

# Go Green. Get More Green



## Eliminate Excess Fluids

### Use Less

It's not overstating the obvious to remind users that less fluids and lubricants equals less purchase cost, less disposal cost, less labor cost for handling and maintenance, less housekeeping and maybe fewer secondary operations. Many companies would like to reduce their dependence on fluids and lubricants but feel it isn't possible; or they feel the process changes they need to undergo to determine if such changes are possible simply cannot be justified.

Customer mandates and unique material or operational requirements notwithstanding, there are some simple things you can do to eliminate excess fluids and lubricants in any facility. Paying attention to these simple guidelines will reduce environmental impact and yield profitable results.

### Consolidate

Fluid manufacturers used to operate on the assumption that there are benefits in creating specialized blends with application-specific properties. There is a place for specialization, but **advanced fluid technology now enables broader use of fluids, especially synthetics and vegetable-based formulas, reducing the need for**

**multiple fluids.** In the production operations of most plants it's realistic to operate with one or two cutting fluids, one or two forming fluids, and a limited number of lubes and greases for maintenance lubrication.

Although equipment builders may specify lubricant types it's not always necessary to follow their recommendations. When it is, their recommended lubricant may also be used in the facility to replace others.

For production processes, work with your fluid supplier to see if there are ways to reduce the number of fluids in the facility without compromising quality. He may have some good recommendations if you ask. Other issues that may be reduced by consolidation are mixing, handling, storage and disposal. Space savings as well as man hours saved can be applied to more important and jobs revenue producing [U1].

### Evaluate

In addition to fluid consolidation, manufacturers should be constantly evaluating the methods used to apply fluids and lubricants in production processes. It sounds simple, but so much innovation has taken place over the last 10-20 years in application methods, that opportunities for

improvement abound. Application methods can make a significant difference in maximizing fluid economy and minimizing environmental impact.

The purpose of applying fluids and lubricants is to reduce friction and to cool. This is done by creating a protective coating at the interface of the tool and the material being worked. More lubricity in the fluid means less friction. A better bond to the substrate means less lubricant is required.

In order to ensure that lubricant successfully reaches the desired surfaces, manufacturers sometimes end up applying it in many places it's not needed. For example a milling machine using flood coolant fills the inside of the machine with spray and flying chips and fills the room with mist. Sumps are laden with spent coolant and soggy chips are conveyed to bins while dripping on floors and absorbent materials. Or a part from coil stock being formed in a die may have lubricant sprayed, brushed or wiped onto the material unevenly or inconsistently causing lubricant to fall to the floor, accumulate on the machine or remain on the finished part unnecessarily.

A myriad of application systems have been developed to enable users

In today's manufacturing environment everyone is looking for ways to control cost. Current trends also find most companies paying more attention to their impact on the environment. The good news - there is a process in most industrial plants that can help you with both: lubrication.

Repetitive process lubrication and maintenance wearpoint lubrication share a combined expense that for some companies approaches 20% of total manufacturing cost. This includes the cost of the fluid or lubricant itself, plus the cost of handling, application, cleanup (including secondary processes) and disposal. For years lubrication has been considered a necessary intrusion in the production process that has to be dealt with at any cost.

# and Lubricants

by Steven Rainwater

to apply fluids more carefully and precisely. These systems can control both the volumes of material delivered and where it's applied. Both OEM systems and aftermarket retrofits are available for nearly every type of machine.

For machining, components such as programmable spray systems can be integrated to machine controls. Mountings, nozzle holders and work holders enable more precise direction of fluids. Coolant fed tooling more carefully directs coolant to the cutting surface while advances in tooling geometry and tooling materials allow more accurate cuts using less fluid. MQL processes with highly refined vegetable-based and synthetic fluids also enable users to cut using very little fluid.

In metal forming programmable stock lubrication applied with rollers and programmable die lubrication can be used to eliminate baths, high volume sprays, drip methods and manual lubrication. Using a programmable lubrication system in metal forming usually eliminates the need for recycling.

Sometimes there are cost-related objections to changing application methods. But when the cost of

fluid purchase alone can sometimes be reduced by 50-90% because unnecessary fluids are eliminated, the expense for improved application systems is easily justified.

When man hours are saved due to reduction in housekeeping or a secondary operation is eliminated because excess fluid or chips, are no longer a problem on the finished part, it is easy to see why improved application methods are worth taking a look at. The elimination of unnecessary fluids spells additional profits for the operation and less impact for the environment.

## Eliminate

Many companies are moving toward a zero-discharge policy as part of their overall environmental efforts. **Total loss lubrication (TLL) can be a key component to eliminating disposal from a facility.** It is possible in many, if not most types of applications to use only the fluid that is needed to provide lubricity to the tool and the work piece. When the right lubricant is applied only to the required surfaces and only in the necessary quantity it can often be consumed in the process.

TLL is practiced successfully in many machining facilities by using MQL. Companies like Ford and

Mercedes have spent years integrating MQL into their processes so they machine thousands of parts without any excess lubricants.

In metal forming operations such as stamping and roll forming, use of a programmable fluid delivery system with internally fed roller application places an even consistent coat of lubricant on to the stock in the desired volume and thickness. If additional lube is needed in the die it is added downstream, but often isn't required. When the part is formed, little or no lubricant remains on the part due to the controlled application.

Complete elimination of excess lubricant is not possible everywhere. But in a large number of plants there is no reason for any excess fluids to be found on parts, machines, floors or anywhere else it is not wanted.

When careful attention is given to which lubricants are used and how they are applied, lubrication becomes a key component in the company's efforts to Go Green. But most important, is how elimination of unwanted lubricants contributes to the bottom line, creating opportunities for any business to Get More Green, in increased profits and reduced expense.