

How can I reduce the amount of compressed air my dust collector's filter cleaning system uses?

There are several ways to reduce the amount of compressed air your dust collector's filter cleaning system uses. First, make sure the pick-up points aren't picking up more dust than necessary to properly control the dust. You can make adjustments by using blast gates at each pick-up point. Reducing the dust loading to the collector will allow you to lower the bag-cleaning frequency. Second, all timers that are used to control pulsing have built-in adjustments that can fine-tune the bag cleaning. Adjustments are done both on-time, which is the length of time the solenoid valve is open (typically 50 to 300 milliseconds), and off-time, which is the length of time between cleaning rows of elements (typically 8 to 255 seconds). Shorter on-times and longer off-times mean that less air will be used. Finally, if you have light dust loads, consider using on-demand filter cleaning.

*Bill Kurz,
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Upgrading your baghouse control and diagnostic system can lower compressed air consumption. You can then easily monitor the solenoid and diaphragm valves and baghouse pressure drop and detect any broken bags. When problems occur, the control system sends an alarm identifying the problem and location in the baghouse. You can then easily isolate and fix the problem while

minimizing compressed air loss. The control system may also have a built-in Web site and IP address, allowing you to view status remotely using a web browser.

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The easiest way to reduce your dust collector's compressed air use is to not allow it to pulse all of the time and unnecessarily. Installing a pressure differential switch to monitor the ΔP across your filters will allow the pulsing to be done on-demand. When the dust cake builds sufficiently on the media, the ΔP rises until it exceeds the upper set point. The pressure differential switch will then start the pulsing cycle and continue to pulse until the low set point is reached. The high set point should be set at a point sufficiently high so the pulsing sequence is not coming on all of the time, but not so high that the dust collector's performance is diminished. At the proper point, the pressure drop will start almost immediately when the pulsing starts. The low point should be set at either the point that the collector cleans down to easily or the point just above the pressure where the filtration efficiency is affected. With some systems, maintaining a minimum dust cake increases efficiency and allows you to shut down the pulsing system earlier. If you see a puff of dust coming out the fan after the collector pulses, the media may be overcleaned or there may be other issue to address.

Another recommendation is to not use a higher pulsing pressure than is recommended by the manufacturer. If they give a range, regulate down to that range. You'll use less air and extend your filter media's life.

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Clean-on-demand systems consume compressed air when the pressure differential across the filters increases. You can lower your initial pressure drop and maintain a lower pressure drop by putting more fabric into your collector. The simplest way to accomplish this is to convert from bag filters to pleated filters, which can sometimes triple your fabric amount with no equipment modification. Pleated filters can be cleaned at a lower pressure and with less frequency.

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Many plants manually and continuously run their cleaning cycles to clean the filter bags, which is often unnecessary. Continuously cleaning the filters, especially when they're not fully dirty, wastes compressed air and energy and lowers the filters' efficiency. Instead, install an on-demand system that has a pressure control on the filters. The pressure control will help your system determine the exact point that cleaning is truly necessary and will signal a timer board to begin pulsing the solenoids. This way, compressed air is only used to clean the filters when they're fully loaded and dirty.

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Equipment suppliers are a valuable source of information about equipment and processes. In light of this, each month we ask suppliers a question of concern to our readers. Answers reflect the suppliers' general expertise and don't promote the suppliers' equipment. If you have a question you'd like suppliers to answer, send it to Alicia Tyznik, Associate Editor, Powder and Bulk Engineering, 1155 Northland Drive, St. Paul, MN 55120; fax 651-287-5650 (atyznik@cscpub.com).