

#### Debbie Olson, Donaldson Torit Product Manager

In tough economic climates, funds are not always available to make large capital equipment expenditures. Often the plan instead is to take yesterday's equipment and enable it to meet today's increased performance requirements.

It is not unusual to see a baghouse dust collector that is 20, 30 or even 40 years old still in service. The problem is old collectors need to be able to keep up with the new demands and/or regulations. Current air quality standards often require better filtration efficiency than traditional 16 oz. polyester bag filters can deliver. The dusts being collected may also be so abrasive the non-woven filter media being used in the older baghouse develops holes in the bottom of the filter bags, leading to very short filter life.

Pleated bags are now providing cost effective solutions for most common issues affecting baghouse dust collectors today.

#### WHAT IS A PLEATED BAG?

A *pleated bag* is often a long, slender filter assembly that looks more like a cartridge filter than a bag filter. The pleated bag filter media options range from spunbond polyester to PTFE membranes or nanofiber layers that optimize the efficiency, as well as many other media depending on application

needs, such as a stiffened aramid media for higher temperature applications.

Pleated bags have built-in cores so they replace both the filter bag and its supporting cage. Some pleated bag designs even have curved



openings at their top to increase cleaning energy similar to the venturi used in some baghouse filters.

Pleated bags not only look like cartridge filters, but they perform more like cartridge filters than bag filters. The pleated bag (polyester spunbond) media offers better initial efficiency and is often more durable than the polyester felt in a conventional filter bag. Additionally, the average pleated bag can incorporate much more media than the corresponding length of felt bag it replaces typically allowing replacement of felt bags with much shorter pleated bags.

There are pleated bag designs for top load applications, bottom load applications, and even oval applications.



Bag Filter

Pleated Bag

Cartridge Filter

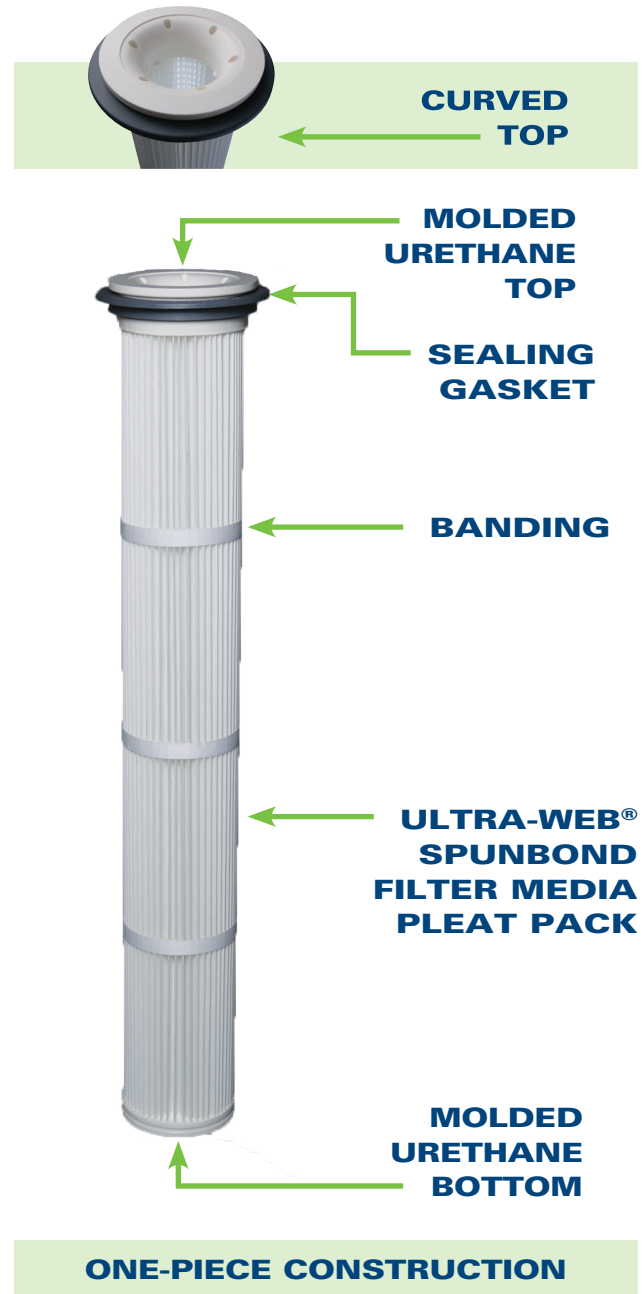
## BENEFITS OF PLEATED BAG FILTERS IN BAGHOUSES

