PROPERLY SIZING INDUSTRIAL COMPRESSED AIR SYSTEMS—FOR BOTH TODAY AND YEARS FROM NOW

By Flavio Poenar and Stephanie Roberts

One of the most challenging parts of installing a new compressed air system can be correctly sizing it for both today and years for now—all while maintaining optimal efficiency. Choosing the wrong air compressor(s) for your facility can significantly increase costs due to wasted energy or even production problems.

With California Compression's customer base in northern California, including the San Francisco Bay Area, we work with many companies that are either currently experiencing or anticipating rapid growth. Today we'll discuss one such customer, their compressed air system, and why it wasn't necessarily the right answer.

The Problem

A California-based food and beverage manufacturer of cooking oils and spices had a 100 hp first-generation load/unload Sullair/Hitachi DSP (Dry Screw Packaged) Series oil free rotary screw air compressor purchased from a previous Sullair distributor. The company selected this compressor based on projected growth – as in production 10 years from now.

Our first step was to do an air and energy audit. The audit showed the customer was only using 40% of the capacity during peak demand and only two times a month 80% of capacity. The compressor's run hours were 23,689 while the load hours were only 4,336. The customer was often getting condensation in the process equipment and frequent breakdowns on the compressor due to unnecessary wear and tear, which was due to frequently running below the threshold. This was very clearly an example of an inefficient compressed air system.

The Solution

In many oil free compressed air system installations, it's rare to see a combination of an oil free scroll compressor and an oil free rotary screw compressor. However, we determined that was the perfect solution for this manufacturer. A VSD compressor was taken into consideration, however, due to low production demands at various times, the VSD would run below its threshold of efficiency and the customer would end up paying a penalty from the power company.

Following the air audit, we determined that, right now, the customer only needed a 25 hp compressor during peak demand. However, for a five-year plan to allow for the customer to grow into the machine, we added a 45 hp Sullair SRL Series oil free scroll compressor to their system. As demand grows, they can grow into it. The Scroll compressor package includes six pumps at 7.5 hp each. As demand increases, the appropriate number of pumps will turn on to satisfy demand.

The customer still uses the 100 hp compressor two times per month at 80% capacity. During bulk orders, the customer will use the DSP Series, but they can now trim, if needed, with the oil free scroll compressor.

- The customer benefits through:
- Reduced electricity bill and increased efficiency
- Reduced unnecessary wear and tear on the compressor
- Reduced maintenance costs and repair

Takeaways

While there isn't a one-size-fits-all solution for compressed air systems, air and energy audits will help identify potential savings. If your production levels are not at the levels they used to be due to current market trends, you'll want to get a more efficient compressor. After all, compressed air isn't cheap or free.

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