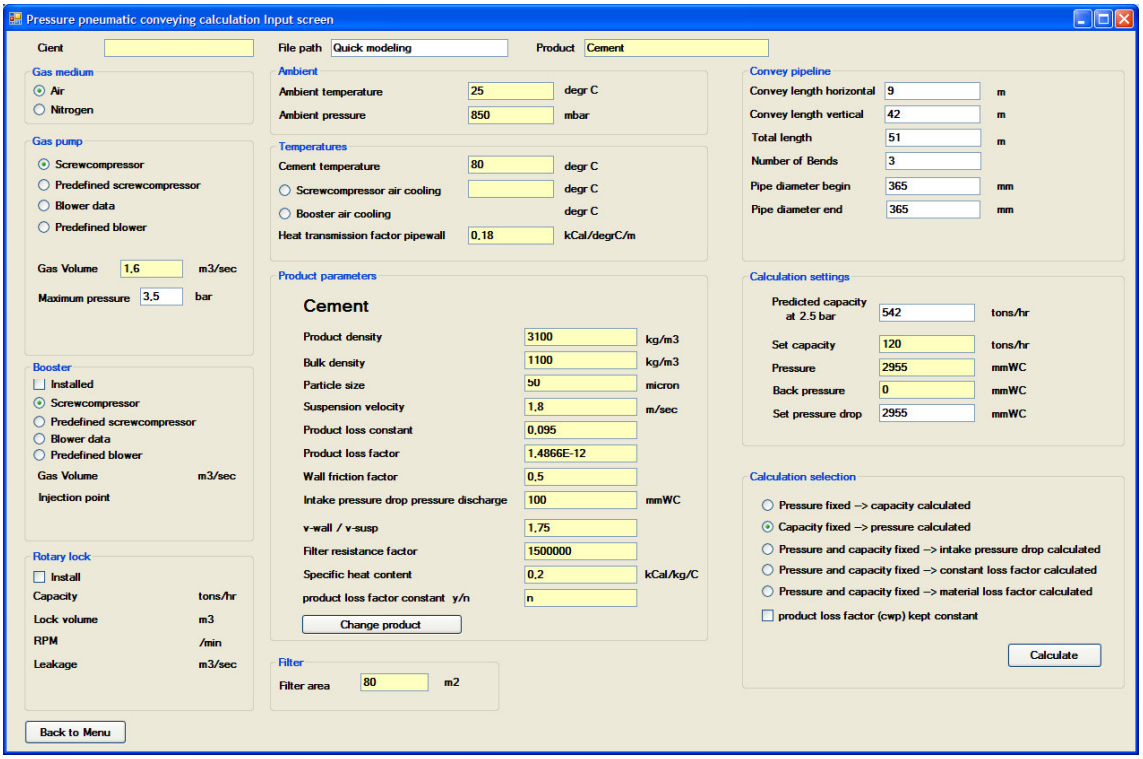
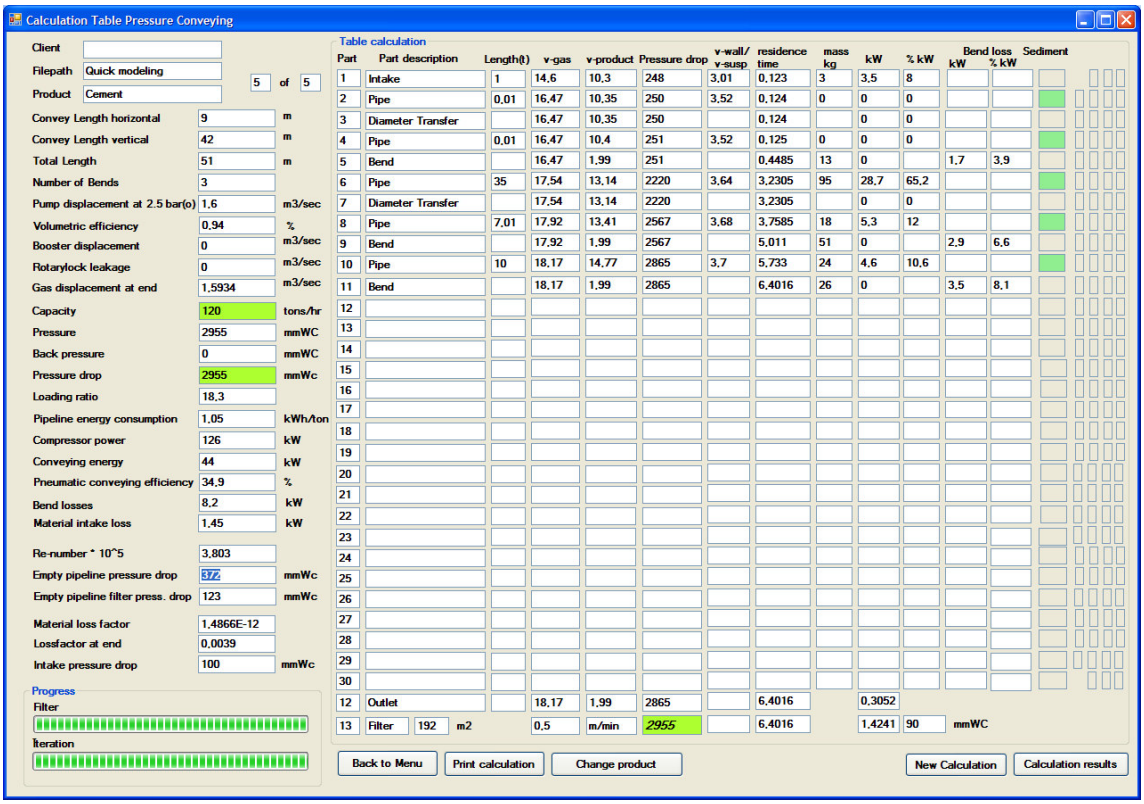

Pressure pneumatic conveying calculation Input screen
Cient
File path
Quick modeling
Product
Cement
Gas medium
Air
Nitrogen
Gas pump
Screwcompressor
Predefined screwcompressor
Blower data
Predefined blower
Gas Volume
1,6
m3/sec
Maximum pressure
3,5
bar
Booster
Installed
Screwcompressor
Predefined screwcompressor
Blower data
Predefined blower
Gas Volume
m3/sec
Injection point
Rotary lock
Install
Capacity
tons/hr
Lock volume
m3
RPM
/min
Leakage
m3/sec
Back to Menu
Ambient
Ambient temperature
25
degr C
Ambient pressure
850
mbar
Temperatures
Cement temperature
80
degr C
Screwcompressor air cooling
degr C
Booster air cooling
degr C
Heat transmission factor pipewall
0,18
kCal/degrC/m
Product parameters
Cement
Product density
3100
kg/m3
Bulk density
1100
kg/m3
Particle size
50
micron
Suspension velocity
1,8
m/sec
Product loss constant
0,095
Product loss factor
1,4866E-12
Wall friction factor
0,5
Intake pressure drop pressure discharge
100
mmWC
v-wall / v-susp
1,75
Filter resistance factor
1500000
Specific heat content
0,2
kCal/kg/C
product loss factor constant y/n
n
Change product
Filter
Filter area
80
m2
Convey pipeline
Convey length horizontal
9
m
Convey length vertical
42
m
Total length
51
m
Number of Bends
3
Pipe diameter begin
365
mm
Pipe diameter end
365
mm
Calculation settings
Predicted capacity at 2.5 bar
542
tons/hr
Set capacity
120
tons/hr
Pressure
2955
mmWC
Back pressure
0
mmWC
Set pressure drop
2955
mmWC
Calculation selection
Pressure fixed –> capacity calculated
Capacity fixed –> pressure calculated
Pressure and capacity fixed –> intake pressure drop calculated
Pressure and capacity fixed –> constant loss factor calculated
Pressure and capacity fixed –> material loss factor calculated
