

Baumann™ Valves Cut Test Time and Increase Efficiency for Copeland® Compressor

RESULTS

- An estimated annual cost savings of \$130,000
- Improved test stand safety
- Minimized unscheduled compressor testing shutdowns
- Reduced overall set-up times, 16–24 hours to 1–2 hours
- Increased test accuracy and repeatability



APPLICATION

Control of high- and low-pressure refrigerants for reliability testing of semi-hermetic and scroll compressors.

CUSTOMER

Copeland Compressors - Sidney, Ohio, U.S.

Copeland is the world's leading compressor manufacturer offering more than 10,000 compressor models in a full range of technologies, including scroll, reciprocation, and screw compressor designs. Today, more than 55 million Copeland Scroll® compressors are installed in air conditioning and commercial refrigeration systems around the world.

CHALLENGE

Improve compressor test stand efficiency, safety, and cost by automating the system and making it compatible with high and low pressure refrigerants.

Technicians running the test stands were required to adjust seven manual valves to get the compressor to operate at specified test conditions. This process took 16 to 24 hours to complete and since this test was for compressor reliability, it was run at its upper limits. Therefore, if adjustments were off slightly the compressor would shut down to protect the motor. Another issue resulting in unscheduled shutdowns was caused by "condition float" due to manual water valve drifting. This would culminate in up to 4 hours of lost time during the week and possibly 48 hours if over a weekend.

"...remarkable success I have seen in using the Baumann valves in the product evaluation lab."

Randall Frisby
Design Engineer –
Refrigeration Product Evaluation Test Lab



To compound the issue, separate test stands had valves only capable of handling either high- or low-pressure refrigerants, not both. Using a low-pressure valve for high-pressure refrigerants would result in catastrophic failure. To minimize shutdowns during the life-test of semi-hermetic and scroll compressors, valves that can handle high and low-pressure refrigerants were needed.

SOLUTION

Copeland Compressor replaced their existing manual valves with Baumann™ 24000 Little Scotty™ control valves and FIELDVUE™ DVC2000 digital valve controllers. With the precise control of the Baumann valves and the constant monitoring from the FIELDVUE DVC2000 instrument, time savings and safety were greatly enhanced.

After installing the Baumann 24000 valve assemblies, the problem Copeland was having with condition drift immediately improved. In the course of a 2000-hour reliability test, the Baumann 24000 with DVC2000 FIELDVUE digital valve controller more than paid for itself in technician time savings and improving the time to complete the test. The Baumann assembly, in place of the manual water valve, also reduced compressor conditioning time from 16–24 hours to 1–2 hours. The automatic adjustments made by the valve compensated for variations in ambient air, chiller water temperature, and refrigerant loss to help avoid test shutdowns.

The Baumann 24000 with FIELDVUE DVC2000 digital valve controller was capable of being used for any refrigerant application regardless of pressure. Not only did the change increase the flexibility and improve the safety of the stands that was previously unavailable, but it has resulted in a cost savings of \$52,000 the first year and \$130,000 each year following.

“As we progress further in the lab, I hope to look into replacing the other manual valves to reduce the time to reach condition to minutes.”

Randall Frisby
Design Engineer –
Refrigeration Product Evaluation Test Lab



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