

10 steps to more efficient compressed air generation



The most expensive thing in the production of compressed air is the energy costs. The average energy costs for the generation of compressed air relatively quickly exceeds the costs for the purchase of a compressor.

The first step in reducing compressed air costs is to measure and monitor energy consumption, flow rates and operating pressure.

Small adjustments can reduce your operating pressure and energy costs while improving flow rates and performance.

We explain how you can optimize your compressed air system in 10 steps and save energy costs.

01 **Switch off your compressor**

A week has 168 hours, but most compressed air systems run at full load for only 60 to 100 hours per week. Depending on your shift scheme, you can reduce your energy costs by up to 20 percent if you switch off your compressors in the evening and at weekends.

02 **Seal leaks**

Leakages in the overall compressed air system are a high cost factor. The leaks act like nozzles from which the air exits at enormous speed. The increased volume flow, requirement caused by the leaks, leads to higher energy costs during compressed air generation. Even a small leakage of only 3 mm in diameter in a 12 bar compressed air network costs you around € 6,000 more per year.

03 **Prevent the formation of new leaks**

Be proactive and look into your piping system. A clean, dry pipe indicates good air quality. On the other hand, dust and sludge in the compressed air pipe system lead to corrosion and the number of leaks can be increased as a result. Dust in the pipe is caused by particles in the compressed air.

If compressed air is not filtered or if the filter is clogged, pressure drops occur and the risk of contamination of the end product increases. Therefore, you should use appropriate compressed air filters and check them regularly. In humid air, a dryer can also be useful.

04 **Operate compressors with the right pressure**

Each reduction by one bar reduces energy consumption by 8 percent. Check system pressure and resist the urge to increase pressure to compensate for leaks or pressure drop due to pipe disturbances or clogged filters.

A central consumption-dependent control system can greatly reduce the operating pressure range and make air production significantly more efficient and effective.

05 **Check drains for condensation**

Time-controlled condensate drains should be checked regularly to ensure they open as intended. The same applies to mechanical condensate drains with floats, as they can clamp quickly.

Even better: use electronically level-controlled condensate drains. This prevents compressed air losses during the opening of the trap.

06 **Check the infrastructure of the compressed air lines**

The compressed air line system should be optimised so that the compressed air arrives at the consumer with the required volume flow and pressure.

Increasing the pipe diameter from two to three inches can reduce the pressure drop by 50 percent. Shortening the distance the compressed air has to travel to the consumer can reduce pressure drops by a further 20-40 percent. The more compressed air flows through a pipe, the greater the pressure loss.

The pressure drop in a pipe increases with the square of the increase in flow, which means that the flow is doubled, the pressure drop quadruples.

The air distribution lines should have a sufficiently large diameter to minimize the pressure drop.

07 **Replace filters systematically and in time**

Maintain and replace filters systematically to ensure air quality and prevent pressure drops. Go beyond the compressor and the compressor room. There are numerous line filters and filters in front of the consumer. The maintenance of these filters is just as important as that in the compressor and compressor room.

08 **Use the heat generated by the compressor**

It is simple physics that heat is generated during the generation of compressed air. You can use almost 90% of this heat in your company - for example to generate hot water and by using the exhaust air as room heating. The savings are worthwhile.

09 **Maintain your compressor properly**

A compressor runs more efficiently if it is maintained regularly and correctly. Correct maintenance reduces energy costs by approx. 1% and helps to prevent breakdowns.

10 **Eliminate unnecessary use of compressed air**

Improper use of compressed air includes all applications that can be operated more effectively or efficiently by methods other than compressed air. For example, high pressure is often used for cooling or other applications where less high pressure would be enough.