

## Fluid Maintenance: Small Systems

*Maintenance is essential to keeping equipment running smoothly and heat transfer systems are no different. For the most part, the fluids in these systems can be considered maintenance-free, but there does come a time when you'll need to at least consider changing the fluid.*

Let's look at what sort of maintenance is needed for small systems ([tips for large systems can be found here](#)).

Small systems are typically electrically-heated. Sometimes they're all-in-one standalone units, other times they're part of a larger process like in an extruder, press or calendaring roll. They typically have built-in safeties like pressure relief bypasses and simplified controllers that just about anyone can operate. They're designed to roll up and hook into to the inlet and outlet of your process and are often used in plastics processing, die casting, and other industries that require portable oil heaters.

These systems tend to have their tanks/reservoirs open to the atmosphere and this air exposure makes oxidation the primary cause of [fluid degradation](#).

A proper fluid analysis will go a long way in determining what level of degradation you're dealing with. We've talked about this analysis in [previous articles](#). Once you have the test results there are a few things to consider:

If the fluid is still serviceable but showing signs of degradation, all might not be lost. If you're showing signs of excessive oxidation, check your tanks/reservoir or any other areas exposed to air. If they're running above 200°F, try to lower the temperature as much as possible to reduce oxidation.

If you're showing signs of thermal degradation, make sure your equipment is operating properly. Check your pressure relief bypasses and heaters to make sure they're working as they should - these areas tend to contribute to thermal degradation.

If it's simply time to change your fluid, the importance of a thorough oil change can't be overlooked. Degraded fluid will quickly contaminate new fluid so you'll want to make sure it's drained thoroughly.

This can be tricky in small systems because there are many areas where fluid can get trapped like heat exchangers, filter housings, and horizontal piping. These areas should be checked for residual fluid. Blowing air or nitrogen through the lines is usually a good way to remove the old oil.

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