

Addressing Compressed Air Equipment Emergencies in Industrial Operations

By Hunter Neblett, General Manager, Fluid Flow Products

When the unexpected happens, the clock is ticking and cost is a concern, rental services are the best option for keeping operations running.



Introduction

In modern industrial applications, all manufacturing sites use compressed air as a utility. In fact, compressed air is such a universal and essential element in the facilitation of industrial processes that manufacturers consider it to be the fourth utility alongside electricity, natural gas and water.

There are many uses for compressed air in industrial applications, including running maintenance tools and HVAC systems. The most common and perhaps important use is to automate the operation of pneumatic actuators in

industries such as power generation, oil and gas, chemical and petrochemical, and food and beverage. Actuators use compressed air as a safe power source to open and close valves that control and regulate the flow of crucial fluids throughout a manufacturing process.

Because of the widespread use of actuators in a variety of industries, experts predict a significant increase in the demand for these devices in the coming years.

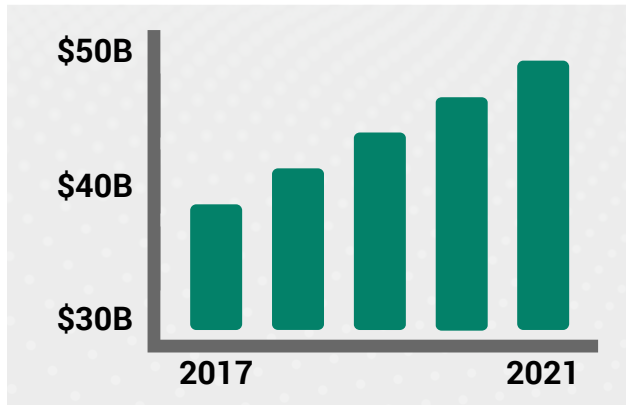
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According to recent research reports:



- **The global market for all “conventional” actuators (pneumatic, hydraulic and electric) is expected to grow from an estimated \$38.80 billion USD in 2017 to an estimated \$49.28 billion USD by 2022, at a compound annual growth rate (CAGR) of 4.90%. Source: marketsandmarkets.com**
- **Industry analysts expect the global pneumatic actuator market to grow at a CAGR of 4.04% during the period 2017-2021. Source: businesswire.com**
- **In terms of geographic regions, the Americas will be the major revenue contributor of the pneumatic actuator market throughout the 2017-2021 forecast period. The modernization of facilities and technologies in oil and gas exploration, the thriving shale oil market in the U.S. and massive oil sand deposits in Canada will drive the rising demand for pneumatic actuators in this region. Source: Technavio**

This data makes it reasonable to expect a similar increase in the demand for compressed air equipment including desiccant air dryers to remove moisture from compressed air. Some of this demand will be the result of manufacturers purchasing the equipment for permanent installation in their production facilities. At some point, every manufacturer makes the decision to invest part of their capital budget in a compressed air system. This is due to a number of factors, including:

- An expectation of a 20-30-year life cycle for the equipment.

- A desire to control how the equipment is built with regard to any custom functionality that might be required.
- A need to adhere to corporate standards for reliability.

The Challenge

In some cases, purchasing fixed equipment is not a feasible solution to the continued need for compressed air. That's why every manufacturer that owns compressed air equipment also occasionally rents compressed air equipment. In this white paper, we address the five most common challenges that cause an industrial manufacturing plant to suddenly require a compressor and/or desiccant air dryer system – and why renting the equipment is a better business decision.



1. Unexpected equipment failure

Without question, this is the primary reason why a manufacturer would urgently need a replacement compressed air system. Equipment downtime is rarely planned, is frequently an emergency, and is often a result of not adhering to a recommended maintenance schedule. Some manufacturers have backup systems in place, but many more do not, largely because capital funds can be difficult to secure (we will address this next). Of course, production needs don't cease to exist when equipment shuts down. Keeping the operation running by purchasing a replacement system is a prohibitive approach due to the time and money involved (30 weeks or more to install new machinery, plus installation costs that can be four times as much as the equipment itself).



2. Capital budget constraints

Nothing puts a strain on a manufacturing plant's already-limited budget for capital equipment quite like a system failure. Even in an ideal financial situation, companies rarely authorize every expenditure that comes across the decision-maker's desk. When that expenditure comes with such significant installation costs, it becomes far less likely that the purchase of new compressed air equipment or desiccant air dryers will be approved.

