CU I&E Submission: Reliable Compressed Air [1]

Who

Jefferson Butler is a Pipes Trades I Maintenance Mechanic who works mainly in the Kittredge Complex for Housing Facilities Services. He has worked for CU Boulder for 7 years and has a mechanical background in multiple trades. When we would lose compressed air from the CU Boulder power plant, Jefferson would need to go to each building and dump condensate water into the drain and reset systems at all times. Jefferson came to me with the idea of how to build a redundant system using two compressors that would lead and lag which allowed constant back up of air.

What

Three systems are run by compressed air in Kittredge. Without reliable compressed air, none of these systems will work. The systems are climate heat, domestic hot water, and condensate evacuation pump system. Both heat and hot water are created by converting thermal energy from steam that is provided and metered by the CU power plant. Condensate is produced as a result of this thermal exchange and that condensate needs to be pushed back to the power plant where is it turned back into steam. If the condensate is not evacuated, costly damage occurs.

Why

In the past, if the compressed air systems went down we could not provide hot water and might need to hand out blankets or small heaters to keep our students comfortable until the compressed air was repaired. The original design called for only one compressor and that system would fail at least once a month. Adding the second compressor and additional automation has resolved the original design flaw in the CU Boulder system. We have not experienced an outage since the system's installation.

Where

This process is implemented in Kittredge West, Kittredge Central, and Williams Village Center. We plan to put the system in Arnett, Andrews, Buckingham, and Smith halls. This enhancement has resulted in a continuous supply of hot water and comfortable temperatures for students, faculty, and staff.

When

The first two systems were built last spring in Kittredge West and Kittredge Central and have been functioning perfectly.

Submitter's Information

Submitter's Name: Alan Brown
Submitter's Email: alan.brown@colorado.edu [2]?
Submitter's Org: Housing Facilities Services, University of Colorado Boulder

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Links
[1] https://www.cu.edu/controller/i-e-awards/past-submissions/cu-ie-submission-reliable-compressed-air
[2] mailto:alan.brown@colorado.edu