

# Urea Dosing System Troubleshooting Guide

## 1. Symptom: Erratic Flow or "Hunting" (Pressure Spikes)

- **The Likely Cause: Crystallization at the Nozzle.** If the urea is not being fully atomized or if the heat tracing on the injection lance has failed, urea will "salt out" at the tip, causing backpressure to fluctuate as the pump tries to overcome the restriction.
- **The Fix:** Initiate a "Warm Water Flush" cycle immediately. If flow does not stabilize, the injection lance must be pulled and mechanically cleaned of "urea scale."

## 2. Symptom: Pump Cavitation or Loud "Rumbling"

- **The Likely Cause: Suction Line Air Binding or Plugging.** Because urea is prone to off-gassing small amounts of ammonia if it sits stagnant in a warm suction line, an air pocket can form. Alternatively, the suction strainer may be blinded by urea crystals.
- **The Fix:** Check the suction strainer mesh. Verify that the suction line heat tracing is maintaining the urea above its crystallization point (e.g., 80°F for 50% urea) but below its decomposition point (110°F).

## 3. Symptom: Low Flow Despite High Pump RPM

- **The Likely Cause: Internal Pump Wear or Recirculation Valve Leak.** In progressive cavity pumps, the rotor/stator fit may have widened due to abrasive particulates. In centrifugal systems, the back-pressure valve may be stuck in the "Open" position, recirculating the fluid to the tank instead of the duct.
- **The Fix:** Close the recirculation isolation valve momentarily to see if discharge pressure rises. If it does not, the pump internal components likely require replacement.

## 4. Symptom: "Urea Creep" (White Powder on Fittings)

- **The Likely Cause: Micro-Leaks at Gaskets or Seals.** Urea has a unique ability to "climb" out of even the smallest leak paths. As the water evaporates, it leaves behind a hard white crust that can eventually seize bolts and valves.
- **The Fix:** Do not just wipe it away. This indicates a failing seal. De-pressure the line, clean the area with warm water, and replace the gasket with an EPDM or PTFE equivalent.