CONNECTING WHAT'S POSSIBLE



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STEAM TROUBLESHOOTING: ARE YOU EXPERIENCING?

KNOCKING, BANGING, PINGING SOUND IN STEAM PIPES?

This is likely water hammer. Cause is too much condensate in the steam line. Things to look for include but not limited to:

- Failed steam traps.
- Steam pipe should be pitched to drain condensate.
- Low points or change in elevation in steam line that do not have a drip leg.
- Strainers in steam line should be on side.
- On/off valves in steam line should have drip leg
- Process equipment may not be draining condensate properly (stall condition).

STEAM SYSTEM START UP TAKES TOO LONG TO GET UP TO TEMPERATURE?

Causes can include too much air/cold condensate in steam lines upon start up. Issues can be:

- Make sure condensate drains are open on start up
- Trapped air need to have proper air vents installed on top of pipe at end of steam mains.

STEAM PIPES MOVING, SHAKING?

• Water hammer is likely cause. Hammer is likely severe to move pipes. Condition should be checked and remedy's implemented immediately.

HEAT EXCHANGER SLOW TO HEAT UP?

• Condition is likely system stall. Trapped condensate/air in heat exchanger unable to be removed due to lack of motive pressure in condensate line unable to move condensate through pipe. Remedy: APT's - automatic pump traps work great!

REPLACING VALVES IN STEAM SYSTEM TOO OFTEN?

Wet/dirty steam likely cause. Wet steam can cut valve seats causing premature leaks and wear. Dirty steam can cause orifices in valve to plug. Fixes:

- Install strainers on side just upstream of valve to reduce dirt/scale. (if strainers already in place blow them down & make sure they are on their side).
- Install moisture separator system just upstream of valve to eliminate wet steam condition.

CAN'T GET TANKS/KETTLES HEATED W/O HAVING TO DRAIN OUT CONDENSATE FIRST?

Likely causes can be air trapped in steam space and system stall. Fixes include:

- Adding thermostatic air vents in top area of kettle
- If system stall is determined add APT (automatic pump traps)

EXCESSIVE FLASH DISCHARGE FROM STEAM VENTS: CONDENSATE RETURN TANKS, ROOF?

Likely cause is failed open steam traps and/or pressure drop from HP condensate dumping into LP tank. Fixes can include:

- Repair/replace failed open steam traps
- Possible flash recovery system installed where there is HP condensate going into LP tank energy savings opportunity
- Install vent head on roof

BOILER MAKEUP WATER % KEEPS INCREASING?

Cause could be condensate return % is low due to:

- Condensate system leaks
- Operators dumping condensate at heat exchangers or other equipment to get processes up to temperature.
- Condensate is dumped to drain. Investigate broken condensate return pumps or other causes of dumping.

FREQUENTLY REPLACING MOTORS ON THE ELECTRIC CONDENSATE PUMP SKID?

• Electric pump skid is pumping

Condensate that may be too hot entering the pump skid. Fixes:

- Failed open traps in the condensate return system may be over temping the return. Fix traps
- Suggest a flash tank in front of the electric pump collection receiver. Or, a pressure powered pump system will work.

NATURAL GAS BILL HAS BEEN INCREASING FOR NO APPARENT REASON?

- This can be many things. Most likely failed open traps and steam leaks are the usual causes.
- Fixes can be (but not limited to):
 - Perform steam trap survey to identify and fix failed traps.
 - Check for steam piping leaks and fix.
 - Check condensate return % . If too low, this can cause boiler to work much harder depending on steam system demand. Look for ways to improve and return as much condensate as possible.