A Clean Case For Regenerative Blowers

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Regenerative blower technology as a solution to reduce energy and maintenance costs, improve productivity and “go green”.

Pressures remain high for plants to reduce energy and maintenance costs, improve productivity and “go green”. In response to these needs, some have looked to regenerative blower technology as a solution. Interest in these products has also been heightened due to the higher costs and increased maintenance associated with traditional air-displacement blowers and compressors. Regenerative blowers can be used to agitate solutions, convey parts and products, perform vacuum hold-down and pick-up operations, dry and clean parts, or handle process and off gases. So if you’re considering their use, here are some basic regenerative technology principles to consider.

Form & Function

Let’s start with some basics on how regenerative blowers work. First, air or other gases are drawn in by impeller blades passing an inlet port. These blades then accelerate the air in an outward and forward direction using centrifugal action. This air is then turned back, or regenerated, by the blower’s annular-shaped housing to the base of following blades. Here it is again projected outward.

Each regeneration imparts more pressure to the air. When the air reaches a stripper section at the outlet, it is stripped from the impeller and diverted out the blower. The stripper section is located between the inlet and the outlet where the annulus is

reduced in size to fit closely to the sides and tips of the impeller blades.

Some of the advantages regenerative blower users have seen include:

- Pressures and vacuums equal to those obtained from larger multi-stage or positive displacement blowers.
- A more efficient design that allows for less energy waste.
- Fewer moving parts that translate to less wear, tear, maintenance and downtime, as well as greater reliability.
- The supply of clean air that's free of oil, excess moisture and other compressor-induced contaminants.

The Choice Is Yours

In general, when selecting a regenerative blower for a system, the blower's pressure-flow curve should initially be one of the first criteria evaluated and compared. Regenerative blowers can typically achieve flows of up to 1,800 SCFM, pressures up to 264 IWG and vacuums up to 13.4 in. Hg., depending on the style. Once flow and pressure requirements are satisfied, then other factors can be considered to help marry the right blower to the right application.

Basic influences in blower selection will also include:

- The size needed for a particular application.
- Noise levels, with less being better in complying with OSHA standards.
- Composition or construction that will stand-up to use in industrial conditions.
- Specialized surface treatments. Some proprietary surface-conversion processes enable blowers to withstand corrosive environments. This process might combine the advantages of anodizing, hardcoat plating, low-friction polymers and dry lubricants to become an integral part of the blower's molecular structure. It essentially creates a plastic/ceramic surface that is resistant to damage from chemicals.
- Specialized gas-leakage seals that can be either lip seals or a pair of face carbon seals. For some blower styles, a series of hermetically sealed O-rings can achieve complete containment.
- Dedicated components like custom filtration, air-flow measurement and system protection devices offer additional functionality.

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