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Lube-System Overhaul Dispenses Cost Savings on Every Front

A dramatic shift in stock-lubrication strategy for deep drawing and stamping at an MTD facility yielded improvements in press uptime and operator efficiency, and slashed lube consumption as well.

BY BRAD F. KUVIN, EDITOR

The huge 260,000-sq.-ft. MTD plant in Martin, TN, deep draws and stamps as much as 1 million lb. of steel per week to supply more than 250 different parts to its assembly lines, and to the lines of some of its nearby sister plants. Its bread-and-butter jobs—deep drawing mower decks and fenders—have become more critical with recent product redesigns, including a new, synchronized-blade system that requires tighter tolerances on the deep-drawn deck. The plant employs a 1600-ton transfer press to draw and trim decks at line speeds to 12 strokes/min., which can generate a lot of heat. Any lubrication failings can quickly lead to galling and other premature die-wear issues caused by overheating.

At the same time, in another area of the plant, more than a dozen progressive-die presses stamp a variety of smaller mower components—muffler guards, frame components and the like. Here, MTD operators change over press lines as often as seven times per shift. Each

job has its own, unique lubricant requirements to avoid over-application and waste, while still ensuring consistent coverage to optimize part quality and die life.

New Programmable Roller-Coater Units

To address its lubrication concerns in both areas of the plant, early in 2006 MTD maintenance manager Trent Rutkowski began to replace the spray-lubrication equipment on the plant's presses with roller-type equipment. It started with a test unit from Unist, Grand Rapids, MI, a uni-Roller Type S equipped with Unist's SPR-2000 programmable controller, so that MTD could estimate the reduction in lubricant consumption due to eliminating overspray and therefore justify the investment needed to install the units on several of its presses. MTD then



Deep-drawn mower side panels formed through a four-press cycle using multiple tools, ready to be washed and painted.

brought Unist personnel into the plant to train all of its press operators on the equipment, to ensure operator approval. Within two years, the plant had installed the uni-Roller and SPR-2000 on eight coil-fed presses. It also installed Unist powered uni-Rollers and SPR-2000s on a pair of blank-fed press lines.

“Upgrading our lubrication technology has been the most successful project we’ve implemented in recent years,” says Trent Rutkowski. “With our previous oilers, we constantly fought maintenance battles with the pumps, filters, etc. We tried to implement TPM at



A roller unit sits ready to apply an even, thick film of drawing compound top and bottom at the entry end of a press.

the cell level, but the work wasn't getting done. So we bypassed operator involvement to let them focus on other more important tasks around their press cells and decided to automate the lubrication process. I'd estimate that we've reduced press downtime due to lubrication issues throughout

the plant by at least 20 percent."

Among the Unist installations, Trent says that the most noteworthy improvements came on the progressive-die presses, where he has installed the uni-Roller units on eight of 15 coil-fed presses. On these lines, where press size varies from 150 to 800 tons, the coil line feeds



Deep drawing these mower decks at line speeds to 12 strokes/min. can generate a lot of heat. Any lubrication failings can quickly lead to galling and other premature die-wear issues caused by overheating.

the stock through the uni-Roller, which applies lubricant to the top and bottom of the material. To set up a press for a new job, the operator only has to select a predetermined program on the SPR-2000 controller based on coil width.

"We used to run the same lube settings for every job, regardless of coil width," adds Trent. "This led to a lot of overspray and waste, and the subsequent cleanup time and associated costs. Also, running three shifts, without the programmable control, we might have operators on each shift run different lubricant settings for the same part. Now we get consistent, even coverage, top and bottom, with no need to spray lubricant in the die, with improved part quality to show for it. Our tools stay cool, which has saved us a significant amount of tool and die repair time." The plant last installed a uni-Roller and SPR-2000 setup in August 2008, on a 500-ton Verson, and Trent expects to continue to change over its presses well into 2009.

Long-Lasting Application for Tandem Line

In addition to its coil-fed progressive-die stamping lines, the MTD team also installed new lubricant setups on a blank-fed five-press tandem line that stamps muffler guards and other parts with relatively smaller draws. Here the lubricant might have to last through as many as eight die stations, so Unist supplied its powered roller equipment and high-output rollers. The powered uni-Roller dispenses lubricant from a tube inside of the roller. The tube has holes spaced along its length and as the fluid controller injects lubricant into the tube, the lubricant is dispersed evenly across the inside of the roller. The setup features an array of 12-in. rollers staggered and overlapping to allow programming of custom application patterns onto the blanks.

"Before, applying enough lubricant to adequately coat the blanks on this tandem line required in-die spraying in addition to roll coating at the entry side of the first press," says Trent. "We could only position nozzles to spray

Lube-System

the top of the stock, not the bottom, and we also had overspray issues. Now we coat top and bottom once with no need to spray in the die.”

Central Mix and Supply Stations

All of the MTD stamping presses run the same lubricant—a synthetic mixed with water in two different compositions—one mix handles the jobs at the tandem line and the 1600-ton transfer press that deep-draws mower decks; and one mix for the progressive-die press lines.

“We have two central mixing and supply stations to deliver premixed lubricant to all of our presses,” adds Trent. “We’re consuming about 350 gal. of the synthetic lube every two weeks.”

Before installing the Unist equipment, press operators would have to fill reservoirs at each press, fed by the central supply stations. Now the supply stations feed directly to the presses, “yet one less procedure our operators must worry about,” Trent says, which also helps ensure that the dies consistently receive well-lubricated parts and, therefore, won’t prematurely wear.

Savings Keep Adding Up

Along with his conservative estimate of a 20 percent reduction in downtime due to lubrication-system issues, Trent also estimates (conservatively) that the plant’s purchase of raw lubricant has been reduced by 11 percent since it began to install the Unist equipment some 30 months ago. This reduction is made more important since the price of its lubricant has continued to rise over the last few years.

“Overall, very little attention now is required of our operators to the lubrication process and equipment,” he says. “Typically the operators would be involved with cleanup, refill and recycling activities—that’s all been eliminated. We get an even coat of lubricant on the top and bottom of the material, and have eliminated the time-consuming mop-up and cleanup of the overspray from our previous lubrication systems.”

MF

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