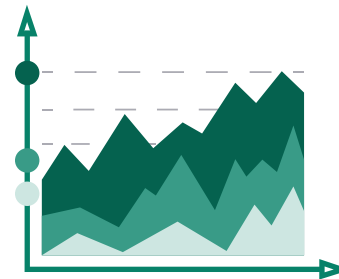


3. Scheduled maintenance

The vast majority of manufacturers rent compressed air equipment because of an unexpected failure in their existing equipment. In the wake of such a situation, some of those manufacturers will improve their planned preventative maintenance procedures. Doing so can reduce downtime, but it still requires equipment to be offline for a period of time while Technicians conduct performance checks and complete any necessary repairs or upgrades.

4. Productivity optimization

Occasionally a manufacturer will recognize an opportunity to maximize or increase production with a new or upgraded compressed air system. Often, these windows of opportunity are small, and waiting more than six months for an equipment installation isn't an option. Additionally, production levels could benefit from an expansion of the plant itself or other maintenance work to the existing facility. These types of initiatives require additional compressed air capacity to run jackhammers, impact wrenches and other construction tools. Drawing on an existing compressed air system could compromise production levels.



5. Spikes in demand

Ambient conditions such as seasonal changes in the weather can suddenly increase the need for compressed air in industrial processing and manufacturing facilities. For example, many chemical companies that use compressed air as part of their process have a reduced need for additional cooling air during winter months or additional combustion air during summer months. However, if ambient temperatures suddenly become unseasonably warm or cold, compressed air usage can change accordingly and existing systems can have difficulty keeping up with demand.

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The Solution

When an industrial manufacturing facility faces any or all of the five primary challenges associated with procuring a compressed air system, a rental solution makes the most sense in the majority of cases. Rental equipment service providers offer same-week (and in many cases, same-day) delivery, with installation as simple as confirming the correct electrical connections, fitting sizes and tie-in points. Responsibility for having those elements in place lies with the customer, but experienced providers will ask the necessary questions prior to delivery to ensure that they arrive with a functional solution for any specific application.

Rental compressed air systems and desiccant air dryers are modular, extremely flexible and designed to be up and running quickly. If available floor space is at a premium or is non-existent, most rental equipment is suitable for outdoor installation and only requires additional hose length to connect to the system indoors. Compared to the price of implementing a permanent compressed air solution, the installation costs associated with rental equipment are minimal. The actual rental costs typically do not come out of a company's capital budget, which provides a built-in workaround if that budget is limited. Facilities can rely on rental equipment for days or years depending on when existing systems can be repaired or capital funds are authorized for a replacement unit.

The most important differentiators between available rental equipment options are the ability to deliver 100% oil-free air and modulate air flow.

Eliminating oil from compressed air allows facilities to comply with ISO 8573-1 and other environmental mandates while also helping them avoid contaminating their final product as well as their process systems. Oil-flooded rotary screw compressors can deposit the lubricant on the desiccant in the air dryers as well as the instrumentation and valves that are actuated by the compressed air, which can cause failures to all of these downstream components. This concern does not exist in oil-free rental systems. Modulating (or throttling) controls on the compressor's inlet valve allow the operator to vary the unit's output depending on flow requirements for maximum efficiency and energy savings. Very few rental services provide equipment with

these critical, cost-saving features, so it is important to inquire about oil-free operation and inlet valve modulation up front to ensure the implementation of the best possible solution.

Conclusion

Because all industrial manufacturers use compressed air in their processes, they are all well aware of the challenges related to acquiring compressed air systems and desiccant air dryers – especially when the need for replacement or backup equipment is unexpected. A company that offers comprehensive compressed air rental services can help manufacturing facilities avoid costly process interruptions and the considerable capital expense of purchasing and installing equipment.

The ideal partner will offer unmatched compressed air and fluid processing expertise as well as a dedication to delivering state-of-the-art engineered systems for short and long-term rental and rent-to-own requirements. Choosing rental equipment that is designed for ease in transportation, installation, commissioning and operation can significantly reduce the stress and downtime associated with an unexpected compressed air equipment issue.

About the Author:

Hunter Neblett is General Manager for Fluid Flow Products. He has more than 20 years of experience in the sales and service of compressed air systems, desiccant air dryers and other engineered equipment. He holds a MARA degree in Business Administration from Texas A&M University at Galveston.

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