Snap-on Tools'® Kenosha Plant Eliminates Need for New Air Compressor

efficient manufacturing

PROJECT RESULTS

- **Equipment first-cost reduced $30,000**
- **Operating costs reduced 40%**
- **Pressure fluctuations reduced ±8 psi**
- **Satisfied compressed-air users**

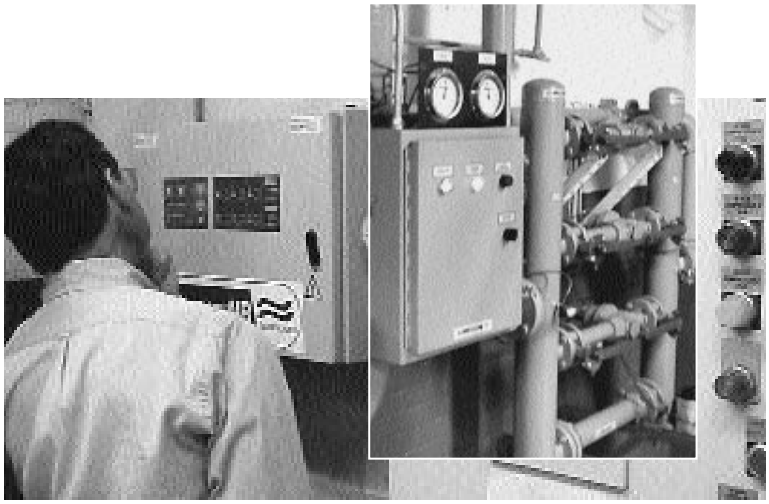
Purchasing a new air compressor is not always the best way to meet industrial compressed-air demand. When Larry Day, Energy Manager at Snap-on Tools'® Kenosha, Wisconsin plant, called for a price quote on a new compressor, Bill Biehn of Cochrane Compressor Company, along with Sri Chari of ConservAIR Technologies Co., LLP, came up with an attractive system control alternative that would eliminate the need for a new compressor. The alternative package was not only forty percent less expensive to operate, it also offered a lower first-cost.

"I consider suppliers part of my energy efficiency staff. They are the ones who work with these systems every day," notes Day. "I don't have time to know more than all the people who walk into my office. I just need to determine which ones have good integrity. If someone will offer me a lower cost alternative and guarantee our satisfaction with their equipment, that's a good start."

The alternative Snap-on Tools chose was a money saver. The operating savings alone will pay for the system improvements in 12 months. This is in addition to the $30,000 to $40,000 they *didn't* spend on a new compressor.

Here is the recipe Snap-on Tools followed to comfortably supply system demand while reducing their operating costs:

1. Evaluate Compressed Air Use Requirements
The compressed air system was evaluated to quantify pressure and flow requirements.



Bob Wilson of ConservAIR Technologies monitors a sequencing controller that helped Snap-on Tools' Kenosha, Wisconsin plant use their compressors more efficiently and avoid a compressor purchase. A flow controller *(inset)* helped them reduce pressure fluctuations.

2. Increase Compressed Air Storage Capacity
This was accomplished by adding a 1400-gallon vertical receiver tank and storing compressed air at an elevated pressure of 105 psig in conjunction with a flow controller. The flow controller steps down the plant supply pressure to 85 psig in a way that produces minimal pressure loss. With additional storage and flow control, plant pressure fluctuations were reduced from ±9 psi to ±1 psi.

3. Reduce System Distribution Pressure
Originally the plant was supplied with 105 psig, as are many plants. However, it was determined that 85 psig exceeded all the plant's requirements. This lower distribution pressure reduces both the artificial system demand and losses associated with air leaks. It also provides a buffer between the compressor controls and the actual plant demand. This buffer allows compressors to remain unloaded longer instead of having to respond to short-term increases in demand.

4. Minimize "Part-Load" Compressor Operation
Since screw compressors operate most efficiently at full load, a compressor sequencing controller was installed to minimize the number of compressors operating under part-load conditions and to shut off as many compressors as possible. The sequencer monitors the amount of air in storage and the rate at which it is released. It then matches the compressor horsepower to the need to replenish storage rather than reacting directly to changes in system demand.

The operational savings achieved by improving system control put smiles on the faces of the company's management. "When justifying energy efficiency investments I need to show our decision makers the check we won't be writing in the future," says Day. No problem here.

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