

## POWDER PUMP FILTER DESIGNS AND UPGRADES

When it comes to pneumatic conveying systems, a primary design goal is to minimize pressure drop through the system, and filtration surface area is one key factor in achieving this.

As part of De Dietrich Process Systems' continual design improvement efforts, we can now offer an optional filter element upgrade to help increase an older Powder Pump system's performance.

The original flat filter design (Figure 1) can now be updated to allow filter socks with larger surface areas (Figure 2) to be installed on any size powder Pump system. This option can also be expanded to include multiple filter sock elements (Figure 3) in our larger PP-8 and PP-12 systems for even greater surface area increases.

### BENEFITS

- Increased transfer rate
- Extended filter life
- Improved filter efficiency
- Tool-free filter changeout

Don't have the Powder Pump design? Not a problem! DDPS can provide filters for some competitive systems. Additionally, we can convert other manufacturer's units to the upgraded sock filter design.



Figure 1: Original Flat Filter Design

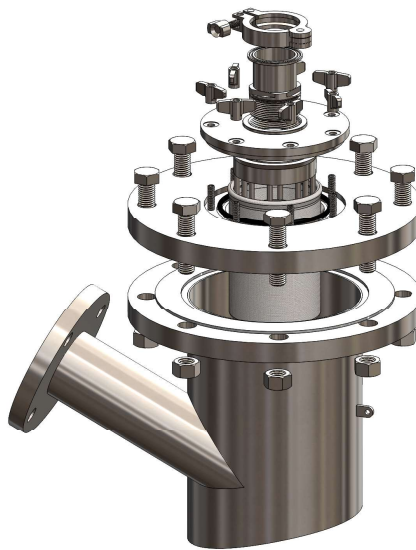


Figure 2: Sock Filter Design with Tool-Free Wing Nut Access

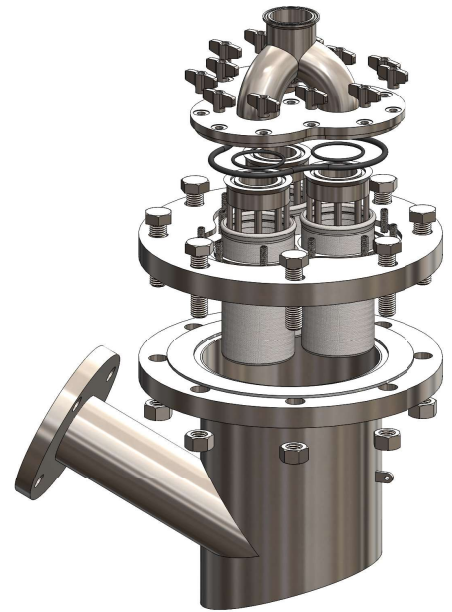


Figure 3: Multi-Filter Design

## POWDER PUMP FILTER DESIGNS AND UPGRADES - TECHNICAL DATA\*

Pressure Drop Across Filter Socks (PP-8)	Pressure	
	(mm Hg)	(PSI)
Single Filter - Clean	74	1.43
Single Filter - Dirty	204	3.94
Multi-Filter - Clean	32	0.62
Multi-Filter - Dirty	58	1.12

Rates	Start Weight	End Weight	Time (sec)	Rate (lbs/hr)	Percent Increase
<i>Product A</i>					
Single Filter Sock	0	123.9	144	3097.5	
Multi-Filter Sock	0	128.1	131	3520.3	14%
<i>Product B</i>					
Single Filter Sock	0	51.6	292	636	
Multi-Filter Sock	0	86.9	174	1798	283%

Powder Pump Size (in)	4	6	8	12
Disc Filter Area (ft <sup>2</sup> )	0.09	0.20	0.35	0.79
<i>Sock Filter Area:</i>				
Total Sock Area(ft <sup>2</sup> )	0.32	0.39	0.50	1.18
Total Multi-Sock Area (ft <sup>2</sup> )	-	-	1.18	2.18
<i>Filter Area Ratios:</i>				
Sock to Disc	4.5 : 1	2.0 : 1	1.6 : 1	1.5 : 1
Multi-Filter to Disc	-	-	3.4 : 1	2.8 : 1
Multi-Filter to Sock	-	-	2.2 : 1	1.9 : 1

\*All testing was conducted on an 8" Powder Pump unit with the following test products:

- Product A - Sodium Bicarbonate with a bulk density of ~80 lb/ft<sup>3</sup>
- Product B - An aliphatic monomer with a bulk density of ~40 lb/ft<sup>3</sup>

All testing performed at a distance of 50 ft. and vertical rise of at least 20 ft.