Improving the Cleaning Cycle in Baghouse Collectors

ABSTRACT: Background
The reverse pulse jet baghouse has been around for over 45 years and the cleaning cycle has not changed very much since that time. The cleaning cycle is the most important part of the dust collector because it controls efficiency and media life. In a generic baghouse, the cleaning system is comprised of a blowpipe that is located typically approximately three inches above the bag, with an orifice and a venturi, which is located at the top of the bag/cage. This system uses bursts of compressed air at 100psi and back flushes one row of filters at a time during the cleaning cycle. This cleaning system has some deficiencies and thus Scientific Dust Collectors (SDC) introduced a special converging/diverging nozzle based cleaning system in 1981. SDC eliminated the venturi and provided a unique and patented cleaning system, which significantly improved filter life and lowered pressure drop. Over these many years, SDC's technology has been field proven in a wide variety of applications.

Scientific Dust Collectors is now proud to introduce the "Next Generation of Nozzle Technology". By improving the nozzle design SDC has achieved an even better filter cleaning system.

Results
SDC has conducted extensive tests to observe the shortcomings of the venturi based cleaning system. In comparison, SDC's nozzle allows more cleaning air to be induced into the bag when compared to the generic system. Using our old nozzle design, tests show a 40% increase in cleaning air at the bottom of an eight-foot long bag when compared to the venturi based cleaning system. This significant increase in cleaning flow allows the bags to clean better, which allows SDC to operate successfully with fewer filters and provide the customer with a longer bag life than generic baghouses. In using SDC's new nozzle system, the effect was a 56% increase in cleaning air at the bottom of the bag when compared to the venturi based system.

Figure 1 below illustrates the cleaning flow during operation of one valve. It shows results at the top, middle and bottom of a standard eight-foot long bag. This graph shows the cleaning results of a venturi based cleaning system, SDC's old nozzle cleaning system and SDC's new nozzle cleaning system.

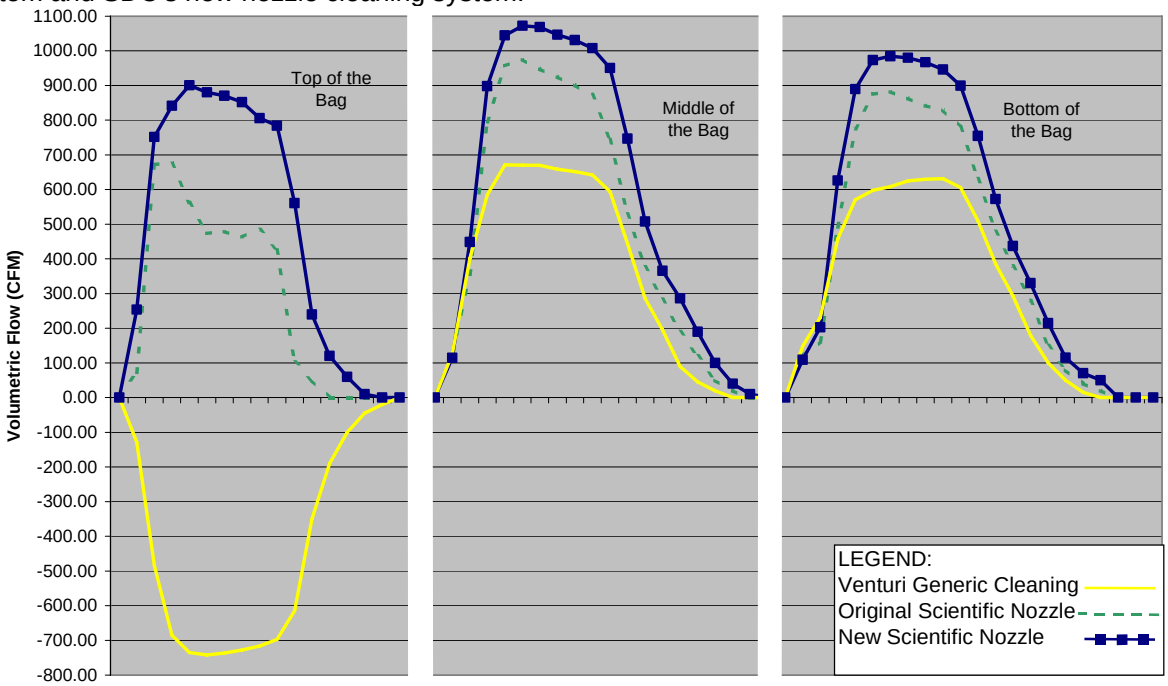

Figure1: Volumetric Flow throughout the Entire Bag for all systems at 100psig

Benefits
In looking at the above graph, it is clear that both SDC nozzles outperform the generic venturi cleaning system by a significant amount. In fact, it is interesting to note that the venturi system actually draws in air at the top of the bag during the cleaning pulse. That is the subject of "Advantages of Cleaning without a Venturi in Baghouse Collectors", a separate technical paper also available from SDC.

The advantage of using SDC's nozzle for the end user is a more even cleaning system that supplies a significant amount of induced air into each bag for thorough bag cleaning. SDC cleans the entire bag-top, middle and bottom with considerably more cleaning air than the generic venturi based baghouse. This allows SDC to operate effectively and efficiently with fewer filters, less valves and using less compressed air to clean the entire collector. SDC guarantees filter life and performance. With our new nozzle, we just made a good thing even better!

Please go to www.scientificdustcollectors.com for the full 18 page technical paper on this topic.