Oil & Natural Gas

V-Cone Flowmeter Solves Compressor Control Problems for the Oil & Gas Industry.

Compressor control applications

Compressor and pump controls are normally used to manage the injection of a fluid (compressible and incompressible) into a reservoir or pipeline. Some of the fluids that are injected include water, methanol, carbon dioxide, natural gas and other gases.

When injecting compressible fluids, large centrifugal single and multi-stage compressors are used. However, correct control of these large units is essential if the operation is to be fault-free.

A concern with these units can be controlling the rotational speed, to prevent the compressor turbine from reaching a stall condition. If the gas supply to the compressor inlet is suddenly cut, the compressor's RPM increases rapidly until it goes into "surge" or until it reaches a potentially destructive RPM and shuts down. The surge control's set-point is approximately 25% below the design operating flow rate for the compressor. When a surge situation occurs, the signal from the compressor flowmeter is registered in the control system, which sends a signal to the anti-surge valve to open. The anti-surge valve, mounted in a recycle line around the compressor, opens in less than a second. The valve remains open until the gas supply to the compressor is re-established. Then the anti-surge valve will close slowly.

To prevent the compressor from surging, a flowmetering device is placed in the compressor piping to monitor the gas flow through the compressor.

- Low signal noise
- Little or no upstream straight pipe run requirements
- High accuracy and repeatability
- Easy installation - ideal retrofit
- Low headloss

Measures:

- Gas which can be wet, abrasive and has a disturbed flow
- Output from separators
- Flow in gas injection systems
- Contaminated water (sand, oil, paraffins, and other hydrocarbon fluids)

√CONE®

McCROMETER
The Flow Measurement Specialists

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Application Notes

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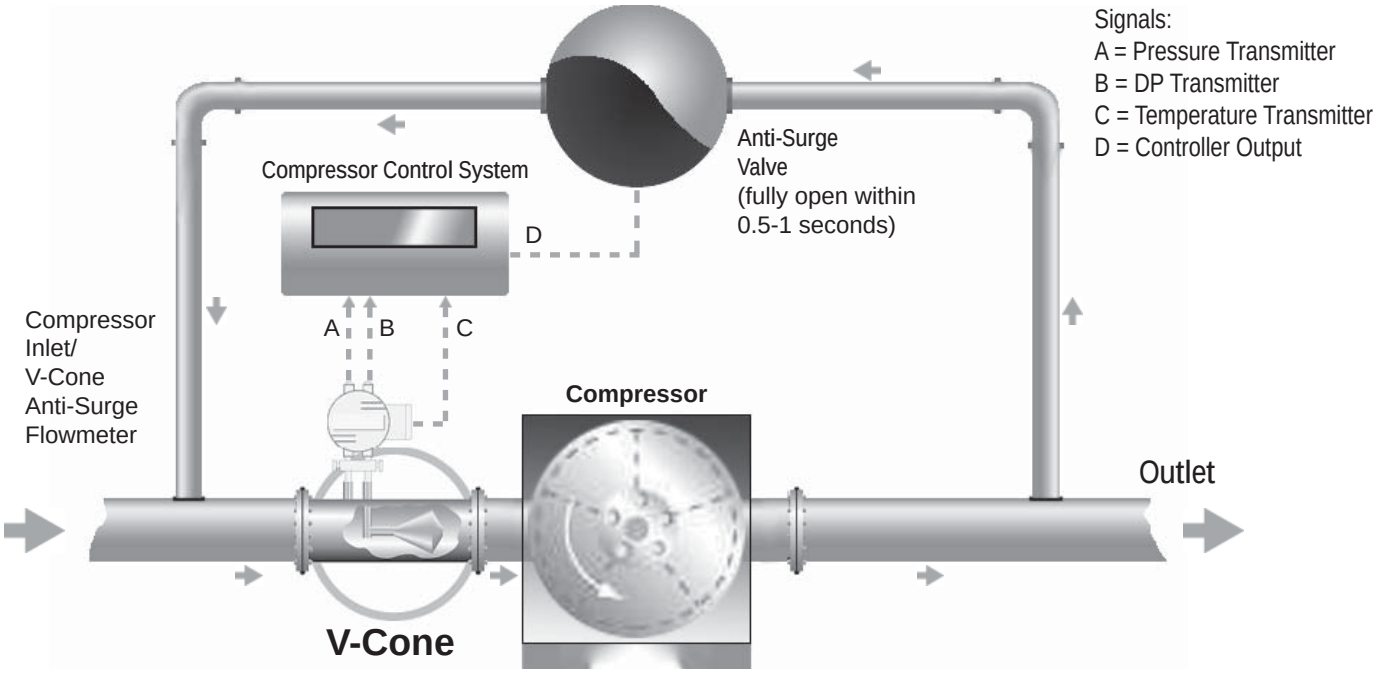
V-Cone installation on a typical compressor control application.



Why the V-Cone Flowmeter is ideal for Compressor Control Applications

One of the advantages of using McCrometer's V-Cone® Flowmeter is due to its unique design. The patented flowmeter offers an advanced, differential pressure flow technology that acts as its own flow conditioner, fully conditioning and mixing the flow prior to measurement. The result is a low amplitude, high frequency signal with little "signal bounce." Readings are always precise and reliable, including low pressure flow situations.

The V-Cone offers an almost instantaneous response time and large turndown, which allows the compressor control to be fine tuned. This provides better results when using prediction control software and also helps simplify compressor installation construction due to the flowmeter's inherent conditioning action.

Its unique design also enables the V-Cone to provide outstanding performance without the upstream or downstream piping required by other flowmeters. This reduced straight pipe run requirement results in significant space and weight savings. For retrofit purposes, the V-Cone is simple to install.

The V-Cone provides an accuracy from ±0.5% of rate and a repeatability of ±0.1%. It comes in sizes from 1/2 inch to over 120 inches. It handles flow turndowns in excess of 10:1. High pressure meters are available. Corrosion resistant models in most materials are also available.

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