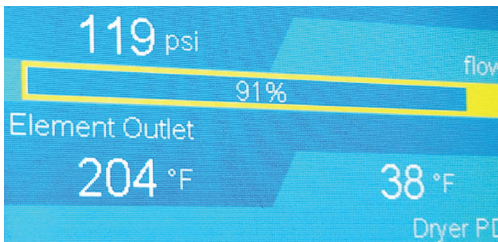




Typical ROI for the PressureFlowEnergy (PFE) Controller is 18 months!

The combination of supply and demand side benefits typically result in energy savings of 20% - 40%!

The following screen shots demonstrate the dramatic difference in air flow (reduction from operating 91% motor rpm to 53 % motor rpm without the PFE Flow Controller to operating at near constant 19% motor RPM with PFE Flow Controller) from a state-of-the-art 125 HP Atlas Copco VSD air compressor with the PFE Flow Control Valve enabled and disabled. This is a real world installation at a major manufacturing plant.



91% to 53% motor RPM with out PFE Flow Control Valve

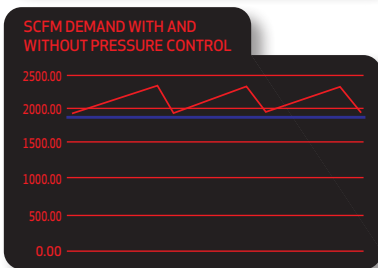
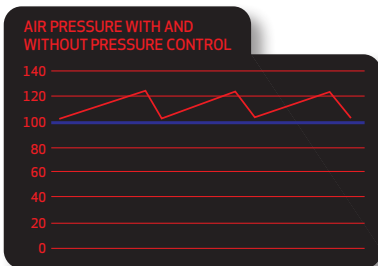


Near constant 19% motor RPM with PFE Flow Control Valve

The beauty of the PFE Flow Control Valve is that it dramatically reduces the inefficiency of the ramp up/ramp down action of the VSD/VFD motor and allows the compressor VSD/VFD motor to run in a highly efficient steady state (RPM) condition.

Regulating Plant Flow CFM

Red line is plant air pressure and plant flow CFM unregulated with no PFE flow control valve.
Blue line is plant air pressure and plant flow CFM regulated with PFE flow control valve.



Optimize Air Storage

- Ideal operating pressure > 90 psi
- Compressor operating pressure 105-125 psi
- Ideal receiver capacity 4 gal. / scfm or 1915 x 4 = 7660 gallons (7500)
- Usable storage 1723.5 cubic feet

Operating Cost Reduction

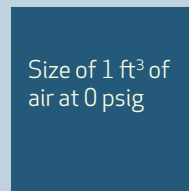
With compressor delivering compressed air at only 15 ¢ per 1000 cubic feet a demand reduction of 273 scfm equals $273 \times 60 \times 8760 / 1000 \times .15 = \$21,523.00$ annually.

Compressed Air Demand Reduction

With compressed air pressure set at 100 PSI the compressed air demand is held constant at 1915 scfm. This represents a compressed air demand reduction of 273 scfm from the previous average compressed air demand of 2278 scfm

How Large is a Cubic Foot of Air?

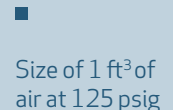
As air pressure is increased, each cubic foot of compressed air is squeezed smaller and smaller. This results in more compressed air flowing through each air device and leak. The air compressors have to make this additional CFM capacity, the plant does not need this extra CFM capacity to operate, thus the term artificial demand. PFE flow control valve provides constant pressure for constant performance of all operated devices and significant energy savings by reduced kilowatt of compressors.