**Increased Filter Area** - Pleated bag filters can provide as much as twice the filtration area per foot of filter length, so in existing equipment the increased filter media in the pleat pack design can either reduce filtration velocities or allow more total volume at the same filtration velocity. This means you may be able to run more air through existing collectors without having to add another collector or overwork current equipment. The caution here is bottom entry baghouse collectors where you may still find limits on total air volume based on the resulting upward velocity profile in the collector.

**Lower Pressure Drop** – Since pleated bags can double the amount of media in a baghouse collector, they can often lower the average differential pressure drop for the collector, assuming the same air flow volumes. Reductions in pressure drop often translate directly to energy savings over the life of the filter if the fan can be adjusted to take advantage of the reduced static pressure load on the filtration system. The reduction in differential pressure drop can also reduce the frequency of pulse cleaning required by the filters, offering additional savings in reduced compressed air consumption.

**Abrasion Resistant** - It is common for abrasion to cut short the life of bag filters with holes appearing in the bottom portions of the filter bags. This results in immediate filter bag emission failures because dust-laden air will begin passing through the holes unfiltered. Pleated bags can address this abrasion issue in a couple of ways. First, the spunbond polyester media in pleated bags is very durable. Second, pleated bag designs offer more media per foot of bag length, so pleated bags are often much shorter than the fabric bags they replace. This allows the creation of a *drop out zone* in the lower section of the collector. Dust entering the collector has an increased volume as it enters the collector that is more open, with lower-velocities. This zone allows the heavier, and therefore more abrasive, dusts to simply drop down into the hopper without swirling around and damaging the bottoms of the filter bags.

**Improved Filter Efficiency** – Another benefit of pleated bags is improved filter efficiency. Compared to conventional 16 ounce polyester bags, spunbond polyester pleated bags can reduce initial emissions by as much as 50%. Nanofiber-coated or PTFE coated pleated bags may further reduce emissions by as much as 75% relative to a conventional bag filter. In some instances the improved filter efficiency offered by pleated bags may make the difference between



meeting or exceeding emission requirements. When the dust being collected is a product stream, the increased filter efficiency may also help improve overall productivity since less product emitted out the stack translates to more product that can be sold.

**Longer Life** – Pleated bags commonly offer longer filter life over polyester felt bags, and longer filter life leads directly to cost savings. When the filter bags last longer, filter change outs happen less often and fewer change outs means less downtime, fewer bags to purchase, less frequent disposal costs, and lower labor expenses.

**Ease of Maintenance** – And last but not least, when it comes to replacing filters, changing out fabric filter bags has always been an unpleasant, time consuming process. Dirty bags and cages are often a challenge to remove from the collector, and the dirty old bags still need to be stripped from the cages before new bags can be installed into the collectors.

Because pleated bags replace both the bag and cage in the collector, they are often not only easier but also faster to change out. Additionally, because the pleated bags are typically much shorter than the corresponding bags and cages they replace, they are often far easier to handle. Pleated bag users have often found they can cut their change out time by more than half, so the ease of change outs becomes yet another

cost savings associated with pleated bags - fewer hours of labor to change out the bags and fewer hours lost to downtime.

Overall, pleated bags offer solutions to a wide variety of baghouse challenges including how to get more production from a dust collection system without the labor or financial cost of installing a new piece of capital equipment. Pleated bags can provide not only more efficient filtration, but they offer the potential for lower pressure drop, longer filter life, quicker and less painful maintenance, and they can even help address filter abrasion.

**Pleated bags typically result in problems solved!**

[astgroup.ca](http://astgroup.ca)



**AST GROUP**  
OF COMPANIES

905-821-8860

 **Air Separation  
Technologies Inc.**  
[astcanada.ca](http://astcanada.ca)

 **AST**  
Engineering Inc.  
[astengineering.ca](http://astengineering.ca)

 **AST**  
Mechanical Inc.  
[astmechanical.ca](http://astmechanical.ca)

 **STEVENS ON SPRINKLER**  
& Fire Protection Ltd.  
[stevensonsprinkler.ca](http://stevensonsprinkler.ca)