



# ROTARY VANE COMPRESSORS: FACT VS. FICTION

Air compressors are among the most popular industrial machines used today. Offering versatility and efficiency throughout a countless number of diverse applications, air compressors have long since proven to be dependable workhorses. However, there are several varieties of compressors available and it is vital that you select the best option for your unique application.

Industry professionals gravitate toward two main systems: rotary vane and rotary screw compressors. These compressors incorporate similar components—oil tanks and coolers, thermal bypass and minimum pressure valves, mechanisms for controlling air volume—but the similarities end there.

Comparing the two technologies side-by-side, rotary vane compressors offer superior performance, enhanced efficiency and unmatched resiliency, among a number of other benefits. However, there are several common misconceptions about rotary vanes that may discourage buyers from purchasing these systems. To provide a clearer understanding of rotary vanes, Mattei's air compression specialists are addressing these misconceptions head on.

# 1

**FICTION:** The vanes of these compressors must be replaced frequently.

**FACT:** Mattei's vanes and stators are both made from a proprietary cast iron blend, designed to significantly enhance resistance to wear. Because of this, our vanes have infinite life and never require replacement.

# 2

**FICTION:** Several springs are used to push out the vanes.

**FACT:** Rotary vane compressors don't use springs at all. Instead, these compressors use centrifugal force to push the vanes against the wall of the cylinder, where the oil ensures there is no metal-to-metal contact. As the vanes rotate, they are propelled outward, thus creating the individual compression volumes within the compressor.

# 3

**FICTION:** Rotary vane compressors consume large amounts of energy.

**FACT:** These compressors offer some of the finest energy efficiency available today. The rotary vane design produces compression that is highly volumetrically efficient; this is due to substantially fewer opportunities for air leakage in the stator unit towards the compression intake; there is no blow-hole as there is in traditional screw compressor systems. The stator of the rotary vane compressor maintains its load balance as pressure stays equal along the rotor's length—this provides 90% mechanical efficiency, enabling much less energy consumption than rotary screw compressors.

## 4

**FICTION:** Rotary vane compressors are prone to wear and need constant maintenance.

**FACT:** Rotary vane compressors use a direct-drive design, meaning these units will not have to contend with any thrust forces. Due to this fact, vane compressors use oil-lubricated hydrodynamic bush bearings instead of ball or roller bearings (found in rotary screw compressors). If proper lubrication is maintained, these bush bearings never wear out, thus eliminating the highly expensive compressor overhaul associated with screw compressors that use ball and thrust bearings.

## 5

**FICTION:** To operate efficiently, rotary vane compressors must run at high speeds.

**FACT:** Screw compressors need to operate at high rotational speeds, but the same is not true of vane compressors. At the relatively low speed of 1,500 RPM, vane compressors are able to adeptly minimize mechanical losses due to power transmission and friction. Generally speaking, the slower a compressor runs, the higher the performance output.

## 6

**FICTION:** Rotary vane compressors consume large quantities of oil.

**FACT:** Rotary vane compressors contain state-of-the-art air-oil separation systems. These three-stage separation systems (stage one and two mechanical, stage three coalescing) are built into all rotary vane compressors, leading to industry-beating oil carryovers of between 0.5ppm and 3ppm.

Before deciding on an air compressor, it's important to understand the facts. Mattei has been a leading compressor manufacturer for more than 95 years, the last 60 of which have been dedicated to developing the most extensive range of industrial rotary vane compressors in the world. Our innovative rotary vane design can meet all the economic, durability, and energy efficiency needs of your application.

For more information on our products, please [visit our website](#) or [contact us today](#).