Size of 1 ft³ of air at 0 psig



Size of 1 ft³ of air at 100 psig



Size of 1 ft³ of air at 125 psig

Typical PFE Flow Control Valve Compressed Air Energy Savings

Plant Air Compressor (HP/KW)	Energy Saved per Hour	X	Operation Hours per Year	X	KW Cost	=	Annual Energy Savings	PFE ROI Period
25 HP/20 KW	2.8 KW		8760 hours		\$ 0.07		\$ 1,717.00	> 1 year
30 HP/23 KW	3.2 KW		8760 hours		\$ 0.07		\$ 1,962.00	> 1 year
40 HP/31 KW	4.3 KW		8760 hours		\$ 0.07		\$ 2,637.00	> 1 year
50 HP/40 KW	5.6 KW		8760 hours		\$ 0.07		\$ 3,434.00	> 1 year
60 HP/47 KW	6.6 KW		8760 hours		\$ 0.07		\$ 4,047.00	> 1 year
75 HP/60 KW	8.4 KW		8760 hours		\$ 0.07		\$ 5,151.00	> 1 year
100 HP/80 KW	11.2 KW		8760 hours		\$ 0.07		\$ 6,868.00	> 2 year
125 HP/109 KW	15.3 KW		8760 hours		\$ 0.07		\$ 9,382.00	> 2 year
150 HP/115 KW	16.1 KW		8760 hours		\$ 0.07		\$ 9,872.00	> 2 year
200 HP/160 KW	22.4 KW		8760 hours		\$ 0.07		\$13,736.00	> 1 year
250 HP/200 KW	28.0 KW		8760 hours		\$ 0.07		\$17,170.00	> 1 year
300 HP/235 KW	33.0 KW		8760 hours		\$ 0.07		\$20,236.00	> 1 year
350 HP/275 KW	38.5 KW		8760 hours		\$ 0.07		\$23,608.00	> 1 year
400 HP/315 KW	44.1 KW		8760 hours		\$ 0.07		\$27,042.00	> 1 year
450 HP/355 KW	49.7 KW		8760 hours		\$ 0.07		\$30,476.00	> 1 year
500 HP/395 KW	55.3 KW		8760 hours		\$ 0.07		\$33,910.00	> 1 year
600 HP/450 KW	63.0 KW		8760 hours		\$ 0.07		\$38,632.00	> 1 year
700 HP/550 KW	77.0 KW		8760 hours		\$ 0.07		\$47,216.00	> 1 year
800 HP/630 KW	88.2 KW		8760 hours		\$ 0.07		\$54,084.00	> 1 year
900 HP/710 KW	99.4 KW		8760 hours		\$ 0.07		\$60,952.00	> 1 year
1,000 HP/785 KW	110.0 KW		8760 hours		\$ 0.07		\$67,452.00	> 1 year

The PFE Flow Control Valve provides estimated energy savings by:

Eliminating Artificial Demand

Artificial demand is the compressed air the plant consumes when operating at higher air pressure than required as a result of operating plant pressure via air compressor controls. As air pressure is increased, each cubic foot of compressed air is squeezed smaller and smaller. This results in more compressed air flowing through each air device and leak. The air compressors have to make this additional CFM capacity, the plant does not need this extra CFM capacity to operate, thus the term artificial demand.

Creating Usable Storage in Receiver Tanks

A 400 gallon receiver tank holds 363 CF of stored air at 100 psig. There is no usable storage unless the air pressure is released at a pressure less than 100 psig. By installing the PFE Flow Control Valve and back pressuring the 400 gallon receiver tank to 125 psig, then discharging air to the plant at 100 psig, the 400 gallon tank now has 91.1 cf of usable stored compressed air at a pressure greater than 100 psig. The combination of properly sized storage tank with PFE Flow Control Valve creates usable storage for load shaping. Load shaping prevents system pressure drop when large air consuming events are activated to prevent another air compressor coming on line to fill a demand via a properly size storage tank and the PFE Flow Control Valve.

Holding Plant Air Pressure Constant

The PFE Flow Control Valve holds plant air pressure constant +/- 1 psig, which means the plant's air operated devices will all provide consistent repeatable performance. When air pressure changes all air operated device performance changes.

- Higher air pressure all air devices will operate faster than design.
- Lower air pressure all air device will operate slower than design.
- The PFE Flow Control Valve provides consistent performance of all air operated devices.

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