Go With the Flow

Maintaining Thermal-Fluid Ironers

Keeping these energy-efficient finishing machines in top condition requires yearly fluid testing and analysis

By Greg Jerdan

Self-contained thermal-fluid ironers are growing in popularity as a way to get high throughput, while saving on floor space and energy costs.

Since many thermal flatwork ironers are running constantly, 8-16 hours daily, regular maintenance is easily overlooked. However, doing so is a potentially costly mistake that can lead to equipment failures and shutdowns.

Pumps, burners and belts are easy to check because they're visible—you can see when they aren't moving. Thermocouples and other sensors are also relatively straightforward. The heater won't start or the sheets won't dry if the temperature is too low.

The thermal fluid inside the ironer is a different problem because you can't *see* whether it is in good shape or not. Following these tips can result in years of problem-free operation.

The importance of fluid analysis

The most important element of preventative maintenance for thermal-fluid ironers is fluid analysis. Fluid analysis involves not only testing the fluid, but also analyzing these results in terms of how operating and/or equipment problems can cause changes in the fluids.

Not all fluid tests are equal. For example, reports that include particle counts and levels of metals assume the tested material is a lubrication oil. If corrective action is required, the 'report' will always suggest a change-out or better filtration because that is what is required to prevent equipment failure in lubricating systems.

Thermal fluids operate under very different conditions. A drop in flashpoint in a lube oil indicates contamination by a fuel, while a drop in flashpoint of a thermal fluid indicates overheating, which is a serious equipment problem. A 0.5 Acid Number in a lube oil is not usually high enough to require action, whereas in a thermal fluid it is an early warning sign of a potentially serious system problem.

The following tests are the minimum recommended and should be run yearly.

Acid Number: This is the most important test to run because acids are the raw materials for almost everything bad that can happen to a thermal-fluid ironer, including sludge and fluid gelling.

Viscosity: Extremely high viscosity can reduce the heat transfer efficiency and can also make the fluid too thick for the equipment to start up. Periodic testing can identify increases long before problems start.

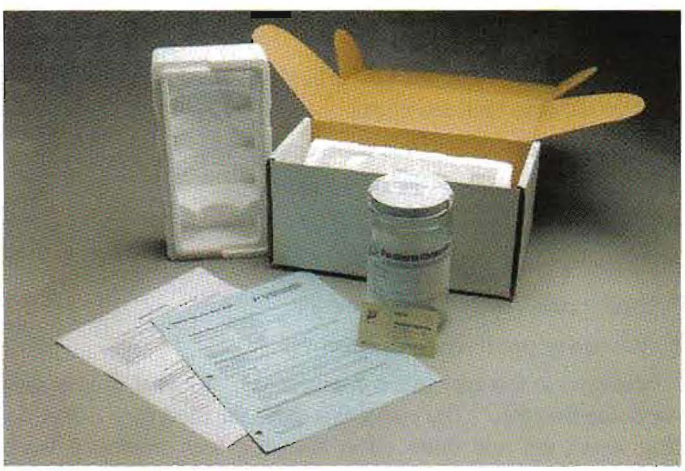
Distillation Range: When compared with new fluid, this test can

determine whether the fluid is degraded or just contaminated.

So having a thermal-fluid expert conduct the fluid analysis will ensure that the proper tests are done, the results analyzed correctly and any problems identified.

Don't learn the hard way

The operator of a large resort property could've avoided a costly shutdown had he conducted regular fluid analyses. Unfortunately, the resort's managers neglected fluid testing, until the blockage of a Y strainer became an issue. At this point, a fluid analysis finally was conducted. The test results indicated that the fluid was basically solid at ambient room temperature. If the system had continued and completely shut down, repair crews would have had to dismantle all the piping, which is an expensive way to remove the fluid. Fortunately, the situation was detected in time to allow a fluid change-out. Repairs totaled over $200,000 to restore the system to operation—and that's beyond the cost of outsourcing laundry service for more than a month.



Thermal oil ironers make a lot of sense in terms of space and energy savings, but their maintenance requirements vary greatly from those of conventional ironers.

Startup and shutdown

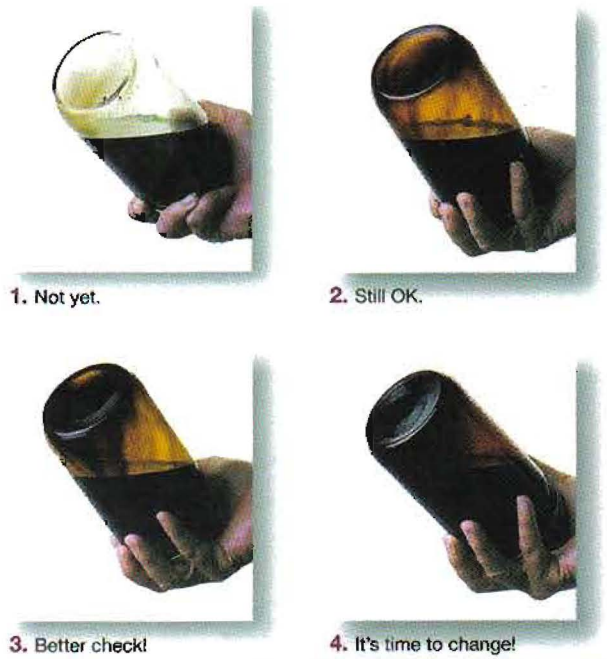
Shutting systems down during nonservice times can provide significant energy savings for facilities that operate Monday through Friday, or limited hours during the day.

These startup and shutdown functions may be preprogrammed in many of the newer model thermal-oil ironers. If automation is not an option, the following steps should be followed to ensure that fluid is not overheated.

To properly shut a system down, make sure the circulating pump continues running after the heater is turned off. Allow the temperature to decrease to 250°F or below before shutting the pump down.

When starting a cold system, turn on the circulation pump and bring the heat transfer fluid up to about 220°F, then continue to increase the set point to 250° F in 2° to 3° F increments. This will ensure that any water that got into the fluid will slowly boil off. If the system is stable, then you can increase the set point to the operating level.

How to check your transfer fluids—fill a clear jar and turn it upside down...



A resort owner who delayed too long to test fluids in a thermal oil ironer had to pay $200,000 for repairs. The damage could have been even greater. Lesson? Check the quality of thermal fluids annually, and follow the manufacturer's recommendations.

Top off with the right fluid

Lastly, even smooth-running systems will require periodic top offs of fluid. The most common source of fluid loss is at the pump and seals. If the equipment continuously loses fluid, but there are no visible leaks, you may have a cracked heater tube. The typical top off for a 100-gallon system is about five gallons.

Do not mix different brands or specified types of fluids without consulting the equipment manufacturer or thermal fluid supplier because different fluids can be highly unpredictable when mixed together. Mixing different fluids also ruins fluid analysis data, since the fluid has different properties.

Never add a hydraulic fluid to a thermal-fluid system. This will cause immediate system problems and will require draining the system and replacing the complete fluid charge.

In summary, flatwork ironers heated with thermal fluids are great equipment for saving space, energy and providing years of trouble-free performance. The most important part of ensuring that thermal-fluid systems function properly is having the fluid tested once a year and keeping current on the equipment maintenance programs outlined by the manufacturer. **TR**

Greg Jerdan is a sales engineer and industrial laundry specialist with Paratherm Corp., West Conshohocken, PA. Contact him at 610/941-4900 or gjerdan@paratherm.com.