



Air Superiority News



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Save Money: Convert from Compressed Air Blow-Off to High Efficiency Centrifugal Blowers

Compressed air is not free. Its cost is often overlooked as an operating expense. The wasteful process of producing compressed air at 120 to 130 PSIG can easily justify the cost of upgrading to energy-efficient equipment.

What is the Cost of Compressed Air?

The typical 100-hp compressor incurs the following costs over a one-year period:

Electrical – power at \$0.05 per KW-hr	\$39,935
Cooling water – \$1.80 per 1000 gallon	\$10,400
Preventive Maintenance – oil change, air & oil filter change	\$1,210
Maintenance Labor – personnel cost	\$5,000
Total Yearly Operating Cost	\$56,545

Additional costs not accounted for include:

- Cost of pressure drop within the system
- Cost of air drying
- Cost of accessory and backup equipment
- Cost of capacity control systems
- Cost of point of use filter, dryers and reducing-control valves.

These additional sources of operating costs could double the annual system operating cost.

What is the Real Cost of an Air Blow-off System?

An air knife is the most effective instrument for creating an air curtain. Many types of air knives are used, including: drilled pipe (the worst), pipe with nozzles (requires compressed air at 40 PSI and above; not well suited to providing a continuous curtain of air), high-pressure air knife (requires compressed air at 40 PSI and above; provides a very thin curtain of air) and low-pressure high-flow teardrop air knives—the best choice.

The high-pressure air knife system in a typical application, using two 18" air knives system, will require approximately 32 HP to supply 126 SCFM for an air curtain. Using the national average electricity cost of \$0.083/kW-hr the annual power cost alone is \$9,362.00.

Compare this cost to that of the same application with a low-pressure high-flow high-efficiency centrifugal blower. A high-efficiency blower (70% isentropic efficiency) will supply 324 SCFM using a 5 HP motor. Again, using the national average electricity cost the annual power cost is \$1,358.00.

How to Compare Costs

Using the first year approach (cost of equipment, installation and operating), the high-pressure air knife total cost is approximately \$10,262.00; and the high efficiency centrifugal blower total cost is approximately \$9,633.00.

Performance of the air knives has not been addressed. What has been addressed is the annual ROI. The blower will save a minimum of \$2,000 in electrical cost. **This is not a one-time savings—it is year-after-year.**

Air Blow-Off Applications: Produce Industry

Where is air blow-off used in the produce industry?

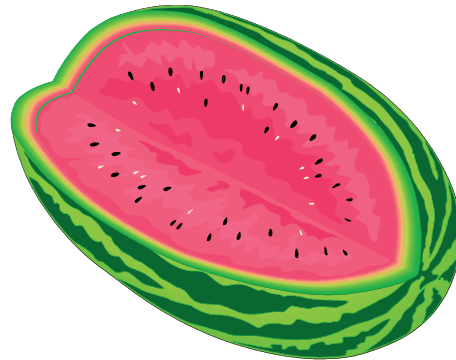
Produce from the field, such as potatoes, needs to be washed prior to packaging. Field potatoes must be washed before they are bagged. Excess water must be removed from the potatoes before bagging. Along with rollers, the air knife can remove the final bits of excess water.



The Australian Potato Industry conducted several trials to determine whether or not air drying would be effective in minimizing the soft rot commonly found in “tubers” (potatoes). One recommendation was the application of air knives to dry the potatoes. Air-knife drying is an alternative that overcomes many of the problems of the sponge roller.

When you visit your supermarket’s fresh produce department, you will find an array of produce items, ranging from apples, apricots, peaches, nectarines and grapes to tangerines, grapefruit, lemons and oranges to sweet peppers and watermelon. You also will see pre-cut produce packed to match your individual needs.

Pre-cut and packaged watermelons are an example of pre-cut produce. Watermelons from the field need to be washed before they can be cut and packaged. Air knives are used to remove excess water after they are washed.



Vortron to Exhibit at CleanTech 2004

February 23-26, 2004 CleanTech/NMW, McCormick Place, Chicago, IL. You are invited to visit the Vortron booth, CT1749, to see the all-new Mobile-Aire system.

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