

Machine Tool Maintenance: Avoid the Tow Truck

WHEN VISITING SOME MACHINE SHOPS I hear PM, most commonly known as preventive maintenance, referred to as “postmortem,” as in, “We just run the machines until they die.” I also hear, “We usually do PM while the machine tool is down for other reasons since it’s not producing anyway.” I understand both sentiments.

Making chips means making money, and there’s a reluctance to halt machines for long. However, inspecting certain areas on a regular basis can help transform PM from autopsies to extending the lives of those machines for years. It will save money by preventing unplanned downtime and investing in new equipment prematurely.

There are also shops that approach machine tool PM like car maintenance—change the oil and filter, top off the fluids, and check the tires every 3,000 miles. More can be done. Shops should examine a machine’s condition regularly. Here are some tips:

When changing the “oil and filter” on machine tools, take a few extra minutes to look at the color and condition of the oil. Discolored oil can be an indication of too much heat somewhere in the system. Something might be burning or breaking down. Metal shavings in the oil or the oil filter could mean gears are meshing improperly, bearings are deteriorating, or something is misaligned and/or rubbing.

Even “topping off the fluids” is an opportunity to prevent a problem. Consider why they need to be added at all. Too much oil consumption in a machine tool could mean a possible break in the lubrication lines leading to such critical components as the ways or ballscrews. Even worse is the situation in which not enough oil is being consumed. The ways and ballscrews, and perhaps even spindle bearings, may not be getting enough oil. Some fluids for hydraulic systems, gear boxes, and others should not be consumed at all. Needing to add fluid to those

areas could mean a broken O-ring or seal, or a more serious problem.

Similar to “checking the tires” on a vehicle, scrutinizing for abnormal wear on a machine tool is smart. Are there unusual shiny spots or dull spots in the covers or gears? Pulling back the way covers can reveal a lot. For instance, if there are extra amounts of swarf and chips gathering in the castings, it could mean that the telescopic covers are bent, or the telescopic cover wipers are not adjusted properly.

Waging War on Swarf

Depending on the material being machined, if swarf gets beneath the way wipers it can scratch the way surfaces. Cast iron swarf is particularly hazardous to ways. Large gouges can be cut into them over time. The machine might be salvaged if the ways are replaceable, but a machine with integral ways would be trashed if the ways get too badly damaged—and all because a \$25 wiper wasn’t adjusted properly.

Also akin to “checking the tires,” the machining center’s toolchanger and pallet changer are simple to test and adjust. A misaligned toolchanger will deform and degrade the tool taper interface. This means machining inaccuracies, loss of rigidity, and excessive tool wear.

A successful PM effort means knowing what to check and verifying and spotting those early signs of impending issues. Most shops have a mix of different machine tool brands and types. In-house maintenance staff may not have the multifaceted expertise, nor the time, to effectively conduct PMs on all of the machine varieties. At Mitsui Seiki, we have a dedicated PM department. Our engineers are factory-trained and know all of the minutiae that can affect our equipment. Sometimes it’s just better to engage an expert, just like it can be better to schedule an appointment with the car mechanic, rather than sitting on the side of the road waiting for a tow truck. ➤



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