Shut the compressed air system down at night – and cut costs while you sleep

If production ceases at night or during weekends and there is no need to supply any equipment that consumes compressed air, the entire compressed air system can be switched off during these periods.

Action

An automatic start-up device automatically switches the compressed air system off and back on again. When switching off, it disconnects the pipe network with an electrically operated ball valve, so it turns off the compressor as well as the dryer.

Requirement

Ensure that the system does not have to supply any continuous consumers of compressed air such as ventilation flaps, diaphragm pumps, slide valves for water pipes, etc.

What to do

- From your supplier, obtain an automatic start-up device and a ball valve that can be controlled with a time switch. The ball valve should have the same dimensions as the outlet of the compressed air line downstream of the dryer.
- Install the ball valve downstream of the dryer.
- Ask the supplier to install the automatic start-up device.
- Programme the automatic start-up device so that it:
  - Switches off the pipe network, the compressor and the dryer with the ball valve 30 minutes after the end of operation (closing time).
  - Switches on the dryer and compressor 30 minutes before the start of operation (opening time). The ball valve is set to open slowly 15 minutes later.

Costs – outlay

- Depending on the size of the plant, installation of an automatic start-up device with a ball valve costs between CHF 2000 and 3000.
- For large systems with many leaks, the amortisation period for your investment is 1 1/2 years. For small systems with few leaks, the amortisation period is somewhat longer.

Please note

- The control requires a manual switch that makes it easy to start operating the compressed air system outside the programmed operating times.
- Important: a slow-opening ball valve must be used. Solenoid valves open too quickly, so they are not suitable for switching entire systems or sub-systems off and on. This is because switching the equipment on quickly causes what are known as pressure shocks or surges; these can cause major damage (ripped filters, water in the compressed air network, etc.).

Additional explanations

Switching the compressed air system on and off manually

The compressed air system can also be switched off and back on manually. But be careful to avoid errors when switching on and off manually, because if the ball valve is wrenched open when switching on instead of being opened slowly, the system can be damaged. Filters can be torn, and water or oil can penetrate the pipe network and cause serious damage to the machines. Experience also shows that people repeatedly forget to switch off manually. The compressed air system continues to operate even though no compressed air consumers are active. You can find instructions on switching on and off manually in the Guideline on optimising compressed air from SwissEnergy.

Screw compressors

Screw compressors must still “run on” after they are switched off and for this reason, they must not be switched off via the network connection. They must be switched off and on via the internal control, and an expert should be engaged to make the connection correctly.

Automatic disconnection of compressed air distribution from the generator

95% of leaks are located in the compressed air network and on the equipment that consumes compressed air. The compressed air generating system (compressor, preparation unit) is only responsible for 5% of leaks. If the compressed air distribution network is disconnected from the generator, most of the losses will be avoided. A somewhat less costly variant is to disconnect the compressed air distribution network from the generator. In this case, only a time-controlled ball valve is installed downstream of the preparation unit. Since compressed air preparation continues to operate during the night, this solution saves somewhat less energy. The Guideline on optimising compressed air from SwissEnergy describes this variant in detail.

Additional information

- Short film: Energy efficiency in companies: switch off the compressed air

- Guideline on optimising compressed air, information for staff responsible for compressed air
- 4-step check to optimise a compressed air system, work instrument for staff responsible for compressed air
- Guidance on compressed air, boosting efficiency in compressed air systems

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