

**EXCESSIVE LEAKAGE**

Compressed air is a quality energy transmission agent, so it must be treated accordingly. Unfortunately, much of the compressed air produced is lost before it is even used because of leaks. An acceptable target value for the overall share of leaks is 10%. A decrease in leaks below 10% is not achievable without a substantial and often uneconomic investment.

If the facility has a loss of compressed air of 10% or more, urgent action is required. The important consequences of system leaks are:

Increased operating costs; compressor operation time increases; the frequency of maintenance work is accelerating  
When replaced, compressors are oversized, resulting in unnecessary investments

Checks on compressed air systems indicate that the average plant loses 20% or more of the compressor capacity due to leakage. Leakage rates exceeding 50% of consumption are common. In practice, a pressure increase of 2 PSI will require 1% more energy from the compressor; each PSI lost due to leaks is therefore very expensive.

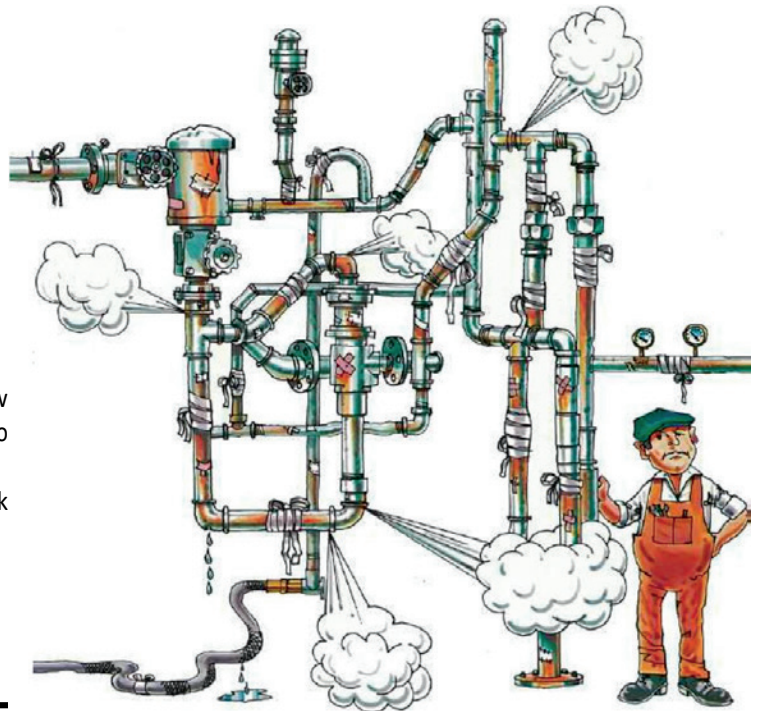
Given the cost of energy, this loss is a significant drain on resources. Since air leaks are not dangerous, they are often tolerated. In addition, leaks usually appear through a multitude of small orifices, and none of them are large enough to attract attention; although each leak is minor, their accumulation is serious. With compressed air charges hovering around \$0.25/1000 ft3 (\$0.08/KWH) an average plant can potentially save large sums of money by simply establishing a leak detection and repair program.

The source of the leaks is multiple, but the most common problems are:

- Condensate traps left open
- Shut-off valves left open
- Leaks in pipe joints
- Leaks in hoses and quick couplings
- Pressure regulator leaks present
- Permanent opening of cooling nozzles
- Continuous operation of compressed air equipment

Substantial leaks can be eliminated simply by improving these few elements. Leaks are not just a direct source of energy loss; they also contribute indirectly to operating costs.

As the leakage increases, the pressure decreases, the air tools do not work as well and the efficiency is affected.



**AIR LEAKAGE AND COMPRESSOR ENERGY CONSUMPTION (\$/AN)**

This table is for illustration purposes only. The calculations are based on 8760 hours of operation with a 100% efficient compressor.

N.B. Un orifice de 3/8" équivaut à 144 orifices de 1/32".

leakage meter (inch)	PRESSURE			
	90 PSIG	100 PSIG	120 PSIG	150 PSIG
1/64	46\$	51 \$	60\$	73\$
1/32	185 \$	203\$	239\$	292\$
1/16	742\$	814 \$	955\$	1170 \$
1/8	2970\$	3260\$	3820\$	4670\$
3/16	6680\$	7320\$	8600\$	10 500 \$
1/4	11 900 \$	13 000 \$	15 300 \$	18 700\$
3/8	26 700 \$	29 200 \$	34 300\$	42 000\$
1/2	47 500 \$	52 000\$	61 200 \$	74 800\$