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## **Question 18: What are some typical causes for high pressure drop across regenerator dust collectors in continuous reforming units? Is anyone using continuous blowback on the bags?**

**BULLEN** (UOP LLC, A Honeywell Company)

The obvious answer to the high-pressure drop would seem to be that you have too many fines on the bags. But realistically, why do you get too many fines? The causes could be that you waited too long to do the reverse jet blowing or, a less common cause, that you are getting hydrocarbon carryover which is causing the fines to clump together on the bags. We recommend doing the blowback procedure at five inches of water ?P. You also need to confirm that you have the right velocity, so you do not get too large of a blowback and then cause even more fines to occur by fluffing the material in the filter.

Some other causes for high fines could be too high elutriation velocity. There has been experience with the wrong filter elements being used, and that will cause problems.

We do have some experience with continuous blowback systems. However, one caution is that you can actually overpressure the system with continuous blowbacks. You have to watch for that. Also, you tend to blow off the permanent fines layer that accumulates on the bags which helps trap some of the bigger particles and improves the efficiency of the bags. So, watch for that as well. Some of these fine particles that can be blown off will also plug some of the holes in the bags. So, if you are going to do continuous blowback, you should actually check with your vendor for recommendations when using that kind of system.

**PATRICK BULLEN** (UOP LLC, A Honeywell Company)

In UOP's experience, the most common cause for high differential pressure (DP) across CCR Platforming™ process unit dust collectors are too much fines accumulation on the filter elements. There are a few possible causes of extra fines accumulation on the filter elements; however, the most probable causes are waiting too long to reverse jet the filter elements or hydrocarbon carryover from the catalyst collector. As fines are collected on the filter elements, the DP across the dust collector will start to increase. Once the DP reaches about 5 inches of H<sub>2</sub>O, the reverse jet blowback system should be commissioned. Prolonging the period between blowbacks will allow more fines to accumulate and create a stronger "fines barrier". The barrier can eventually get too large and prevent the blowback system from effectively removing the bulk of accumulated fines. UOP recommends that the reverse jet system be initiated whenever the DP across the dust collector approaches 5 inches of H<sub>2</sub>O. Furthermore, if hydrocarbons are carried over to the dust collector system they can condense on the bags causing fines to stick and cake up on the bags leading to high DP. Other causes for high dust collector DP include inadequate reverse jet pulse time, low N<sub>2</sub> blowback pressure, too high of an elutriation velocity (which causes more dust make and an overload of the dust removal system), and even using the wrong type of filter elements. The dust collector vendor should specify the type of filter elements that should be used

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based on UOP current felt material type bags specifications. UOP no longer specifies sintered metal filters.

There have been some refiners using continuous blowback. Typically, it can help with reducing the DP across the filter bags. However, it has also been known to cause lifting problems when the lift system is overpressured with nitrogen. Operating with a continuous purge could also remove the “permanent” fines layer that is present on the filter bags. The fines layer increases the filter efficiency by plugging off some of the bigger holes of the filtering elements. Removing the fines layer could free up some of the bigger holes that could allow dust to pass through to the lift system. Furthermore, continuous blowback could result in creating microscopic holes (due to the constant back pressuring) in the dust collector bags that could result in dust passing through to the lift gas blower and lift system. UOP recommends checking with the dust collector vendor before moving to a continuous blowback operation.

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