

Comparison fan blower versus PD blower in a vacuum system

PVC beads

material density = 1682 kg/m³

bulk density = 640 kg/m³

particle size = 400 micron

suspension velocity = 3.75 m/sec

Initial intake material pressure drop = 100 mmWC

Convey length horizontal = 82.6 m

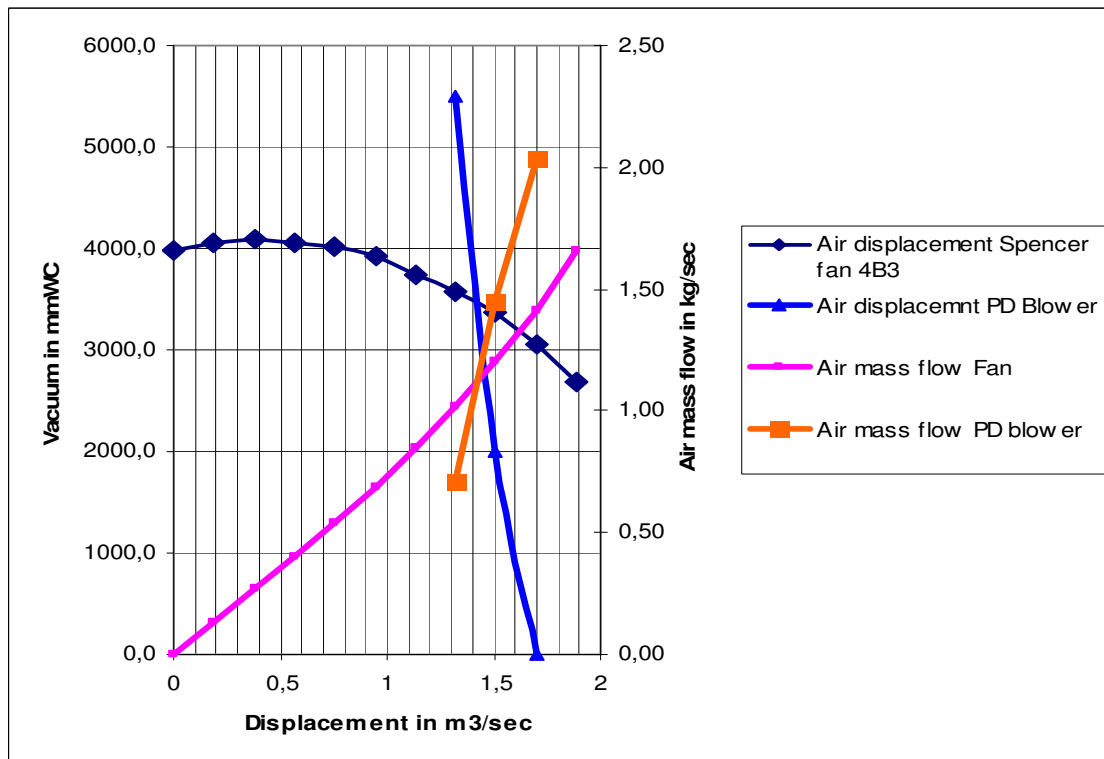
Convey length vertical = 21.2 m

Number of bends = 15

Fan curve Spencer 4B3

| volume cfm | vacuum inch Hg | volume m ³ /min | vacuum mmWC | volume m ³ /sec |
|---------------|-------------------|-------------------------------|----------------|-------------------------------|
| 0 | 11,6 | 0,0 | 3988,0 | 0 |
| 400 | 11,8 | 11,3 | 4056,7 | 0,1888 |
| 800 | 11,9 | 22,7 | 4091,1 | 0,3776 |
| 1200 | 11,8 | 34,0 | 4056,7 | 0,5663 |
| 1600 | 11,7 | 45,3 | 4022,3 | 0,7551 |
| 2000 | 11,4 | 56,6 | 3919,2 | 0,9439 |
| 2400 | 10,9 | 68,0 | 3747,3 | 1,1327 |
| 2800 | 10,4 | 79,3 | 3575,4 | 1,3215 |
| 3200 | 9,8 | 90,6 | 3369,1 | 1,5102 |
| 3600 | 8,9 | 101,9 | 3059,7 | 1,6990 |
| 4000 | 7,8 | 113,3 | 2681,6 | 1,8878 |

| Fan | PD blower vacuum | PD blower kg/sec |
|------|------------------------|------------------------|
| 0,00 | | |
| 0,13 | | |
| 0,27 | | |
| 0,40 | | |
| 0,54 | | |
| 0,69 | | |
| 0,85 | | |
| 1,02 | 5500 | 0,71 |
| 1,20 | 2000 | 1,45 |
| 1,41 | 0 | 2,04 |
| 1,66 | | |



| Fan 4B3 | | | Blower (1,51 m3/sec) | |
|-------------|------------------|------|----------------------|-----|
| vacuum mmWC | Capacity tons/hr | SLR | Capacity tons/hr | SLR |
| 2681 | 20,1 | 3,1 | 26,5 | 4,6 |
| 3060 | 28,4 | 5,2 | 29,8 | 5,7 |
| 3370 | 33,3 | 7,1 | 32,5 | 6,5 |
| 3575 | 35,3 | 8,9 | 33,9 | 7,1 |
| 3747 | 35,1 | 10,6 | 34,8 | 7,5 |
| 3919 | 29,9 | 11,1 | 35,6 | 7,9 |
| 4022 | 10,6 | 5 | 36,1 | 8,2 |