product loss factor (cwp) kept constant
Calculate


Calculation Table Pressure Conveying
Client
Filepath
Quick modeling
5
of
5
Product
Cement
Convey Length horizontal
9
m
Convey Length vertical
42
m
Total Length
51
m
Number of Bends
3
Pump displacement at 2.5 bar(o)
1,6
m3/sec
Volumetric efficiency
0,94
%
Booster displacement
0
m3/sec
Rotarylock leakage
0
m3/sec
Gas displacement at end
1,5934
m3/sec
Capacity
120
tons/hr
Pressure
2955
mmWC
Back pressure
0
mmWC
Pressure drop
2955
mmWc
Loading ratio
18,3
Pipeline energy consumption
1,05
kWh/ton
Compressor power
126
kW
Conveying energy
44
kW
Pneumatic conveying efficiency
34,9
%
Bend losses
8,2
kW
Material intake loss
1,45
kW
Re-number * 10^5
3,803
Empty pipeline pressure drop
372
mmWc
Empty pipeline filter press. drop
123
mmWc
Material loss factor
1,4866E-12
Lossfactor at end
0,0039
Intake pressure drop
100
mmWc
Progress
Filter
Iteration
Table calculation
Part
Part description
Length(t)
v-gas
v-product
Pressure drop
v-wall/ v-susp
residence time
mass kg
kW
% kW
Bend loss kW
Bend loss % kW
Sediment
1 Intake 1 14,6 10,3 248 3,01 0,123 3 3,5 8
2 Pipe 0,01 16,47 10,35 250 3,52 0,124 0 0 0
3 Diameter Transfer 16,47 10,35 250 0,124 0 0
4 Pipe 0,01 16,47 10,4 251 3,52 0,125 0 0 0
5 Bend 16,47 1,99 251 0,4485 13 0 1,7 3,9
6 Pipe 35 17,54 13,14 2220 3,64 3,2305 95 28,7 65,2
7 Diameter Transfer 17,54 13,14 2220 3,2305 0 0
8 Pipe 7,01 17,92 13,41 2567 3,68 3,7585 18 5,3 12
9 Bend 17,92 1,99 2567 5,011 51 0 2,9 6,6
10 Pipe 10 18,17 14,77 2865 3,7 5,733 24 4,6 10,6
11 Bend 18,17 1,99 2865 6,4016 26 0 3,5 8,1
12 Outlet 18,17 1,99 2865 6,4016 0,3052
13 Filter 192 m2 0,5 m/min 2955 6,4016 1,4241 90 mmWC
Back to Menu
Print calculation
Change product
New Calculation
Calculation results