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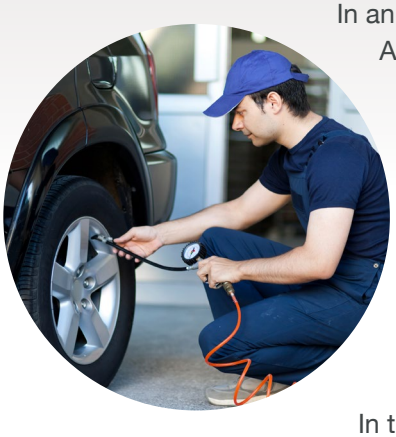
COMPRESSED AIR SINCE 1919

ROTARY VANE AIR COMPRESSORS: THE FUTURE IS NOW

Why are rotary vane compressors the leading solution for today's automotive service industry?

In the automotive service industry, compressed air is an absolute necessity. In body shops, air compressors are utilized constantly for spray painting, grinding, welding and cleaning surfaces—while automotive repair facilities require air to power a variety of tools, impact guns and tire machines.



In an industry that relies so heavily on compressed air, a faulty compressor is a serious issue. An inefficient or unreliable air supply impedes employees' work, and fixing the problem often requires the company to incur time-consuming and costly maintenance services. Furthermore, a poorly operating compressor can easily send energy bills through the roof.

Today, an increasing number of automotive body and repair shops have found that rotary vane air compressors are the solution to these issues. Although piston compressors have historically been the most widely used system, rotary vane air compressors have made significant gains within this particular industry.

In this eBook, we will review the differences between piston and vanes—and why rotary vane systems are today's leading solution for the automotive sector.

The Old Guard: Piston-Powered Compressors

The traditional way of supplying air throughout auto repair and body shops was with piston compressors. These machines are typically less expensive to purchase up-front than other compressors, which lead to their status as the "industry standard." Waiting for an air compressor to "kick-in" was an understood practice, as pistons had to work up to a pressure, shut off, then build that pressure back up again once the pressure in the tanks went down.

However, as manufacturers sought to lower costs, they made the size of the piston pumps smaller and less robust. While manufacturers may have assumed these changes would have little impact on the machine, in reality, they significantly altered the product.

"We've seen the quality of piston compressors really decrease," said Ennis Mobley, President of Automotive & Industrial (A&I) Sales Associates, Inc.

Located in Powder Springs, Georgia, A&I Sales specializes in assisting the automotive service industry with the selection, placement, and proper operation of air compressors. Having worked with all types of compressors for nearly 30 years at A&I, Mobley has experienced firsthand the change in pistons.

> **"Today's pistons have pumps running at a much higher speed, and these compressors are not designed to run as hard or as fast as how they're being used," he explained. "Because of this, we're commonly seeing the valves and pumps fail much earlier. The crankshafts are also breaking because the pumps are so overworked."**

Mobley said that the noise is another drawback to pistons: "We can install a rotary vane compressor in an automotive shop or parts room where employees are working but we can't do this with a piston compressor. They're just too loud."

The New Trend: Rotary Vane Compressors

Rotary vane compressors are the quiet workhorses that leading automotive facilities covet for their durability, reliability and energy efficiency. A vane offers the competitive edge companies need in order to enhance workplace productivity and quality, improve profitability and maximize operational efficiencies.

Not only can vanes operate intermittently to meet the needs of auto repair shops, they can also run flat-out, non-stop to readily meet the demands of high output collision repair shops. Designed for the 24-hour demands of industrial facilities, today's leading automotive repair and body shops enjoy the benefits of a rotary vane compressor engineered to be customers' first—and last—compressor.

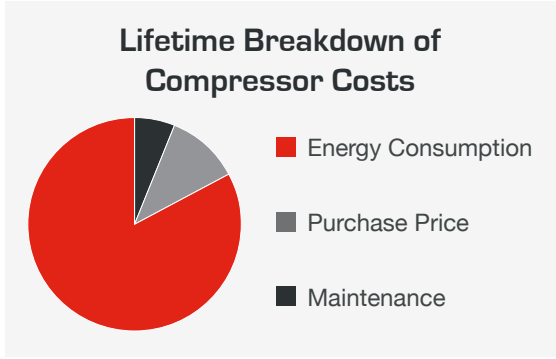
"The dependability of rotary vane compressors versus piston is incomparable," said Mobley. "We have one of our accounts switching all of their automotive facilities from pistons to vanes."

Rotary Vane Compressors: A Legitimate Cost Savings Among Other Benefits

ENERGY EFFICIENCY

Over the service life of an air compressor, 83% of total air compressor costs are related to energy usage. In comparison, purchase price only reflects 11% of the total cost of ownership and maintenance only represents 6%. With this in mind, when choosing an air compressor, **a system's energy consumption should be a primary concern.**

In order to get the most value for your operating budget, you want a system that delivers more air for less energy—which is exactly what a rotary vane system offers. The advanced design of rotary vane compressors creates a near-perfect airtight seal in the rotor stator unit, which enhances volumetric efficiency and reduces the amount of energy required to deliver the air. This means vane compressors can achieve mechanical efficiencies of up to 90%.



