What preventive maintenance steps can we follow to keep our dust collector operating efficiently?

Once a dust collector is properly installed and adjusted, it generally requires little maintenance. Inspect each unit at 3-month intervals as follows:

- Note and record the differential pressure gauge reading in the unit. If you have a severe application or heavy dust loading, the unit may require more frequent checks (weekly or daily).
- Empty the dust trap on the dirty-air pressure line. If your dust collector doesn’t have a dust trap, invest in one. It will help keep the differential pressure line free of dust to maintain accurate pressure readings.
- Check the pulse-jet cleaning system’s air supply for cleanliness and moisture. Drain any accumulated moisture from the manifold tank.
- Check the air-pressure gauge reading at the manifold. The system must recover to 90 to 100 psig between pulses.
- Check the air valves for sequential operation. Change any solenoids or repair any valves that don’t fire.
- Check the unit’s access door and any covers for leaks and replace gaskets if necessary.
- Refer to the unit’s operation and maintenance manual for filter replacement and any troubleshooting issues. If you don’t have a manual, contact your dust collector supplier for a copy and keep an extra copy on file.

Brian Mathews, engineering manager, Scientific Dust Collectors, 708-597-7090

One important pulse-jet dust collector preventive maintenance task is performing scheduled diaphragm-valve repairs.

As a moving part, a valve diaphragm can become worn, lose its seal, and begin to leak. This eventually reduces the unit’s cleaning effectiveness. Operators or maintenance personnel often try to offset the valve’s increasing inefficiency by adjusting the unit’s timer boards to clean the filters more frequently. This uses more compressed air, which can become costly.

The better solution is to purchase an inexpensive diaphragm-valve seal kit. Properly operating diaphragms provide more efficient filter cleaning and help to keep operating costs down by using less compressed air.

Sales team, Wm. W. Meyer & Sons, 847-918-0111

Verify that the dust collection system’s dampers are properly positioned and that the pulse-cleaning valves and systems are functioning properly. Check the differential pressure to make sure it hasn’t exceeded the manufacturer’s recommended limit. Check the compressed-air pressure and purge the compressed-air header while looking for signs of moisture. If you’re located in a cold climate, make sure that your compressed air has a dew point that’s below the lowest temperature your equipment will be exposed to. Installing an integrated control panel on your dust collector to monitor key functions and alert you when critical setpoints are reached can help to ensure that preventive maintenance is performed when needed.

If you’re conducting preventive inspections and basic maintenance but your system is still not performing efficiently, most likely the collector is undersized or inadequately designed for your process’s dust challenges. Bring in an air pollution control supplier with application expertise who is knowledgeable about OSHA, NFPA, and EPA requirements and who has dust testing capability and other technical resources to develop an engineered solution to the problem.

Matt Caulfield, director or sales, USA and Canada, Camfil Air Pollution Control, 800-479-6801

A n effective preventive maintenance program involves checking certain dust collection system elements on a regular basis, replacing any defective elements, and taking preemptive remedial action if the operation is different from the design conditions. Maintain daily, weekly, and monthly inspection logs as recommended in the dust collector supplier’s instruction manual.

**Daily:**

- Check for any unusual sounds or vibrations coming from rotating equipment or compressed-air valves.
- Check the differential pressure across the dust collector.
- Check the bag-cleaning mechanism and cleaning frequency settings.
- Check the exhaust stack for visible dust emissions.
- Check for dust deposits by tapping at strategic locations.

**Weekly:**

- Inspect filter cleaning components, dust collector doors, gaskets, fan housing, and pulley belts.

**Quarterly, semi-annually, or annually:**

- Inspect the filter bags or cartridges, the tube sheet, and the clamping attachment in the plenum.
- Take out and recalibrate any powder detection instruments, level probes on the hopper, emissions measurement devices, and broken bag detectors.
- Ensure that qualified technicians inspect and test the explosion protection systems (explosion vents, flame suppression systems) as recommend by NFPA 68 and 69.

For additional operation and maintenance information you can refer to *OSHA Technical Manual* Section III, Chapter 3 and Industrial Ventilation: A Manual of Recommended Practice for Operation and Maintenance, ACGIH, 2007.

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