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Food Packaging

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DirectAIR®: Compressed Air as an Outsourced Utility

BY TIM TENSING, AIR TECHNOLOGIES

Introduction

Compressed air systems are a source of power (a utility) present in virtually all manufacturing and process industries. What is unique about this utility is that facilities own the utility and are responsible for all the installation, generation, transmission and maintenance costs of the compressed air system. Outsourcing compressed air as a utility, while not a new idea, is a growing trend in industry as service providers have increased their ability to meet customer expectations.

Owning an Older System and Faced with a Capital Expenditure

Recently, a Tier 1 automotive supplier was experiencing reliability problems with an older air compressor. Air Technologies was asked to visit the facility and make a proposal for a new variable speed air compressor. After separate meetings with the plant manager, operations manager, controller and general manager, it became apparent that the problems in this aged compressed air system went far beyond the replacement of just this one air compressor.

The operations manager said that recurring problems with their compressed air system had turned it into a significant cost center in the plant, stating, "Our annual expenditures related to our compressed air system include \$120,000 in maintenance costs, \$248,000 for electricity and \$10,000 in annual rental costs." As the compressed air equipment had gotten old, this manager commented, "We are experiencing significant costs with the air compressor bearings and air ends going bad." For this reason, back-up rental air compressors were needed quite often.



The DirectAIR® Compressed Air Facility

In addition to the high operating costs of the system, it was disrupting production. The compressed air treatment (dryers and filters) equipment had problems and water was present in the compressed air distribution system. The plant manager commented, “We are incurring continuous maintenance problems. Excessive water in the air lines results in rust problems with the pneumatics on our production equipment (solenoids and cylinders).” He went on to state, “We are seeing expensive repair costs to our production equipment due to the air quality problem.”

Air Technologies is a leading compressed air auditing firm, and our system assessment analysis showed that with a capital expenditure of \$315,000, this facility could own a modern and efficient compressed air system capable of addressing all these issues. The customer stated, however, that accessing capital for this project would be an issue for them. That is when we proposed that they outsource their compressed air requirements as a utility and take advantage of the DirectAIR® compressed air utility alternative solution. The agreement was signed, and within two months, their new DirectAIR® system was installed and fully operational.

The DirectAIR® Compressed Air Utility Alternative Solution

Compressed air is used in nearly every facet of this manufacturer’s production process, and is therefore a critically important utility. The customer’s top three objectives for their compressed air system were to:

1. Meet production requirements 24 hours per day, 365 days per year
2. Guarantee required air pressure, air flow and air quality (dew point)
3. Reduce energy costs

Based upon the results of the system assessment, Air Technologies built dual customized DirectAIR® modules to meet the needs of this facility. A total of 3,710 cfm at 125 psig can be supplied by this system. More importantly, the system includes the latest technologies in heat recovery and compressor controls. This enables the customer to use the most modern technologies aimed at reducing energy costs — without having to come up with the capital. This particular system includes six 125 horsepower (6 x 125 hp) base load air compressors and one 125 hp variable speed drive air compressor to maximize the customer’s energy efficiency. Compressed air quality is ensured with new compressed air dryers and filters installed in the module.

The DirectAIR® facility is delivered pre-manufactured to the greatest extent possible and ready to run in a custom-engineered modular facility. The module is installed just outside the plant’s exterior wall. The facility is secured to prevent any tampering and is engineered to provide an ideal operating environment through all four seasons of the year — from hot, humid summer days to sub-freezing winter temperatures.

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The ManagAIR® Monitoring and Control System

ManagAIR® Monitoring and Control System

The Utility Services group at Air Technologies developed DirectAIR® fifteen years ago. Air Technologies' Compressed Air Utility Service has been providing "over-the-fence" compressed air to more industrial customers across the eastern half of the United States than anyone else in the country. There are currently 35 unmanned DirectAIR® compressed air generation sites that are owned, operated, monitored and maintained by Air Technologies to provide a 24/7 supply of reliable, clean, dry air. The installations range from 100–5,000 hp of air compressors. With more than 1.3 million hours of combined operation and without a single continuous hour of low air pressure, the DirectAIR® sites have proven the concept that outsourcing compressed air as a utility is a practical and profitable alternative.

A key step in the market acceptance of this alternative was Air Technologies' investment in the exclusive ManagAIR® control system and control center. The ManagAIR® control system monitors and controls the onboard equipment as well as compressed air pressure, flow and dew point. If any equipment or performance abnormalities occur, ManagAIR® automatically contacts the DirectAIR® Service and Operations Team for an immediate response. The system is accessed remotely within minutes of the notification, and our technicians, located in the control center, take the appropriate corrective action.

Installation and Feedback

DirectAIR® includes the electrical, foundation, rigging, condensate drainage, and piping installation that enables the customer to spend their capital investment in other areas that help drive their top and bottom lines. And DirectAIR® is very flexible, with additional cfm capacity that can be added in very short order.

The start-up and transition experience is also designed to be seamless for the customer. This particular customer commented, "We had a very smooth transition, in fact it went much smoother than I expected. The transition was seamless and flawless, with no change in plant air pressure. There was never a time that I was in doubt about the cut over. At no time did we lose air pressure in the plant and we were at full production during the changeover."

With Air Technologies' help, customers will receive 100% reliable compressed air. Here are some of the comments from this customer after having the experience of their new DirectAIR® Solution:

"I have forgotten all about air compressors already!"

"Fabulous. I have no air or water concerns anymore."

"Haven't thought about compressed air ever since we transitioned over to DirectAIR®."

"I would certainly recommend it based upon our experiences so far, and would be happy to entertain prospective DirectAIR® customers in the future with a site tour of our DirectAIR® facilities."



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Costs and Payback

The costs for the DirectAIR® utility solution include a monthly fee to Air Technologies and the associated energy costs are retained by the customer. The DirectAIR® alternative, put simply, allowed this customer to treat compressed air as any other utility and pay for it as a monthly operating expense with the resulting tax benefits. No capital expenditures are required and there are no maintenance costs (and no surprises). There are also no emergency rental air compressor costs. Plant management and staff no longer need to spend any time working on or managing compressed air system issues.

A thorough financial analysis and Net Present Value (NPV) cash flow comparison made DirectAIR® a viable choice. The conservative cost estimates did not include the reduction of the current production costs being incurred, such as:

- Internal work hours dedicated to operating and maintaining their compressed air equipment
- The product scrap resulting from low air pressure or excessive water in the lines
- Costs to repair downstream production equipment due to on-going wet air



DirectAIR® facilities range from 100–5,000 hp

The monthly DirectAIR® fee was lower than the multiple costs outlined above. The net benefit to the customer over an eight-year projected comparison was over \$300,000. Importantly, the new outsourced utility solution reduced energy costs by \$58,000 per year (23.5%) and eliminated the capital requirement the customer was facing of \$315,000 in compressed air equipment replacement costs. **BP**

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