Paratherm™
HEAT TRANSFER FLUIDS
A Division of Lubrizol

Proper System Startup

In last month's Tip Sheet we discussed the importance of proper shutdown procedures for thermal fluid systems. However, significant damage to fluids – and equipment – can also occur if the system is started improperly.

All thermal fluids become less viscous as temperature increases. As the fluid gets thinner, its efficiency (heat transfer coefficient) increases dramatically.

At temperatures below 100°F, most high-temperature thermal fluids have viscosities greater than 10 centipoise, and won't flow efficiently. At start-up, this cold fluid is not able to flow as well and absorb as much heat from the heater tubing compared to when it's hot. If the temperature rises too quickly, the fluid film at the heated surface may begin to crack, damaging the fluid on a molecular level. If the system has a repeated on-duty off-duty cycle, this damage will re-occur with each start-up.

Remedy? When cold, always start the system raising the heater setpoint in 10 to 20°F increments until the fluid reaches turbulent flow.