

PNEU DILUTE PRESSURE

PRESSURE DILUTE PHASE SIZING CALCULATION

version 3.06

abr-08

Pneu Solutions

| INPUTS | | | UNITS | | METRIC CONVERSION UNITS | | | |
|----------------------------------|--------|----------------------|--------|--------|-------------------------|----------|---------|--|
| | | | | | inputs | | results | |
| PRODUCT FRICTION FACTOR | 2 | 1-LOW, 8-HIGH | 13.400 | kg/hr | 29.547 | lbs/hr | | |
| VELOCITY FACTOR | 15 | 11-LIGHT TO 21-HEAVY | | | | | | |
| PRODUCT CONVEY RATE | 29.547 | LBS/HR | | | | | | |
| | | | | | | | | |
| SITE ATMOSPHERIC PRESSURE | 14,5 | PSIA | 1,00 | bar | 14,50 | psi | | |
| MIN AIR/GAS TEMPERATURE | 23 | DEG F | -5 | degC | 23 | degF | | |
| MAX AIR/GAS TEMPERATURE | 95 | DEG F | 35 | degC | 95 | degF | | |
| MIN MIX TEMP AT PICK-UP | 77 | DEG F | 25 | degC | 77 | degF | | |
| MAX MIX TEMP AT DESTINATION | 77 | DEG F | 25 | degC | 77 | degF | | |
| | | | | | | | | |
| INPUT TERMINAL VELOCITY | 3.937 | FT/MIN | 20 | m/s | 3937 | ft/min | | |
| | | | | | | | | |
| PIPE SECTION 1 | | | | | | | | |
| INSIDE PIPE DIAMETER | 4,02 | INCHES | 102 | mm | 4,02 | inches | | |
| HORIZONTAL DISTANCE | 119,8 | FT | 36,5 | meters | 119,8 | feet | | |
| VERTICAL DISTANCE | 16,4 | FT | 5 | meters | 16,4 | feet | | |
| 90 DEGREE ELS | 4 | QTY | | | | | | |
| | | | | | | | | |
| PIPE SECTION 2 | | | | | | | | |
| INSIDE PIPE DIAMETER | 4,49 | INCHES | 114 | mm | 4,49 | inches | | |
| HORIZONTAL DISTANCE | 234,6 | FT | 71,5 | meters | 234,6 | feet | | |
| VERTICAL DISTANCE | 91,9 | FT | 28 | meters | 91,9 | feet | | |
| 90 DEGREE ELS | 6 | QTY | | | | | | |
| | | | | | | | | |
| PIPE SECTION 3 | | | | | | | | |
| INSIDE PIPE DIAMETER | 5 | INCHES | 127 | mm | 5,00 | inches | | |
| HORIZONTAL DISTANCE | 16,4 | FT | 5 | meters | 16,4 | feet | | |
| VERTICAL DISTANCE | 8,2 | FT | 2,5 | meters | 8,2 | feet | | |
| 90 DEGREE ELS | 1 | QTY | | | | | | |
| | | | | | | | | |
| ADDITIONAL LOSSES | | | UNITS | | | | | |
| INLET FILTER | 1 | QTY | | | | | | |
| INLET SILENCER | 1 | QTY | | | | | | |
| DISCHARGE SILENCER | 1 | QTY | | | | | | |
| DISCHARGE COOLER | 1 | QTY | | | | | | |
| DISCHARGE FILTER | 1 | QTY | | | | | | |
| | | | | | | | | |
| BUTTERFLY VALVES, CLEAN GASLINE | 2 | QTY | | | | | | |
| FLEX HOSE, CONVEYLINE | 0 | FT | 0 | meters | 0,0 | feet | | |
| FLEX HOSE, CLEAN GASLINE | 0 | FT | 0 | meters | 0,0 | feet | | |
| | | | | | | | | |
| CLEAN GAS LINE SIZE | 3,15 | INCHES | 80 | mm | 3,15 | inches | | |
| CLEAN GAS LINE LENGTH | 2 | FT | 0 | meters | 0,0 | feet | | |
| CLEAN GAS LINE BENDS | 0 | QTY | | | | | | |
| | | | | | | | | |
| RETURN GAS LINE SIZE | 0 | INCHES | 80 | mm | 3,15 | inches | | |
| RETURN GAS LINE LENGTH | 0 | FT | 0 | meters | 0,0 | feet | | |
| RETURN GAS LINE BENDS | 0 | QTY | | | | | | |
| | | | | | | | | |
| MISC PRESS DROP, CLEAN GASLINE | 0 | INCH H2O | 0 | Kpa | 0,0 | inch H2O | | |
| MISC PRESS DROP, CONVEYLINE | 0 | INCH H2O | 0 | Kpa | 0,0 | inch H2O | | |
| MISC PRESS DROP, RETURN GAS LINE | 0 | INCH H2O | 1,5 | Kpa | 6,0 | inch H2O | | |

| OPERATING RESULTS | | UNITS | NOTES | METRIC RESULTS |
|---------------------------------|------|--------|-------------------------------|----------------|
| MIN. ALLOWABLE PICK-UP VELOCITY | 2955 | FT/MIN | | 15,0 m/s |
| CALCULATED PICK-UP VELOCITY | 3146 | FT/MIN | PICK-UP VELOCITY IS OK | 16,0 m/s |
| STEP 1 VELOCITY | 3187 | FT/MIN | STEP 1 VELOCITY IS OK | 16,2 m/s |

| | | | | |
|---|-------------|---------|-----------------------------------|--------------------|
| STEP 2 VELOCITY | 3633 | FT/MIN | STEP 2 VELOCITY IS OK | 18,5 m/s |
| FINAL (TERMINAL) VELOCITY | 3937 | FT/MIN | | 20,0 m/s |
| BLOWER DISCHARGE PRESSURE | 14,5 | PSIG | | 1,00 barG |
| TOTAL BLOWER DIFFERENTIAL PRESS. | 14,8 | PSI | | 1,02 bar |
| CONVEY GAS FLOW | 523 | SCFM | | 14,8 m3/min |
| MATL-TO-GAS RATIO | 12,56 | LBS/LBS | MATL:GAS RATIO IS TOO HIGH | 12,56 kg/kg |
| AIRLOCK LEAKAGE (INPUT) | 0 | SCFM | | 0,0 m3/min |
| MISCELLANEOUS LEAKAGE (INPUT) | 0 | SCFM | | 0,0 m3/min |
| TOTAL GASFLOW REQUIRED | 523 | SCFM | | 14,8 m3/min |
| MOTOR HP AT OPERATING PRESSURE | 34 | HP | | 25 KW |

DESIGN CONDITIONS SUMMARY

| | | | | |
|-----------------------------|------|------|--|-------------|
| TOTAL GASFLOW + 20% | 627 | SCFM | | 17,8 m3/min |
| RELIEF PRESS RECOMMENDED | 19,3 | PSIG | | 1,33 barG |
| MOTOR HP AT RELIEF PRESSURE | 61 | HP | | 45 KW |

Línea: L2
 Destino: TK-697
 Proyecto: 1337-2
 Revisión: 0
 Fecha: 30 de junio de 2009