



Technical Information

Air Leakage/Control Efficiency Air Compressor/Compressed Air System

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Leakage: In many cases, the volume of a leak can be determined by placing a plastic garbage bag over the leak and determining how long it takes to inflate bag. Using a bag of 33 gal capacity @ 7.48 Gallons per cu ft, the capacity of the bag would be 4.4 Cu Ft. If bag fills in 15 seconds, leak equals more than 16 CFM, or about 3.5 KW. At \$.12 per KWH, this leak would cost \$3.36 per 8 hour shift.

A leak equaling 35-40 CFM equals approximately 10 horsepower or 7.5 KW. At \$.12 per KWH, such a leak will cost \$ 669.60 per month in a 24/7 operation!

Air leaks waste energy and increase the maintenance cost of equipment. The energy cost of a small air leak can in just a few years can exceed the replacement cost of a compressor.

Control systems can effect compressor efficiency. Load/unload compressors are approximately 100% efficient at full load. At 10-20% of full load they use 60% of their rated horsepower. A 50 HP compressor producing 225 CFM @ 100 PSI will draw approximately 37.5 KW or cost \$4.50 per hour to operate, or \$.000333 per cu ft of air. At 20% capacity, or 45 CFM, it will draw 22.5 KW OR \$.00045 per cu ft of air.

Variable speed motors (VSD) and variable capacity compressors can dramatically reduce power consumption when system demand varies widely. Although the initial cost of VSD compressors is considerably greater than a single speed load/unload system, there are many advantages. VSDs start with low load (soft start) rather than the high starting load associated with full voltage start, single speed motors. The actual horsepower produced is tailored to the actual demand on the system., effectively operating at 100% efficiency at any load.