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ProBusS Presents
News about skilled trades, maintenance, and manufacturing

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Clearing the air

The last couple of newsletters we've talked about saving on utility bills. Have you ever thought about **saving on air expenses**?

Not airline tickets, but compressed air. Practically every industrial plant uses it, yet it's one of the most neglected systems in any operation. Fortunately, there are easy ways to save on energy use and maintenance of any compressed air system.

How well do you know the full cost of compressed air? **Take this quick quiz** to find out:

1. How much **air leaks** out of a typical industrial plant compressed air system?
a) 5% b) 10% c) 25% d) 35%

2. What percentage a plant's **electric bill** is used to generate compressed air?
a) 3% b) 5% c) 10% d) 12%

3. Of the compressed air a plant produces, how much **actually gets used** in production?
a) 90% b) 75% c) 50% d) 40%

4. What percentage of a plant's compressed air is **wasted in**

"artificial demand" (e.g. operating at too high pressure)?
a) 4% b) 8% c) 13% d) 17%

According to the U.S. Dept. of Energy, the correct answer to each questions is c) in every case. The full answer to the first question is 20 to 30%; 25% leakage is an average.

No matter how many you got right, you probably don't like wasting 50% of anything. So if you'd like to make sure you're not paying for a lot of hot (and expensive) air, here are four strategies to consider:

- analyze your compressed air system
- minimize leaks
- consider alternatives for low-pressure uses
- reverse engineer existing equipment

Let's look at each one briefly, in kind of a Cliff Notes fashion.

Step 1: Analyze your compressed air system

What are your plant's air **quality** and **quantity** needs? What are the **pressure** and **demand** load requirements? All four are important to know. Air quality is the dryness and contaminant level allowed for reliable production; over treating wastes energy and money.

Next, add up the quantity needs for all compressed air applications and process operation, including durations for specific volumes. The **total air required** is not the sum of maximum requirements for each process or tool, but the sum of the average air consumption for each.

Next, what are the **minimum discharge pressure** needs? Take into account different pressure ratings for air applications and processes, including pressure drops from components in the system.

Finally, what is your plant's compressed air need over time, or **load profile**? Variations in demand over time are a major consideration. Wide variations means you need a system that runs efficiently under part-load. Multiple compressors with sequencing controls might be more economical for you. Plants with a flatter load profiles can work with simpler control strategies.

Step 2: Minimize air leaks

More than just costing money, **leaks can also lead to problems** such as:
-**fluctuations** in system pressure that can cause air tools and other equipment to operate less efficiently
-**excess** compressor capacity, another higher than necessary cost
-**decreased service** life and more maintenance for air supply equipment from unneeded cycling and longer run time

Leaks can occur anywhere, but likeliest suspects are couplings, hoses, tubes, fittings, pipe joints, quick disconnects, FRLs (filter, regulator, lubricator),

condensate traps, valves, flanges... and more.

What's the best way to detect leaks? An **ultrasonic acoustic detector**, which beats the old soapy water trick any day.

Step 3: Consider low pressure alternatives

Compressed air is clean, available, and easy to use, so it's often used for jobs that could be done much more economically. Consider a few **alternatives to using compressed air** in low-pressure uses, to save substantially, such as:

· Parts **cleaning**: low-pressure **blowers**, **brooms**, electric **fans**, and high-efficiency **nozzles** are more efficient than using compressed air

· Open **blowing & mixing**: using compressed air here is a waste; consider a **blower or fan** instead, or if higher pressure is needed, a high efficiency nozzle could be used. Mechanical methods of mixing usually used less energy than compressed air.

There are other less-costly alternatives to compressed, which an evaluation of the system can spot.

Step 4: Reverse engineer existing equipment

For existing compressed air systems, reverse engineering can often reduce consumption and efficiency:

· diaphragm pumps, air knives, and venturi-type vacuum generators and other air consuming equipment often benefit from proper **control and regulation of devices**; something as simple as sensing circuits that turn the air off when the machine is idle or parts are not present can deliver big savings

· **minimize pressure drop** by making sure you have the proper size supply lines and connections from the main header to the inlet of the equipment

· another must: **proper size components** for treating air, such as filter, regulators, and lubricators at the machine inlet

This isn't just hot air!

If you'd like more information about managing your compressed air system more effectively and efficiently, call us or drop us an email. ProBusS will give any reader of this newsletter a **free walk-thru of your plant's compressed air system**, one hour max, at no charge.

Compressed air doesn't have to be nearly as expensive as some plants make it. Once you've taken a few steps, you can lower the cost of your compressed air, reduce downtime, and have more time for

other things, like this funny compressed air video. Run time is about one minute. Enjoy!