Compressed Air System Control

Flow Controller
Capacities from 1000 to 15,000 cfm

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Controlling wasteful demand

Compressed air is a very expensive input. At 10 cents per kWh, a 125 hp compressor can consume up to $95,000 per year in energy costs alone. In most systems, only 50% of the air produced is needed for production. Leaks, inappropriate uses, and artificial demand account for the remaining 50%. Without proper controls, you are likely to produce more air volume than needed at higher energy input rates and still not provide stable flow and pressure to your production equipment. Controlling flow and system pressure reduces much of this waste and improves pneumatic equipment operation at the same time.

The impact of artificial demand and leaks

Artificial demand is operating a system at a higher pressure than necessary. Every 2 psig increase in pressure costs approximately 1% increase in power consumption. Most systems have fluctuating demand and if not properly controlled, system pressure will also fluctuate, leading to inconsistent production, higher scrap rates, and higher energy costs. To compensate, many users run more compressors than needed and at higher pressures than needed, causing higher leak rates and greater energy usage.

Cost of Leaks

<table>
<thead>
<tr>
<th>Diameter</th>
<th>80 psig</th>
<th>100 psig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16&quot;</td>
<td>$1,980</td>
<td>$2,353</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>$13,070</td>
<td>$15,684</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>$32,675</td>
<td>$39,210</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>$49,012</td>
<td>$58,815</td>
</tr>
</tbody>
</table>

Actual cost based on 8760 hours and 10 cents/kWh

Cost of Artificial Demand

Costs calculated based on 8760 hours and 10 cents/kWh

- 80 psig
- 100 psig

Savings

30 psi reduction
20 psi reduction
10 psi reduction
Flow controller operation

The flow controller creates more effective storage by accumulating compressed air in receivers and only delivering what air is needed for production. It responds very rapidly to fluctuating demand and actively maintains constant system pressure downstream.

Reduce costs and waste

Stable air pressure means lowering the operating pressure to what production equipment actually needs. This eliminates artificial demand and substantially reduces air losses through leaks. In this way, overall air consumption is greatly reduced.

Further, stored compressed air can now be used to satisfy air demand spikes (see point 5, on the right) without pressure drop at the point of use. Additional energy is saved, since standby compressors do not have to come on-line. This greatly reduces compressor cycling and ensures more efficient use of compressors.

An added benefit is that by reducing wide fluctuations in volume flow (and velocity), the flow controller ensures that your dryers and filters have adequate contact time to properly clean your compressed air. This protects production equipment which may be sensitive to moisture and other contaminants.

Flow Controller Applications

Plants with older compressors that are not compatible with current system master controller technology can benefit from a flow controller since the flow controller can help maintain a stable system operating pressure and reduce fluctuations in flow—no communications ports are necessary.

Also, installations with older piping and higher leak loads where it may not be possible to replace aging piping or repair existing leaks can benefit from the flow controller’s ability to reduce leak rates and artificial demand.

Additionally, applications with a large, intermittent demand event may benefit from having a flow controller since it creates true storage that can supply the demand event instead of bringing on an additional compressor.
Technical Specifications

<table>
<thead>
<tr>
<th>Connection Size (in.)</th>
<th>Max. Flow* (scfm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 NPT</td>
<td>1000</td>
</tr>
<tr>
<td>1.5 Flange</td>
<td>1500</td>
</tr>
<tr>
<td>2 Flange</td>
<td>2500</td>
</tr>
<tr>
<td>3 Flange</td>
<td>3500</td>
</tr>
<tr>
<td>4 Flange</td>
<td>6000</td>
</tr>
<tr>
<td>6 Flange</td>
<td>12,000</td>
</tr>
<tr>
<td>8 Flange</td>
<td>15,000</td>
</tr>
</tbody>
</table>

NOTES:

2” NPT
- Maximum inlet pressure: 300 psig
- Inlet pressure range: 50 - 300 psig
- Set-point pressure range: 15 - 275 psig
- Ambient air temperature range: 40° - 110°F
- Maximum operating temperature: 150°F

All Others
- Maximum inlet pressure: 250 psig
- Inlet pressure range: 85 - 250 psig
- Set-point pressure range: 40 - 225 psig
- Ambient air temperature range: 40° - 110°F
- Maximum operating temperature: 300°F

Consult factory for higher flows, pressures, and temperatures or other operating conditions.

Indicated performance is based upon adequate compressed air supply, piping, and adequate storage volume upstream of the flow controller.

Features:

- Fail open in case of low pressure or loss of power
- Rapid valve response
- Control panel can be isolated for service without interrupting air supply
- Pressure adjustment from panel
- Electronically controlled pressure regulation
- General alarm for flanged valves
- Easy installation with plug-in power
- No field calibration necessary
- Pilot air does not need to be instrument air quality

Flow characteristics may vary depending on inlet pressure and set point pressure. Rated flow based on 100 psig inlet, and a minimum of 10 psi available between inlet pressure and set point pressure.

Specifications are subject to change without notice. See installation instructions for further details.