

Peregrine Water-Cooled High Performance Compute Cluster

LESSONS LEARNED

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Proper water flow is required for flushing of pipes prior to commissioning (full design flow in all branches is recommended). Ensure that connections between supply and return pipes at all load connection points are line size so full flow and complete flushing are achieved throughout the piping system. Strainer screens and sensitive controls units can be removed during this process while one standard or finer mesh strainer screen should be utilized at the pump inlet.

When testing the water flow/flushing noticed back pressure build up on the secondary pump and a low flow condition when sequencing in the energy recovery loop.



After checking the VFD for the secondary pump (to insure the proper control signal) and verified the control signal was correct proceeded to follow the piping path thru the HX.

After following the path the probable cause was isolated to 3 components: 1. the valve before the strainer (highly unlikely to fail), 2. The strainer may be dirty (most probable) and 3. The HX itself may have fouled (not very probable).



To determine root cause:

The first step was to blow down the strainer which did not show any sign of being fouled.

The second step was to remove the strainer and visually inspect. To do this we shut both valves upstream and downstream of the strainer and looked visually for traces of contamination. None was found.

The third step was to check pressure drop across the HX but could not get the proper flow to finish this step.



Check valve operations. The upstream valve operated correctly but when modulating we noticed free movement of the stem (i.e., not much resistance). Inspection showed the stem separated from the valve itself. This meant the valve appeared to be in the open position but was in fact closed to about 85%.

The pump system was shutdown and the valve upstream and downstream of the broken valve were closed and locked out. The system was drained via the strainer and the valve was replaced. The valve was then modulated to verify proper working condition.

Water flow and flushing test resumed with no further problems. Other than modulating all valves installed and looking for resistance there is no other test that can be performed to insure operation of manual valves.

