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Healthy Pipe Systems = Big Savings $$$$

Have you ever wondered why your air compressor operates at 120 psi, but you're only using 90 psi on the manufacturing floor? How about those weekends when the plant is shutdown, yet the compressors continue to run until Monday? Has your boss asked you to figure out a way to reduce energy costs? If the answer to any of these questions is "yes", this article could be very useful to you.

While there can be a few varying explanations for these occurrences, the vast majority stem from your compressed air piping system. The piping system in your facility can be compared to your body's cardiovascular system, pumping the right amount of air at the right pressure to areas on the floor where it's needed. When there are fluctuations or gaps in this performance, output can suffer and the system can fail, resulting in serious bottom-line damage. Therefore, it is important to consider ways to keep this system "healthy."

In a typical manufacturing facility, standard carbon steel pipe is used to transport compressed air from the compressor to its point of use. Despite the best efforts of those who install these systems, the vast majority begin to leak from the fittings/connections as early as two years after install; a process that worsens over time. In addition, the material properties of steel make it extremely susceptible to corrosion, both via oxidation and chemical incompatibility. This makes for a chronically unhealthy situation, and it is probably what you have hanging above your machinery right now. Why?...because tradition would tell us it's the "less expensive" option? Well, as the old saying goes…"you get what you pay for."

Lets examine each of the questions from the beginning.

Have you ever wondered why your compressor operates at 120 psi, but you're only using 90 psi on the manufacturing floor?

As you probably know well, the difference in pressure from source to point of use is known as "pressure drop." You are paying to "create" pressure in your system in the same way that you pay to cool or heat the air in your home. The objective should be to minimize the amount of pressure created to effectively accomplish the task, just as you would at home by incorporating insulation, keeping the windows closed or any number of "energy saving" techniques. In fact, a rule of thumb in the industry is that for every 14 psi of increased pressure required, motor capacity is increased by 7%! In the above example, the 30 psi drop from compressor to point of use results in a 15% increase in the energy required to accomplish the same task with a minimal pressure drop (by the way, a 30 psi loss is not terribly unusual!)

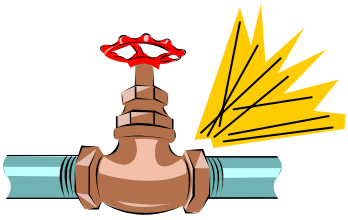
Typical causes for pressure drop include: obstructions in the system, undersized pipe, internal corrosion, and flow restrictions. It is important to make sure your air system has been properly sized for its intended usage and capacity. Also, you should try and avoid using materials that degrade over time, such as steel. The oxidation and corrosion in steel pipes can not only cause contamination and

obstructions from pipe scale, but can actually result in a reduced inner diameter due to material build-up over time. This ID reduction can result in taking a perfectly well designed system and dropping it to an undersized one. These are very real issues that could be plaguing your system right now. If you aren't thinking about them, you should be.

Corroded Pipe

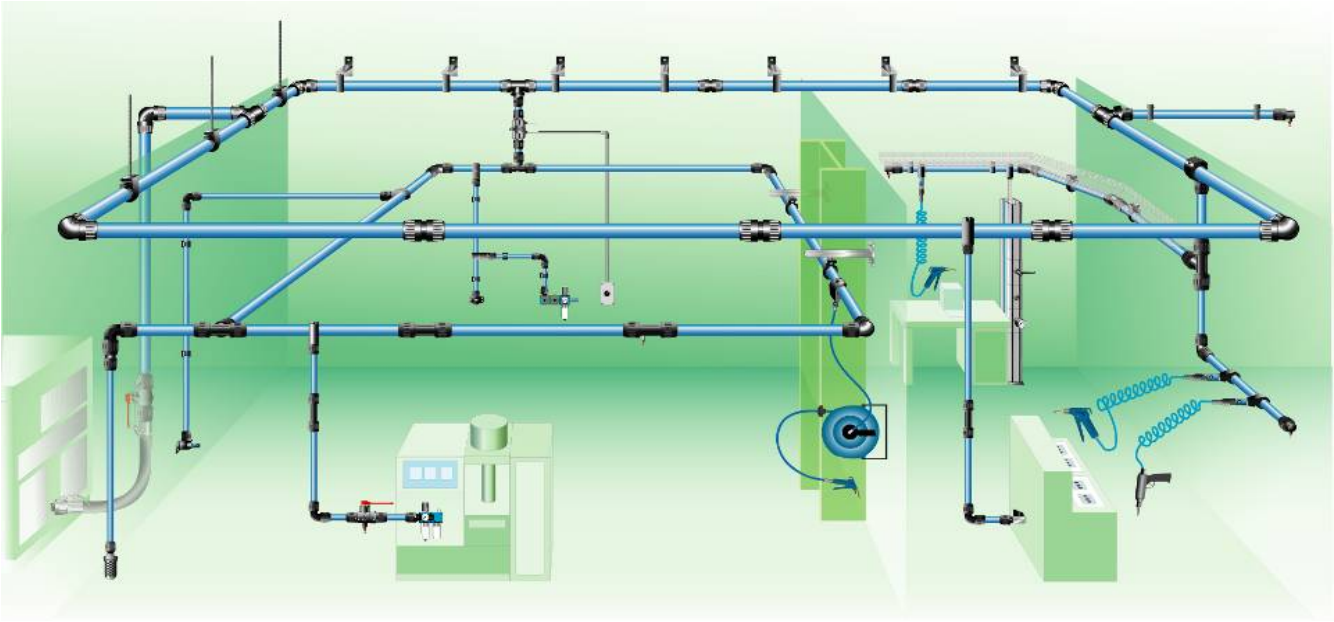
How about those weekends when the plant is shutdown, yet the compressors continue to run until Monday?

