Challenge  
A US paper mill was having difficulty controlling the surface temperature of its lead dryers. They were experiencing surface temperature swings of up to 40°F, caused by increases in residual condensate build-up due to not being able to maintain proper differential pressure across the dryer. The existing condenser and controls were slow to react and became unstable when the condensing load changed abruptly.

Solution  
Kadant Johnson supplied a properly sized water jet heater, pressure transmitter, Liqui-Mover condensate pump, and control logic in order to manage the differential pressure across the lead dryer and efficiently remove the condensate.

Results  
The mill is now able to control the surface temperature of the lead dryer, even at sub-atmospheric steam supply pressures. Vacuum generated was 11” Hg with a steam supply pressure of -2.7 psig using 16.3 gpm of water through the water jet heater. The mill is also able to manage the differential pressure across the dryer at 2–3 psig.

Highlights  
- Water jet heaters can be used to create a vacuum on low pressure and temperature controlled dryers to ensure consistent differential pressure and proper drainage of the dryer cylinders.
- Water jet heaters have no moving parts and eliminate the need for a shell and tube heat exchanger, and liquid ring vacuum pump.
- Water jet heaters produce heated water that can be used for various applications.
- Water jet heaters use pressurized water to condense low pressure or waste steam.