

Pneumatics & Automation

Application Note



The cost of air

While the air we breathe may be free the cost of air in pneumatic systems is enormous.

According to the US Department of Energy compressed air accounts for 10 to 30% of energy costs in US manufacturing. Over the lifetime of a pneumatic system 80% of the total cost will be the electricity that it consumes.

It comes as no surprise then that the major focus for operators of pneumatics is on saving energy through leak detection and pressure optimisation.

Leak detection

The cost of air leaks in pneumatic automation equipment is staggering. Typical manufacturing plants lose up to 35% of the compressed air they generate due to leaks alone. Air leaks in pneumatic systems can easily cost \$50,000+ in energy per machine each year.

Adding flow measurement using the FLS110 allows the air consumption of pneumatic components to be monitored over time. Leaks can be identified even when there is no loss of system pressure and resolved through routine maintenance. This can typically reduce air usage by 20% and save tens of thousands of dollars in energy costs per year.

From an environmental perspective these energy savings can reduce the CO2 footprint for the manufacturer by as much as 10%!



Air leaks can increase energy use by as much as 35% and cost more than \$50,000 per machine per year in electricity.



Optimising the pressure in a pneumatic system can reduce air consumption, energy cost, and CO2 by 10% or more while maintaining productivity.

Pressure optimisation

Without flow sensing manufacturers do not have the full picture when it comes to the relationships between system pressure, air consumption and cycle time. Inevitably this leads to equipment being run at the wrong air pressure.

If the pneumatic pressure is too high, pneumatic machinery will consume more air than necessary. This increases energy consumption and cost with no benefit.

If the pneumatic pressure is too low, then the equipment will be sluggish; extending cycle times and reducing productivity.

Incorporating flow sensors into pneumatic valves and controllers provides the data to optimise the pneumatic pressure for each piece of equipment individually.

Air consumption can easily be reduced by 10% or more with pressure optimisation, reducing energy costs and associated CO2 production.

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Accelerate cycle times

As well as detecting leaks, a flow sensor can be used to detect a drop in air flow rate to give precise feedback on when an actuator has reached the end of its travel.

This closed loop feedback enables faster cycle times than traditional open loop control, increasing productivity and return on capital investment.

Unlike mechanical position sensors a single FLS110 flow sensor can potentially monitor several actuators connected to the same air source, reducing cost. Flow sensing also does not require any mechanical modification to the production line which makes it perfect for retrofitting.

How the FLS110 can help

The FLS110 is the world's smallest, least expensive, and one of the most accurate flow sensors of its type. It can be easily integrated into any pneumatic valve or flow controller to give a precise measurement of the mass flow rate of pneumatic air.

The low cost of the FLS110 allows it to be deployed in every valve and flow controller, providing unparalleled resolution of air consumption throughout a pneumatic system.

FLS110 evaluation kit

This kit contains everything you'll need. It's supplied with a fluidic fixture (to fit your flow range), push-fit connectors and a USB adapter to connect the FLS110 PCB directly to your PC.

And once you have everything connected together, you can easily recalibrate the sensor to take account of your complete system.



Using our FLS110 evaluation kit you can be measuring flow within minutes.



Scan QR Code for more information or to order a flow sensor evaluation kit



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