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Cost of Air
Calculator



PROCESS INSTRUMENTATION

Air and cost savings with SIPART PS2

Advantages of the switching principle with piezopneumatic technology for valve positioners

usa.siemens.com/cost-of-air

The issue

Compressed air is one of the easiest sources of power to distribute and use. Unfortunately, compressed air as a transfer medium and method of energy storage is very cost-intensive in comparison to other options. Pneumatic actuators are widely used because they are low in cost, fast-acting, flexible and inherently suitable for potentially explosive atmospheres. They require a permanent supply of compressed air at an appropriate pressure,

quality and quantity. Air from the surrounding atmosphere must be compressed for this purpose, then purified of oil and particles to maximize the service life of the supplied components. The cost of compressed air is important, as about 18% of the total energy consumed by industrial electric motors is used to generate compressed air. Furthermore, the energy used by compressors makes up the largest component (65%) of the cost of compressed air.

SIEMENS



From standard applications to the fastest particle accelerator in the world – SIPART PS2 masters all control tasks.

The solution

The use of an electropneumatic positioner with a switching principle reduces air consumption, which affects energy costs and emissions. This technology allows facilities to reduce compressor sizes and quantities.

The air loss associated with conventional positioners is very expensive. The SIPART PS2 positioner from Siemens only uses air when required, which means that the positioner quickly pays for itself.

The principle

Due to the switching principle, the PS2 does not require compressed air in a steady state. Because it uses piezo elements, the positioner does not need an additional power supply, but can be powered up with 4-20 mA or a fieldbus.

The PS2 uses a pneumatic valve block with piezo pilot valves to eliminate the need for a traditional I/P and spool valve, both of which bleed air. Piezo-bending elements, functioning as electromechanical transducers, are the base technology of the pilot valves in the PS2 positioner. With the so-called direct piezoelectric effect, a piezo element is deformed when a voltage is applied to it, thus generating mechanical motion. Thanks to this principle, piezo valves require virtually no energy to maintain an active state.

When opening and closing the pilot valves of the PS2, the electrical energy consumption is very low as a result of the piezo elements. Compared to other transducer principles, the switching principle together with piezo elements enables higher switching dynamics of the pilot valve and thus leads

to a higher dynamic control characteristic of the control valve. Compared to analog positioners, the air consumption drops significantly.

The benefit

Siemens offers a positioner with very low air consumption. The SIPART PS2 digital valve positioner has an internal air consumption of just 0.006 SCFM in a steady state, so the required electrical power to generate compressed air, energy costs and emissions is very low. This offers you higher savings compared to other installed positioners and reduces your total cost, including the costs incurred by air generation, maintenance and material.

With the Cost of Air Calculator from Siemens, you can easily compare the cost savings between different manufacturers and the SIPART PS2 positioner.

Legal Manufacturer

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