

## **TECHNICAL BULLETIN #28**

### **Advantages of Rotary Positive Displacement Blowers Versus Centrifugal Blowers**

Centrifugal blowers are generally more expensive than positive displacement blowers.

Centrifugal blowers operate at high speeds (up to 30,000 RPM) and, as such, rely heavily on instrumentation which monitor many conditions to protect against unfavorable operating conditions.

If such instrumentation fails, or is not utilized, a centrifugal blower will often fail to the point that replacement is the only repair alternative.

A positive displacement blower will provide definite warnings prior to failure allowing the user to remove the unit from service prior to the occurrence of major damage.

Positive displacement blowers deliver a generally fixed volume with varying inlet and/or discharge pressures. The throughput of a centrifugal blower can vary significantly with only minor changes in inlet or discharge pressure.

In most cases, usually 250 HP (185 kW) and below, positive displacement blowers operate more efficiently than centrifugal blowers. Always compare power consumption vs. delivered volume at operating and off operating points.

The internals of a centrifugal blower must be kept scrupulously clean at all times. By contrast, a positive displacement blower is less sensitive to fine material passing through the machine.

Centrifugal blowers do not operate well in high vacuum applications (<0.5 ATM) and cannot be used as vacuum boosters.

Similarly, centrifugal blowers do not operate with good repeatability of process when handling low density gases such as helium.

Positive displacement blowers are available with gas-tight mechanical seals, generally avoiding the need for seal purge gas. Centrifugal blowers, due to their inherently high rotative speeds, cannot utilize mechanical seals, and seal areas of units handling gas must be purged resulting in more maintenance costs.

Centrifugal blowers cannot tolerate liquid presence in the gas stream and as such, are never deliberately liquid injected. Positive displacement blowers can be specifically designed for liquid injection to increase performance and/or volumetric efficiency.

Positive displacement blowers can generally be repaired or overhauled in the field by competent mechanics with basic tools. Repair or overhaul of centrifugal blowers generally requires sophisticated equipment and specialized technicians.