Fabrication Services Group started separating and filtering the used Blasocut to purify it for reuse. Recently, the original separation and filtration systems were replaced with a process-controlled centrifugal turbo-separator. The turbo-separator purifies the used oil by settling, centrifugation, filtration, and blending. The new turbo-separator reduces the processing time of the process, allows for higher separational efficiencies, easier material handling, and is highly automated so that the operator can simply set up the processing time and then perform other tasks. The overall recycling process avoids the cost of procuring 48 55-gallon drums per year of virgin Blasocut 2000 @ $1,350 per drum, less the cost for adding virgin product to the recycled material, resulting in $58,050 saved annually. The addition of the turbo-separator further reduces labor costs to operate the equipment by 85%. BNL's Fabrication Services Department purchased the turbo-separator for $48,840.

Keys to Success

Challenges

The previous separation and filtration system had separate unit operations that occupied nearly twice the footprint of the existing recycling system. The separate items included: a screened holding tank, filters, centrifuge, primary settling tank, secondary settling tank, and oil recirculatory all of which required manual labor to operate. The large footprint limited storage capacity of the area for product and was labor intensive.

Solution

BNL replaced the traditional method of purifying spent cutting oil by procuring a turbo-separator, an all-in-one system with automated process control allowing for unattended operation. The new design allows for reduced filtration and more efficient separation of usable oil from non-usable oil. The added space from the new system allows for increased product storage with improved containment capacity, reducing the potential for spills.

Results/Benefits

- Reduced waste (2640 gallons), 48 - 55-gallon drums of oil which originally was disposed of as used oil
- Reduced material costs ($58,050/yr.)
- Reduced labor costs ($28,800 savings/yr.)
- Allows an unlimited amount of recycling cycles of the oil
- Reduced potential for spills

Want to submit your own success story? Send submissions to Shab Fardanesh at Shabnam.Fardanesh@hq.doe.gov

Product Spotlight

Product Type: Water Soluble Cutting Oil

Sustainable Attributes: Reducing purchase of water-soluble cutting oil

Cost per Unit/Unit Type: $1,350 per 55-gallon drum

Brand/Model Number: Model T10-3-315 Turbo-Separator

Manufacturer: Turbo-Separator AG

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