Again, there is no doubt everyone understands that the compressors continue to run because they are feeding leaks in the air system. In fact, for years this has been accepted as just another reality of working in manufacturing. However, this can be a very expensive oversight. By running the compressors without making any product (or even during production, but increasing compressor output to equal usage and leakage), you are increasing the marginal production cost of your final product and taking dollars off your bottom line. Buying a leaky steel system might seem like a prudent way to save money in the beginning, but it will continue to perpetually diminish your profitably throughout its working life.



What causes leaks? Of course there are several potential causes, but investigation has narrowed it down to a couple primary culprits. The obvious ones are leaky quick couplers, accidental pipe damage and sub-optimal installation techniques. But, the less obvious (and most predominant) factor is thermal expansion. As temperature varies over time, metals move. Steel systems are rigid and seldom make concessions for the thermal effect, resulting in stress on the weakest points of the system…the fittings. Even the most brilliant installations will eventually open up to atmosphere for this very reason. Research by the US Department of Energy and the Compressed Air and Gas Institute estimate that after 5 years the average steel system will be leaking from at least 25% of its connectionss, and after 10 years this number increases to nearly 70%! This does not imply that 70% of the energy is being lost to atmosphere, but a significant amount of compressed air is being wasted.

But…compressed air is "free", so this is no big deal…right? WRONG! In fact, the annual energy cost associated with operating a compressed air system makes it one of the easiest and most effective areas in manufacturing where energy savings can be obtained quickly and with a relatively quick payback on capital expense. Whether you are designing a new facility, or currently dealing with the perpetual cost of an inefficient steel system, there is a solution: incorporate a piping system that DOESN'T LEAK, DOESN'T CORRODE, and provides a clean and dependable source of air.



The answer is TRANSAIR. Transair is an advanced, modular aluminum piping system, specifically designed to transport compressed air, vacuum and inert gases. Transair comes with a 10 year manufacturer's warranty, guaranteed to be LEAK FREE, CORROSION RESISTANT and easy to use. Depending on your system's parameters it can save you from 35 to 60% of the energy required to operate your compressed air system. Its push-to-connect technology and light-weight design make it optimal for grassroot projects and facility renovations alike. Special fittings, such as the integrated drop brackets make modifications after installation easy and quick, reducing potential downtime for future adjustments in the air system layout. Best of all, a Transair piping system typically requires a capital cost that can be recovered in 12-18 months maximum, whether in new construction or renovation of your current system. It is an "install and forget" piping system that is durable, and has been tested to far exceed the capabilities of traditional materials.

Take for example, the plastic bottle plant in California with leak and pressure drop issues. An air audit was performed on the system, and it was determined they were losing $35K+ per year in leakage and friction losses alone. Transair was installed to replace their air system, and their investment was recouped in little over a year. The measured savings after the first year in service was $38K.

Before Transair (Copper piping)

Isn't it time you took a closer look at the "health" of your air system?

For more information, design assistance or a quotation on a Transair system, contact your local Air Technologies sales person or send an email to jbeyer@aircompressors.com.

After Transair installation
First year savings $38K