

There's not enough airflow at our dust collection system's capture hoods. What could be behind this?

Assuming the system worked well when it was new, an overriding factor is whether the problem appeared gradually or very quickly.

If the performance loss occurred gradually, which is most common, check the following items (in order of most likely to least likely):

- The filter media (bags or cartridges) are dirty and need to be replaced. Most dust collectors have a differential pressure gauge that will show an increased value as the media collects dust.
- The autocleaning system could be malfunctioning. You should hear the compressed air pulse at even intervals. If not, make sure the compressed air is on at the collector and check for pressure in the manifold. Also check if there's electrical power to the timer and solenoid valves. If you still don't hear pulsing, the timer is bad. If the pulses aren't evenly spaced, the solenoid or diaphragm valve or valves are bad.
- The system dampers may have been adjusted, affecting the whole system. Check to make sure they're in the original position.
- The belt-drive exhaust fan's vee belts may have slipped. Also, if the belts and sheaves are polished, they should all be replaced.

Many factors can cause a lack of suction at a pickup point. Some of the most common problems we run into are:

- Dirty or blinded dust bags
- Too many bends from long ductwork
- Wrong filter media for the application
- Undersized fan or motor
- Too many pickup points with not enough blast gates
- Holes or cracks in the ductwork

We usually start with the collector itself and then expand to the pickup points until we figure out the problem.

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- Bridging in the hopper or a malfunctioning discharge device such as a rotary valve can prevent dust from being removed from the collector hopper. This will cause the dust to re-enter the collector and build up on the filter media.
- The ductwork has a settled dust buildup partially plugging it.
- The discharge air duct's bird screen has gradually built up with material from leaking bags, causing discharge-air back pressure, thereby robbing airflow from the system's suction side.

If the performance loss happened very quickly, check the following:

- The fan's variable-frequency drive speed control has been changed inadvertently.
- The fan's motor or starter has been replaced and it's running backwards.
- The system's ductwork has been damaged and has a major leak.
- The fan's discharge damper has been closed.

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There could be several causes. If it's a brand new system, it might not have been correctly designed and sized to provide adequate airflow for all the capture hoods. Another possibility is that the system hasn't been properly balanced. If you're getting strong airflow at some hoods but not all, then the system needs to be balanced.

If it's an older system that previously worked well, something has changed. Balance can be a problem with an older system as well. *Balance by design* takes into account the required airflow and static pressure (that is, the energy to pull the air through the system). Balance by design normally doesn't use blast gates, and unless someone has added more drops or hoods to the system since it was designed, it should still be balanced. If there are blast gates at each hood, they may have been reset, which can upset the system balance.

Also, check if the filters have become plugged. This can cause significant airflow loss. There should be a gauge or control that shows the differential pressure across the filters. If it's greater than 4 to 5 inches, the filters need to be changed. Check the fan and make sure it's rotating in the correct direction. If it's not, it will still pull some air but not at the rate it was designed for. If the fan has a damper, make sure it's set correctly. If the problem still isn't solved, contact a reputable dust collector manufacturer to come out and survey the system.

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