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DUTY CYCLE

The duty cycle of a compressor is the maximum recommended percentage of time it should be compressing air before unloading or shutting down to prevent overheating, component wear, and oil carbonization and breakdown. When sized properly, a typical piston compressor has a duty cycle of 50% and no-more-than 70% to ensure the pump runs cool and to prevent valve problems and premature wear to the compressor pump.

This means that to ensure reasonable service life, consumers must size a piston compressor to produce double the amount of cfm they need lest they overwork themselves and need replacement in a couple of years.

In contrast, a rotary vane compressor can run at 100% of its rated capacity for hours on end without any harm or damage to the vane airend. A properly sized rotary vane compressor often affords the user the ability to select a compressor one size smaller than a piston style compressor. This saves them not only the purchase price of the equipment, but where the big money is - on the cost of electric power to run the compressor.

In addition, Mattei's exclusive rotary vane technology is designed to operate quietly for many years of service which lends itself to a significantly longer lifespan than that of today's piston compressors.

OPERATING TEMPERATURES

With any industrial process, heat is wasted energy. However, advancements in rotary vane technology have translated to lower operating temperatures, thereby yielding more efficient results. In the auto repair and auto body industries, reduced operating temperatures are especially critical, as high discharge temperatures create moisture levels that can damage costly equipment, such as spray booths and pneumatic tools. Rotary compressors have an average operating temperature somewhere between 170°F to 200°F, whereas piston units can run as high as 400°F. Additionally, rotary vane compressors integrate an air-cooled aftercooler that removes 65% of the condensable moisture to deliver drier air to your system.

AIR QUALITY

Rotary vane compressors integrate high-efficiency filtration to ensure as little as 1 - 3 ppm of oil carryover enters the air system to prevent contamination of equipment or processes. Traditional piston compressors can pass 25 ppm or more, particularly if they run unloaded for periods of time. Rotary vane compressors are valued for their reliable delivery of high-quality air which keeps everything downstream running better and longer, especially when painting.

LIFE EXPECTANCY

Rotary vane compressors are designed to operate for up to 100,000 hours—and it is not uncommon for the systems to exceed this timeframe. Simply put, these systems are built to last. Rotary vane system longevity is greatly enhanced by their low operating speeds and proprietary airends. While piston compressors may be the cheaper option initially, they do not possess the same long-term durability that rotary vanes provide. The extensive life expectancy of rotary vane compressors means when you decide it's time to transition away from your business, you'll most likely pass your rotary vane onto the next owner. Yes, they last that long, which is a key factor when considering the total cost of ownership.

Get Your Last Air Compressor First

With the advent of the rotary vane technology, there is every reason for auto repair shops to replace their “old school” pistons with a rotary vane compressor.

“Automotive shops can’t afford to be without air,” said Mobley. “They can’t generate revenue without air. An air compressor is one of the most important investments for their business.”

A rotary vane compressor is a modest investment with invaluable ROI. Remember, for every dollar spent on compressed air, 83 cents will be used for energy costs and 6 cents will be used for maintenance costs. Purchase price is a mere 11 cents. That is why, at Mattei, we are constantly working to help auto professionals reduce their cost of operation while also keeping upfront costs competitive with piston compressors.

The BLADE: Your Ultimate Solution with a Duplex

Mattei’s BLADE Series is the ideal solution for small- to medium-sized automotive repair and body shops. The BLADE combines a simple design, dependable components, and slow operating speeds (from 1,050 to 2,332 rpm) to supply consistent air pressure and quality for any application.

Low Operating Costs: The BLADE provides constant clean air while consuming up to 20% less energy than competitors’ compressors.

Inherently Quiet: The BLADE Series is housed in a powder coated steel cabinet, and with speeds as low as 1,050 rpm, it delivers sound levels as low as 61 dB(A). This not only makes the workplace more pleasant but eliminates the the health and safety risk of a piston compressor operating at 70 dB(A) and higher.

Duplex With Networked Controls: The BLADE Series is available in many package configurations including the Duplex that is so popular among automotive applications. The BLADE Duplex comes standard with internal networking, that manages the two compressors to maintain equal hours of operation.

Simple, Reliable Controls: The BLADE also contains our MAESTRO XB microprocessor-based controller with both Automatic and Continuous operating modes, to satisfy all users’ compressed air requirements. The Automatic mode is designed for shops with fluctuating air demands, and can start and stop the motor to match intermittent air demands. The Continuous mode allows the compressor to run constantly and consistently for applications with heavy air demands. These control modes allow the BLADE to better adapt to the demands of each unique system.

Contact Mattei to Learn More

A rotary vane air compressor from Mattei will likely be the last compressor you’ll ever need to buy. **Contact Mattei today** today to learn more about our BLADE Series and our other superior compressed air solutions to ensure you get a clean, dry supply of compressed air to your shop.