

Working safely and efficiently with compressed air



Alongside electricity, compressed air is the most widely usable form of energy and the most commonly used energy source in modern manufacturing. It is the power source behind various types of tools and machines, carrying out important functions such as cleaning, drying, cooling, transporting or sorting. In many applications, however, compressed air is not used effectively or safely. The swepro Group explains what businesses need to consider to ensure compressed air is used correctly.

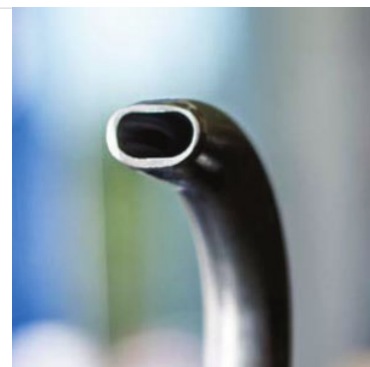
Blowing using compressed air is extremely common in industry. If industrial processes require blowing activities, this often involves installing an ordinary pipe with dimensions varying between 2 millimetres and 32 millimetres. The open pipe is formed and bent into shape to create the desired blowing angle and the required blowing pattern. In most cases, such installations do function but have some drawbacks such as severe turbulence, extremely high energy consumption, as well as potential health hazards.

To minimise costs and increase safety in production processes, industrial firms should consider several factors when using compressed air. The application, required blowing force, blowing pattern, and material of the compressed air equipment used is of significant importance when choosing the right compressed air solution. Generally, compressed air nozzles, safety air guns and safety silencers can be used for most industrial applications. As the exclusive partner of Silvent AB Sweden, the swepro Group offers the world's widest range of compressed air equipment. Marc Kunkel, project manager at the swepro Group, understands the problems that arise when using compressed air: "Many industrial companies do not tackle the consequences and dangers of compressed air in their operations. Choosing the right compressed air solution is however essential for manufacturing processes to operate efficiently, quietly, safely and, not least, economically. Each blowing application is unique and should be treated as such."

NOISE-REDUCED COMPRESSED AIR NOZZLES INCREASE SAFETY AT WORK

Noise is considered by many experts and energy officers as one of the greatest environmental problems in the industry. In businesses working with open compressed air, noise levels are often particularly high, endangering the hearing of employees. Replacing an open pipe with a safety blower nozzle reduces noise levels by at least 10 dB(A). Instead of letting the air out through a large hole, it is divided between a number of smaller holes or slits. The sound level is reduced as both the air is controlled and a concentrated flow is produced. Turbulence, which usually generates noise, is eliminated as a result. A reduction of 10 dB(A) translates to a 50 per cent decrease in the noise levels perceived by the human ear.

Another way of improving noise levels in the workplace is to create noise maps to identify and analyse all sources of noise that employees are exposed to. Based on noise maps, machines or workflows can be adapted to reduce noise pollution. Another measure to protect against noise in the workplace is to train employees in the safe use of hearing protection. Research and studies in this field, however, show that the use of hearing protection is a less effective method to combat damage caused by noise.



Open pipe: *a frequent but ineffective installation*



Pipe with blower nozzle: *optimal efficiency and less noise.*

OPERATING COST ANALYSIS OFTEN REVEALS POSSIBLE SAVINGS

Studies show that most decision-makers do not know what a cubic metre of compressed air costs. Since compressed air is generated on site and not bought from an external supplier, it can also be quite difficult to calculate the actual costs. To detect, however, whether the air pressure is used efficiently, an analysis of compressed air costs is essential. A simple procedure to determine compressed air costs is how much energy (power) the compressor has consumed in a certain period of time and how much compressed air has been generated over the same period. The amount of compressed air generated can be determined using a flow meter. This lets you calculate how many kWhs are required in the respective system to generate 1 Nm³/h of air. Depending on the cost of 1 kWh from your current power supplier, the operating costs for 1 Nm³/h of compressed air can therefore also be calculated. To go further and evaluate the various compressed air consumers in the set-up, air consumption must be measured at various points in the system.

Analysing the cost of compressed air reveals significant deficits for many industrial firms. To counteract these, companies can replace either the compressor or the connected compressed air equipment. Open pipes should always be substituted for more modern and energy-efficient blower nozzles or air guns that generate the correct blowing force and the right blowing pattern for each application. Modernising compressed air equipment can result in energy savings of about 30 to 50 per cent.

CORRECT HANDLING OF COMPRESSED AIR INCREASES OPERATIONAL SAFETY

Alongside cost efficiency, operational safety is an important factor to ensure compressed air is used correctly. Safety measures for handling compressed air are therefore becoming increasingly important for both businesses and authorities, with certain guidelines already being introduced. Since compressed air stores large amounts of energy under high pressure, this can be dangerous if it is not handled correctly. In addition to continuous staff training and suitable protective clothing, professional, quiet tools with intensive and regular maintenance help to optimise operational safety. Users should always use compressed air equipment that meets OSHA (Occupational Safety and Health Administration) requirements and noise regulations under EU directives

INFOBOX:

Leakages: Biggest cost factor when using compressed air

Perhaps the biggest problems in a compressed air system are leakages. Often, 20 to 50 per cent of compressed air generated is lost to the environment through leaks. To tackle this issue, it is important that the compressed air system is checked regularly so that leaks can be found and sealed off. Typically, 80 to 90 per cent of all leaks are found close to the user in hoses, fittings and fixtures. Leakages in compressed air machines and tools may be significant. Plenty of money can be saved by regularly checking the compressed air system, sealing leaks, adapting machines and air consumers to operating conditions, and upgrading the tools and equipment to energy-efficient versions. Safety silencers in particular can make valve air outlets safer and more effective.

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About the swepro Group:

swepro has been a specialised supplier of pneumatic technology in Europe for over 30 years. As the exclusive partner of SILVENT AB, Sweden, the Neuss-based company is in a position to deliver modern, safe and efficient products as well as intensive customer support. Moreover, swepro also offers its customers tailored product solutions in addition to its extensive standard range. All swepro products stand out thanks to their long service life, low maintenance and superior operational safety.

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