TECHNICAL RULES OF THUMB FOR OPTIMAL BLOWER DESIGN & OPERATION

Pressure Systems

For pressure systems, the following rules of thumb govern a robust design:

1. Design pressures should be kept within 10 PSIG to allow for any operational system freeboard pressure below the mechanical pressure relief valves setting.
2. Rotary airlocks should operate at or below 22 RPM and should always be vented, (an absolute for fine powders); else you may see a decrease in the valves fill efficiency that will reduce the conveying rate of the system.
3. During operation, provide a short ramp up period at the beginning of every cycle before dispensing material into the convey lines to normalize airflow.

Vacuum Systems

Likewise, for vacuum systems:

4. Vacuum pressures should be kept within 11 in. Hg
5. Vacuum receivers should be fitted with self-venting vacuum sequencing valves
6. Power unit should have a vacuum breaker valve assembly and a properly-sized in-line central filter

All Blower Systems

7. Blowers should operate within 80% of the rated maximum rated RPM. This ensures an adequate bearing and seal life, as well as provides some heat / metal expansion freeboard for times when the air inlet temperature exceeds the maximum initial design temperature.
8. Before start-up of any “PD” blower unit always check the seals for leakage, and make sure that the units oil level is at the manufacturer’s specified oil level.
9. Always check the belt drive system for adequate design, and for proper assembly before startup.

In essence, if you’re operating at or near the limit recommended by the manufacturer, you’re asking for trouble. When sized with a reasonable factor of safety for operating conditions of today and the foreseeable future, the added investment to correctly sized blower will pale in comparison to the maintenance and operation headaches you’ll prevent.

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