



APTECH ENHANCE CONVEYING PREDICTION SOFTWARE

Following many years experience with a wide variety of products, Aptech are able to use known product conveying characteristics and specific system parameters to assist in scaling and sizing of PNEUMATIC conveying systems.

BENEFITS

- Permits entry of the proposed conveying system via a 'finite element' approach
- Provides optimum Sizing of equipment
- Software permits design changes to be easily entered and the effects shown.
- Yields blower duty point and filter size
- Yields rotary valve size and considers leakage volumes
- Shows pressures and velocities throughout the system and the effect of changing pipe sizes.

FEATURES

- Built in database of over 60 products' conveying characteristics
- Built in database of pipe sizes for different materials and specifications of pipe.
- Takes account of air and product temperatures and subsequent effect on velocities and filter areas
- Allows multiple pick up points to be considered
- Allows entry of different pipe sizes

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APTECH (POWDER SYSTEMS) LIMITED PNEUMATIC CONVEYING CALCULATION

Date	24 February 2009	BLOWER AND FILTER REQUIREMENTS	
Quote	9999 - ACME PRODUCTS	Inlet Volume	3385.1 + 258 M ³ /Hr
Customer	ACME PRODUCTS	Total/Minute	60.7 M ³ /min
System	PRESSURE	Pressure	1062.1 Mbarg

Product	FINE HEAVY POWDER	Filter Area	71 M ²
Bulk Density	825 kg/m ³	Filter Velocity	1 M/min
Pressure Factor	0.0152	Phase Density	2.8
Bend Factor	0.907	Air Temperature	50 °C
Pick Up	25 m/sec	Conveying Temp.	72 °C
Product Specific Ht	0.56 kJ/kg °K	Product Temp.	180 °C

ROTARY VALVE(S) - MAKE: DMN			
Number	Feed Rate	Rotor Size	Speed
1	1500	300	1
2	10200	300	13

ITEM	DATA1	DATA2	PRESS	VELOC	ITEM	DATA1	DATA2	PRESS	VELOC
1 AIR - STRAIGHT	0.5	202	0	12.4	41 ROTARY VALVE	10200	0	300	13
2 AIR - ELBOW	0	202	1.3	12.6	42 CCNV-HORIZ	4	154.1	28.1	30.2
3 AIR - STRAIGHT	2.4	202	0.4	12.8	43 CCNV-BEND	90	154.1	38.4	30.7
4 AIR - ELBOW	0	202	1.4	12.9	44 CCNV-HORIZ	6	154.1	42.5	31.3
5 AIR - STRAIGHT	4	202	0.7	13.1	45 CCNV-BEND	90	154.1	38.7	32
6 AIR - ELBOW	0	202	1.5	13.2	46 CCNV-HORIZ	2	154.1	14.2	32.7
7 AIR - STRAIGHT	1	202	0.2	13.4	47 CCNV-BEND	90	154.1	38.9	32.9
8 AIR - ELBOW	0	202	1.5	13.6	48 CCNV-HORIZ	2	154.1	14.3	33.6
9 AIR - STRAIGHT	1.3	202	0.2	13.7	49 CCNV-BEND	90	154.1	39.1	33.9
10 AIR - ELBOW	0	202	1.6	13.9	50 CCNV-VERT	2	154.1	28.9	34.7
11 AIR - STRAIGHT	7.8	202	1.7	14	51 CCNV-BEND	90	154.1	39.4	35.3
12 AIR - STRAIGHT	1	219	0.1	12	52 CCNV-HORIZ	4	154.1	29.1	36.1
13 AIR - ELBOW	0	219	1.2	12.2	53 CCNV-HORIZ	1	202.7	3.7	21.2
14 AIR - STRAIGHT	2.1	219	0.3	12.3	54 CCNV-BEND	90	202.7	20.4	21.3
15 AIR - ELBOW	0	219	1.3	12.4	55 CCNV-VERT	4	202.7	30	21.5
16 AIR - STRAIGHT	3.5	219	0.5	12.5	56 CCNV-BEND	90	202.7	20.4	21.9
17 AIR - ELBOW	0	219	1.3	12.6	57 CCNV-HORIZ	7	202.7	26.3	22.2
18 AIR - STRAIGHT	10	219	1.6	12.7	58 CCNV-BEND	45	202.7	10.2	22.6
19 AIR - ELBOW	0	219	1.3	12.8	59 CCNV-HORIZ	25	202.7	94.6	22.8
20 AIR - STRAIGHT	2	219	0.3	12.9	60 CCNV-BEND	45	202.7	10.3	24.3
21 AIR - ELBOW	0	219	1.4	13	61 CCNV-HORIZ	20	202.7	76.2	24.5
22 AIR - STRAIGHT	5	219	0.8	13.1	62 CCNV-BEND	90	202.7	20.8	25.8
23 AIR - ELBOW	0	219	1.4	13.2	63 CCNV-HORIZ	3	202.7	11.5	26.3
24 AIR - STRAIGHT	6	219	1	13.2	64 CCNV-BEND	90	202.7	20.9	26.5
25 AIR - ELBOW	0	219	1.4	13.3	65 CCNV-VERT	4	202.7	30.8	26.9
26 AIR - STRAIGHT	1	219	0.1	13.3	66 CCNV-BEND	90	202.7	21	27.6
27 AIR - ELBOW	0	219	1.5	13.4	67 CCNV-HORIZ	33	202.7	126.5	28
28 AIR - STRAIGHT	0.5	219	0	13.4	68 CCNV-BEND	90	202.7	21.3	31.3
29 AIR - ELBOW	0	219	1.5	13.5	69 CCNV-VERT	2	202.7	15.7	31.9
30 AIR - STRAIGHT	2	219	0.3	13.5	70 CCNV-BEND	90	202.7	21.4	32.4
31 AIR - ELBOW	0	219	1.5	13.5	71 CCNV-HORIZ	3	202.7	11.8	33.1
32 AIR - STRAIGHT	2	219	0.3	13.6	72 CYCLONE/FILTER	0	202.7	24.4	33.5
33 AIR - ELBOW	0	219	1.5	13.6	73 FINISHED	0	300	0	15.6
34 AIR - STRAIGHT	1	219	0.1	13.6					
35 ROTARY VALVE	1500	0	300	1					
36 CONV-HORIZ	2	154.1	3.8	29.4					
37 CONV-BEND	90	154.1	10.4	29.4					
38 CONV-HORIZ	15	154.1	28.9	29.6					
39 CONV-BEND	90	154.1	10.5	30					
40 CONV-HORIZ	1	154.1	1.9	30.2					

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