High Volume-Low Pressure Regenerative Blowers

Regenerative Blowers are used in many industrial applications, from powder aeration, forced air conveying, and powder transfer to the vacuuming of dust, powders and gases.

Regenerative Blowers are an important alternative to high pressure compressed air when used for aeration. One major benefit of a High Volume – Low Pressure Blower is the consistent delivery of clean, dry air at a high volume without robbing your compressed air system allowing your plant sufficient high pressure to operate properly.

In a regenerative blower, the compression space consists of a hollow, curricular ring between the tips of the impeller blades and the walls of the housing.

In operation, the rotating impeller draws in air from the inlet port into the compression space and moves it radially outward to the curved housing by centrifugal force. This action is called "regenerative" because a certain amount of air slips past each impeller blade during rotation and returns to the base of a succeeding blade for reacceleration.

Because of this dynamic principle, regenerative blowers can generate pressure and vacuum performance comparable to many multi-stage or positive displacement blowers.

System Tips:

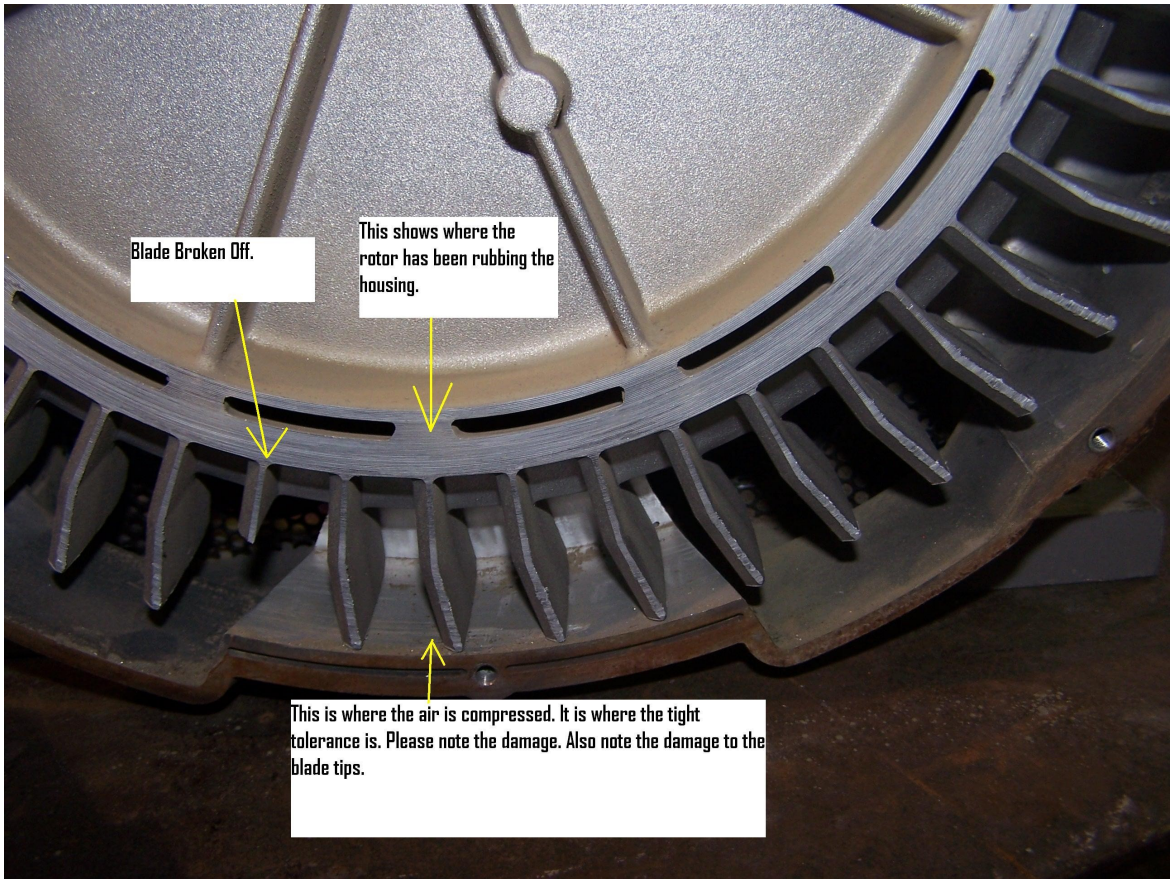
In order to utilize your blower most efficiently, proper system design is essential. The most important thing to recognize is that by utilizing large diameter plumbing, friction losses in plumbing can be greatly reduced. The plumbing should at least be the size as the blower port or ideally one size larger (example – blower has ports that are 1-1/2" NPT, plumbling should be 2" NPT). The plumbing should remain this size until it has reached the location of the work area. Elbows create additional friction which causes pressure loss and back pressure. ***Back pressure generates heat which can cause premature blower failure!!***

