1. Zero waste disposal... as featured in AMS Magazine

2. Recycle coolant offered a big payout... as featured in Cutting Tools Engineering Magazine

3. Reduced coolant expenditures by 75 percent... as featured in Fabricating & Metalworking Magazine
Zero waste disposal

Keeping your coolant

The coolant fluid used to lubricate and control the temperature of machining operations at the point where a cutting tool rotating at high speed comes into contact with a metal workpiece can be a particularly vexatious source of waste and operational inefficiency. Companies all too often keep the same fluid in use for weeks – even months – leading to degradation that impairs its effectiveness at reducing tool wear and makes working conditions unpleasant due to noxious bacterial growth in the fluid. Ultimately, the fluid will be drained and transported off site either for remedial treatment or disposal.

However, a US company called Universal Separators has a system called SmartSkan that can continually recycle and re-use fluid on site. The company is based in Verona, Wisconsin, though CEO Mark Kluis works out of offices in San Marcos, California. Kluis says the system, which has been around for over a decade, consists of a standalone unit that can be co-located with production equipment for ease of access and fed with contaminated coolant as quickly as it is drained into a container and transported across to it.

The fluid then undergoes repeated cycles of treatment over a period of 24 hours or so, at the end of which it is ready for re-use in an almost “as new” state. Kluis says fluid that is three to four months old can be returned to the state it was in “after just a week of use.”

The fluid is subjected to two primary processes within the system. One is a relatively conventional metal-removal procedure that can remove both ferrous and non-ferrous swarf produced by cutting operations. The other involves the use of what Kluis describes as a “coalescer”, which brings together the initially small droplets of “tramp oil” from the machine tool’s own lubrication system that inevitably get into the cutting fluid, so they can be more easily removed. A third optional process is the use of an ozonator to introduce oxygen into the coolant as a counter to bacterial growth.

According to Kluis, the benefits of the system, assuming fairly constant use, could reasonably be expected to include a reduction in coolant consumption of at least 30% and maybe as high as 75% in exceptional circumstances. Though the need to remove spent coolant off-site would not be entirely eradicated, Kluis says the cost savings in that respect might reach as high as 90%. Overall he says an investment of between $15,000-45,000, depending on the required capacity, ought to pay for itself within 12-18 months.

A number of big automotive names use the system including Delphi, Nissan, Honda and Toyota. Another is CS Engineering Autoparts of Samutprakan, Thailand, which started up a new factory with 128 employees in February this year. Its output includes a range of automotive and motorcycle parts for customers including GKN Driveline in Sweden. Production utilises over 70 different items of equipment from CNC lathes and machining centres to small manual machines.

Managing director Naruecha Sungkarat confirms that a SmartSkan system has been in place right from the start of operations and has limited coolant consumption on a continuous basis. He says in the four months from January to April coolant purchases were, respectively, 6, 5, 4 and 3.200-4000 barrels. The company is currently working to add the ISO 14001 environmental management standard to its existing quality management systems which include the ISO/TS 16949:2002 standard for automotive parts.
Although coolant isn’t cheap and prices continue to rise, the larger expense is paying to have dirty coolant hauled off-site, according to Mark Kluis, general manager for Universal Separators. “Customers tell us that’s the bigger savings.”
PHB worked with sales and technical support personnel from Houghton and Universal Separators to design and imagine coolant recycling technology that would meet the plant’s specific requirements. The company installed the new system in June 2007 and subsequently reduced coolant expenditures by 75 percent.

GETTING SMART, REDUCE, RECYCLE, REUSE

In order to maximize the usefulness of the new coolant and eliminate unnecessary waste, PHB continued using its recycling system.

Although the company now operates at 45 percent greater machining capacity than when it adopted the bio-stable coolant, it operates with the same amount of coolant (two to three barrels per month) thanks to the combination of long-lasting fluid and the recycle. "In the 20 years I’ve been here, we’ve been through five or six types of coolants and at least two recycling systems,” Workman said. “We can now recover more coolant than ever before, and that kind of savings is indispensable.”

Smart concludes. “The achievements here could only have been realized through teamwork and shared vision. The supplier team continues to provide the same level of service and support that our collaborative efforts are aimed at ensuring the implementation of the new recycling system. We feel that our partnership and operational improvement have made us a more responsible corporation and better positioned us to gain additional business.”
OUR PRODUCTS:

- Coalescing Oil Water Separators
- Coolant Recycling Systems
- Portable Coolant Recyclers
- Magnetic Separators
- Floating Suction Skimmers
- Sump Cleaners
- Custom Filtration Systems

800-663-2167 (within USA)
608-845-2167 (outside of USA)
support@smartskim.com