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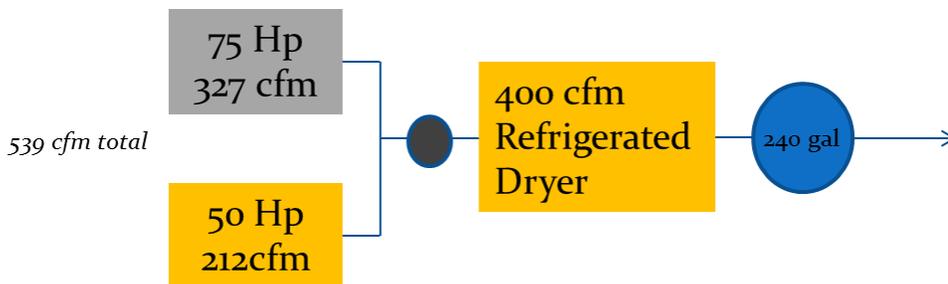
*Mechanical – Plumbing – Electrical – Compressed Air
Industrial – Commercial – Residential*

Wire Company Air Compressors – One is Too Big, and One is Too Small

A local wire company runs three shifts, five days a week for a total of 6500 hours per year. They are in the process of expanding current facility and adding another facility less than a mile away. Building 2 will only have one production line and mostly be used for storage.

Current Situation

- Currently have a 50 Hp and a 75 Hp compressor with refrigerated dryer/filter and 240 gallon storage tank. The 75 Hp is load/unload control and the 50 Hp is modulation control.
- They try to maintain 113 psig supply pressure measured at the outlet of the compressed air system.
- Compressor set point are 115psig load and 125psig unload. (understanding there is about a 3psid pressure drop across the clean-up equipment)
- The 50 hp compressor will not hold 113 psig all of the time. The 75 Hp runs unloaded a lot and causes mechanical problems.



Audit Results

- An air study of the supply side was conducted with the following results:
 - Ave Flow: 200 cfm
 - Max Flow: 240 cfm (25 hours per week)
 - Min Flow: 105 cfm
 - Total Energy Cost: \$20,500 @ .07\$/Kwh

Discussion

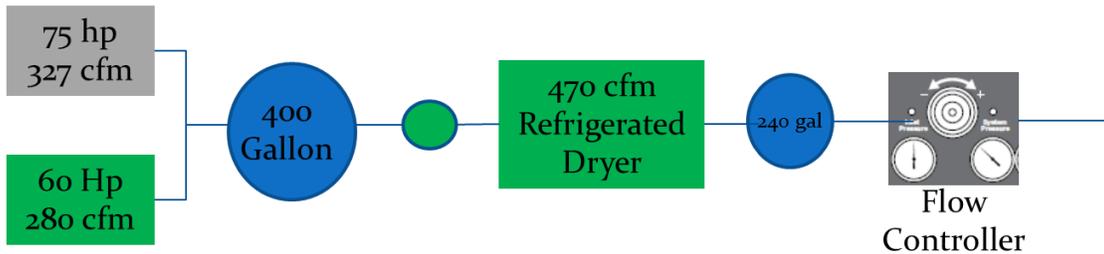
Based on the flow profile a VFD compressor would save a good deal of energy, however, since the product being manufactured is wire, the facility is full of metallic dust. VFD compressors do not typically do well in an environment where there is metal dust in the air without expensive modifications. The soft metals in the drive tend to corrode leading to failure. For these reasons a VFD compressor was ruled out. There is no enclosed outdoor location and customer has limited floor space to work with. Customer is interested in energy savings as a criteria for project approval.

Solution

Since the 50 Hp does not hold pressure all the time, it was moved to the Building 2 along with the 400 cfm cycling dryer which was several years old. Building 2 had a 15 hp reciprocating compressor with 120 gallon tank.

A 60 Hp (280 cfm) compressor with modulation control was selected along with an additional 400 gallon storage tank, new dryer, and a pneumatic flow controller.

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Results

- Steady 110 psig outlet pressure at flow controller
- 75 hp is back-up
- 60 Hp modulates at 123 psig providing a +10 psid pressure differential across the flow control.
- System Storage went from 1.2 gallons/cfm to 3.2 gallons/cfm
- \$5,320 annual power savings (26% power cost reduction)
- ROI was less than 5 years
- System has run more than 7 months without issue.
- 50 Hp compressor was relocated to building 2.