COMPAX: The Perfect Package of Efficiency, Quality and Savings

COMPAX, a leading packaging company near Salt Lake City, Utah, was looking to reduce operating costs and maintenance by adding a smaller positive displacement compressor to their existing centrifugal compressor installation. Their team had determined they needed a smaller compressor to operate when system demand was too low for the centrifugal compressors to operate without damage to their mechanical integrity. **They reached out to local distributor, CH Spencer LLC, a wholly owned subsidiary of Atlas Copco.**

Current Installation

Utilizing a "walk the line" approach, the team from CH Spencer reviewed the existing installation and future expansion requirements. The manufacturing applications, shift variations and maintenance requirements were examined. It was discovered that the existing compressors had been modified to suit the environment and there was little to no partial load savings being experienced. The operating pressure set point was much higher than demand side equipment required, and pressure loss across the clean-up equipment was artificially increasing compressor turndown. The compressors were experiencing 'surge' and the resulting mechanical issues were impacting production, deliveries and profits.

The existing heatless desiccant dryer used purge air for desiccant regeneration, which compounded matters. To compensate for the air lost to purge, the purge pressure and air volume were increased in an effort to minimize the turbo blowoff and loading/unloading cycle rate. Maintaining the heatless dryer and filters was greatly increasing operating costs. The noise level in the compressor area due to compressor blowoff and dryer purge, which occurred every five minutes, was also a major concern.

Design and Selection

CH Spencer performed a supply side flow study, using an insertion type flow meter combined with motor current monitoring. The data was used to model potential energy savings and identify the right size of compressor. While the initial thought was to add a smaller machine, as the existing turbo compressors were less than 5 years old, the plant review uncovered significant expenditures and inefficiencies with the existing system design. Data revealed that a larger (315KW/420HP) oil-free air compressor was actually the energy efficient choice. Through a collaborative effort with CH Spencer, COMPAX selected an Atlas Copco ZR315VSDFF variable speed oil free rotary screw compressor with an integrated heat of compression "zero purge" air dryer. The ZR offered superior performance, greater energy efficiency and significant noise reduction.

Partnership with Utilities

Like any other customer, COMPAX needed hard proof to ensure the capital investment required for the larger compressor was the right decision. CH Spencer brought representatives from the local electric utility to the facility to discuss potential energy rebates to help offset the cost of equipment and installation. The case was shared with utility representatives who performed their own energy audits. Their data confirmed what the CH Spencer team had uncovered regarding air usage and electrical waste with the existing system. The utility reps' follow-up evaluation confirmed the energy savings that would be reached with the new Atlas Copco ZR compressor.

Results

The ZR315VSDFF was installed in place of one of the turbo compressors in June of 2020. The projected energy savings was over $80,000 per year and the utility company offered a substantial rebate to help offset the initial cost. With the new equipment in operation, COMPAX exceeded the projected energy savings by over 20%. As a result, the final utility rebate was larger than initially expected—by almost 10%. Plus, the new compressor allowed their plant machinery to run at a lower air pressure, air quality had greatly improved, and the new Atlas Copco compressor was significantly quieter.

Project Numbers	
kWh Annual Savings:	**933,791**
Annual Electricity Cost Saving:	**$84,298.96**
Annual Reduction in CO2 Emissions:	**600 metric tons** (equivalent to annual electricity usage of 112 average homes)
Project Cost:	**$312,243.49**
Energy Incentive:	**$140,068.65**
NET Project Cost:	**$172,174.84**
Payback Period:	**2 Years**

About COMPAX

COMPAX creates the perfect package for your brand — your product — and your customer.

With a global network, and 16 years of manufacturing in the United States, COMPAX has the resources and experience to deliver innovative, sustainable packaging for your brand.

"We have seen a vast improvement in the quality of our compressed air. The air is dryer and cleaner them we had before the installation of the Atlas Copco ZRVSD. We have seen significant savings in our power consumption, thanks to its variable speed design."

Tyson Clements
Maintenance Manager
COMPAX

VSD

What triggers should drive a review of YOUR compressed air system?

- **High repair costs resulting from unwanted surge of your compressors.**
- **Long periods of downtime due to these continued repairs.**
- **Continuing operating pressure increases to overcome pressure drops.**
- **Loud noise from the compressor and the heatless regenerative air dryer purge exhaust.**
- **Operational imbalance during periods of low plant air demand (e.g., on weekends, when demand is low, you may see pressure swings and excessive delays in restarts).**
- **Ongoing costs for filtration element change out.**

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