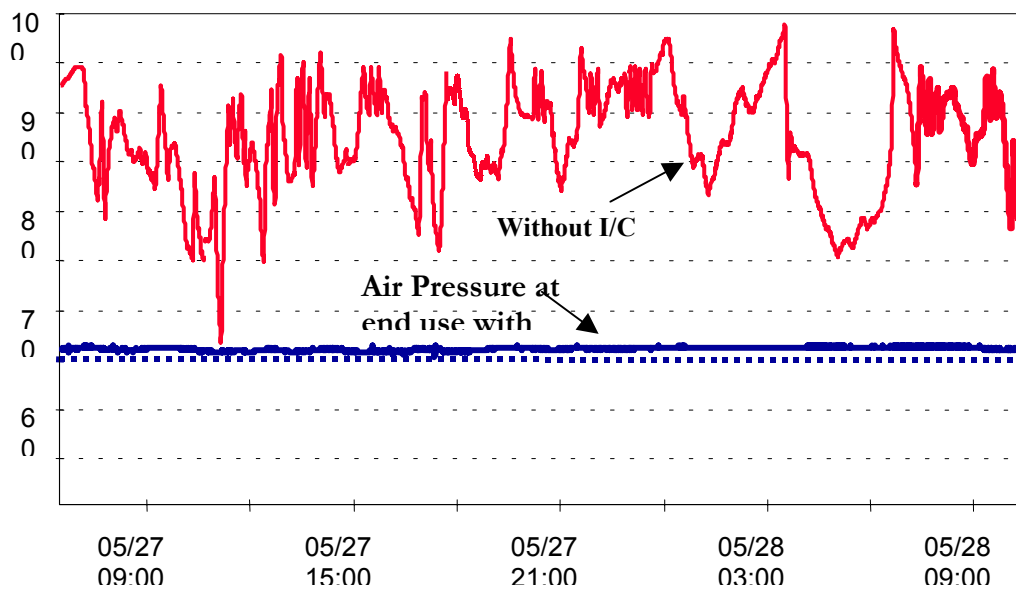
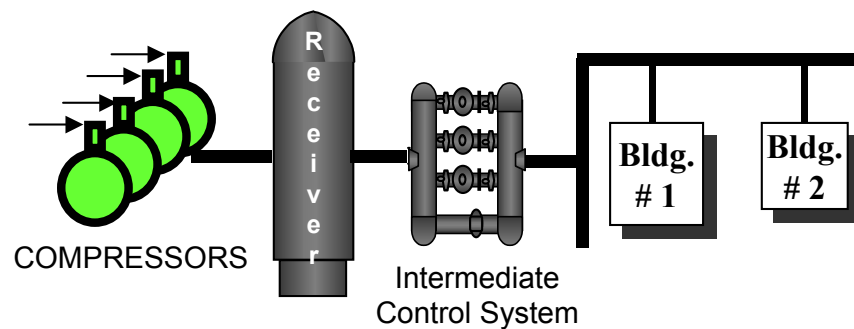


Successful Implementation – Energy Conservation Measure

Measure
Energy saving in compressed air system by eliminating artificial demand.
Equipment
Compressed Air System
Industry / Sector
Manufacturing Industry
Year of Implementation
Sep – 2001
Cost Benefit Analysis
<input type="checkbox"/> Type of Measure : Short term
<input type="checkbox"/> Annual energy Savings : 8,73,080 KWH
<input type="checkbox"/> Actual cost savings : Rs. 29 Lakhs per annum
<input type="checkbox"/> Actual investment : Rs. 20 Lakhs
<input type="checkbox"/> Payback : Less than 9 months
Implementation Highlights
<ul style="list-style-type: none"> ▪ Implementation of the measure has resulted in ▪ Reduction in energy by nearly 19 % ▪ Maintaining constant compressed air pressure within a variation of 2 psi (0.14 kg/cm²) resulting in improved product quality and probably increase in productivity ▪ Reduction in compressed air leakage ▪ Reduction in operation downtime ▪ Minimisation in compressed related complaints and ▪ Easy operation

Background

In the given manufacturing industry, Compressed Air is the major utility used in many applications. The industry has 2 centrifugal compressors of 3000 cfm each and 3 reciprocating compressors of 1000 cfm each. There is 1 centrifugal compressor running out of 2 compressors and 2 reciprocating compressors out of 3 compressors of total capacity of 5000 cfm. It was observed that there was fluctuation of pressure from 98 psi to 67 psi. Two Intermediate controls of each 4500 cfm rating has been installed which reduced the fluctuation of pressure from 31 psi to 2 psi. Energy saving after implementation of I/C is 19% i.e. almost 8,73,080 KWH/Annum.

ConservAIR Intermediate Controller Scheme

Principle

ConservAIR Intermediate Control System (I/C) is designed to operate at the intermediate point of the compressed air system - downstream of the receivers, filter/dryer & upstream of the main piping distribution system.

The I/C creates useful storage by introducing a controlled differential pressure across upstream receiver & itself. This storage isolates Compressors from the demand side. Peak demands are dealt with using reserve energy in storage instead of additional horsepower, to allow the compressors to run longer period on no-load. Thus by providing air at controlled differential at an optimum pressure, mass of the air is reduced, and high-pressure storage is created which increases unload time of Compressors. This increase in unload period is directly proportional to reduction in energy consumed by air compressors.

Further, constant pressure now available for end use applications results in consistency to improve productivity & quality and reduction in breakdowns.

With the ConservAIR Solution, Artificial Demand in a system is reduced & the Compressors have to now feed only the Base Demand. This reduces the horsepower requirement & thus reduces overall energy consumption.

Improve Production

The I/C delivers stable air pressure to work stations at the lowest optimal pressure levels to:

- Control compressors.
- Reduce compressed air leaks.
- Lower incidence of product defects and scrap.
- Improve consistency of finished product quality.
- Reduce operational downtime.
- Minimize or eliminate compressed-air related complaints.

Details of techno-economics:

Particulars	Actual energy savings
Main Header Pressure Variances Before implementation of I/C	+/- 13 psig
Main Header Pressure Variances after implementation of I/C	+/- 1.5 psig
Energy Consumed Before implementation of I/C	11,760 kWh/day
Energy Consumed after implementation of I/C	10,329 kWh/day
Energy saving	2392 kWh/day (~ 19 %)
Energy Cost Savings	Rs. 29 Lakhs per annum
Total Project Cost	Rs. 20 Lakhs
Simple Payback period	Less than 9 months

**Implementa
tion issues**

Since the Technology was innovative and new for the client, there was some resistance from operator level in the beginning. After demonstration of benefits of Intermediate Control and spreading awareness about the technology, the project became a big success.

For any clarification contact: **Mr. Uday Pandit & Mr. Nilesh Sawant**, PNEUMATECH & ConservAIR Enterprises Pvt. Ltd.

Email: conservair@vsnl.com, conservair@technologist.com,