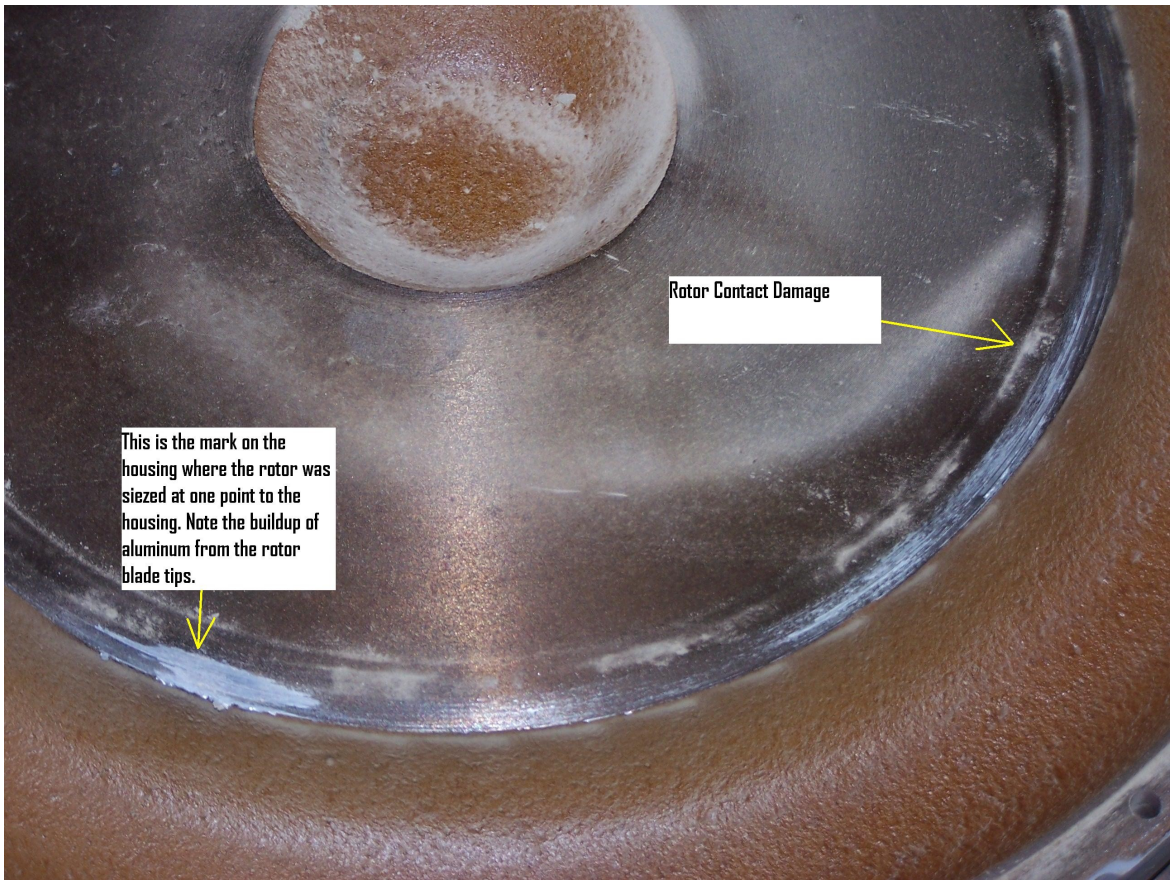
Three major enemies of a Low-Pressure Blower are dust/debris, water, and heat.

- Always be sure that the correct inlet air filter is used. Typically a fine micron filter with a weather cover is used outdoors to protect against dust and water infiltration.
- Aside from the blower inlet, you must also periodically check the equipment that you are supplying air to. For example, aeration pads or air slide media cloth may become plugged. This will cause the blower to work harder against itself and generate excessive heat.
- It is also recommended that a pressure relief valve be installed on the blower so that in the event that there is a problem somewhere down the line, such as clogged air pads, the blower can release excessive pressure, reducing the risk of overheating and blower failure.

- The typical procedure for blower operation is to run them for a short period each morning to fluff material in the silos and also run them while unloading silos. Setting a blower to run manually all day long can result in excess heat buildup and impellor warping.

<u>Following is an Example of a Premature Blower Failure:</u>
In this case, a blower was applied as an aeration system. The aeration pads in the distribution system became plugged which, in turn, caused back pressure in the compression chamber. With the air pads clogged, the blower built up a tremendous amount of heat which caused the cast aluminum impellors to slightly warp and hit the housing. The gap between the aluminum impellor and the housing is approximately .002". The heat buildup resulted in a loud grinding noise caused by the warped impellors hitting the housing, followed by a broken impellor, and finally the blower locked up and failed.




Rotor Contact Damage
This is the mark on the housing where the rotor was siezed at one point to the housing. Note the buildup of aluminum from the rotor blade tips.