

Troubleshooting Unloading Fans

Several issues may cause fans to unload before the maximum pressure drop is reached. To troubleshoot, first evaluate your situation:

1. Is this a new installation in which the fans have never been able to reach the maximum pressure while maintaining the proper airflow?
2. Is this an existing installation? If so, did the problem just start or has it been getting increasingly worse over a period of time?

With your answers to the above questions in mind, try to isolate the problem by the following:

1. Is the spray booth an open face? If yes, move on to step 2. If not, open the doors to the working area of the spray booth with the exhaust fans running. If this fixes the problem, check your intake filters and supply fan.
2. Check the Andrae Filter for proper installation. Verify that the filter is installed at 8 pleats per foot. The installation of an excessive number of pleats will cause airflow problems. We have seen improper installations of 30' of filter in a 10' frame (requiring only 80 pleats as opposed to 240 pleats).
3. If the filter has been installed at the recommended number of pleats per foot, remove the filter with the fan running to check the airflow.
 - a. No airflow indicates either a problem with the fan or an obstructed duct.
 - b. Little to normal airflow may indicate problems listed in 3a or an undersized fan.
 - c. Excessive airflow may indicate that the fans are not sized properly for the installation. The overall system static pressure and required airflow should fall in the mid range of the fan curve.

Items 1-3 have isolated the problem to either obstructed duct(s), before or after the fan, or an issue with the exhaust fan itself. Possible issues with the fan could be one or more of the following:

1. excessive build-up of paint on the fan blades
2. loose fan belts
3. aging fan motor or other possible electrical issues
4. fan not properly sized for application in terms of static pressure vs. required airflow (Consult with your spray booth manufacturer for help to correct this problem.)
 - a. If the fans are too small, they may unload on a clean filter or even unload due to duct loss and roof cap and/or dampers.
 - b. If the fans are too large, they will create an excessive amount of static pressure on the filters. Upon start up, you will see the static pressure start to increase excessively, then instantly drop to almost nothing.
5. In rare cases, if the duct work has never been cleaned, excessive build up of paint will reduce the inside diameter significantly enough to increase the static pressure and unload the fan.

Keep in mind that you should clean your stacks at least once per year. Although Andrae Filters are 98.1-99.8% efficient in paint arrestance, they are not 100% efficient. Over a period of time, paint will build up within the ducts and on the fans. Most local fire marshals require the ducts and sprinklers within the ducts to be cleaned every 6-12 months.