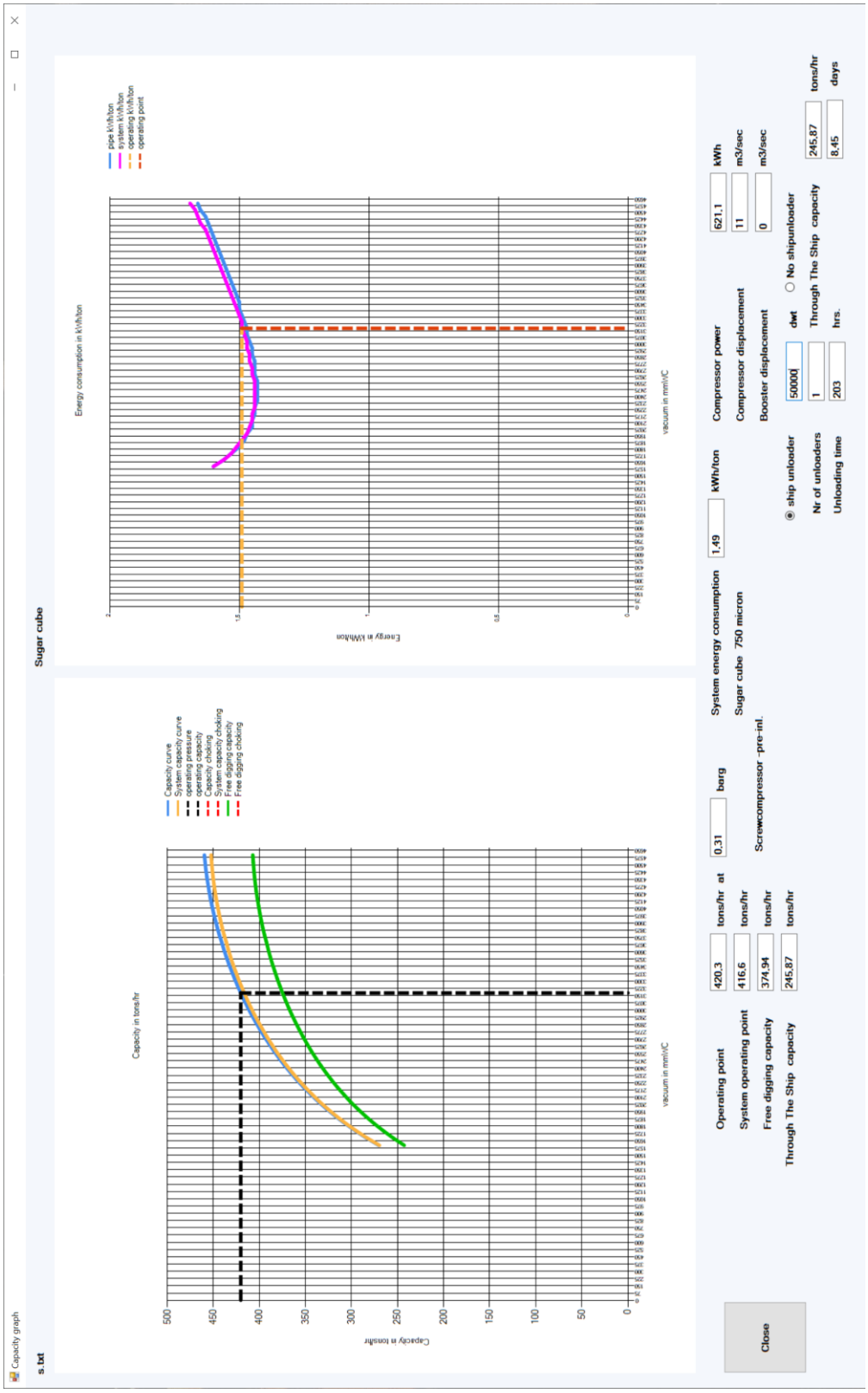
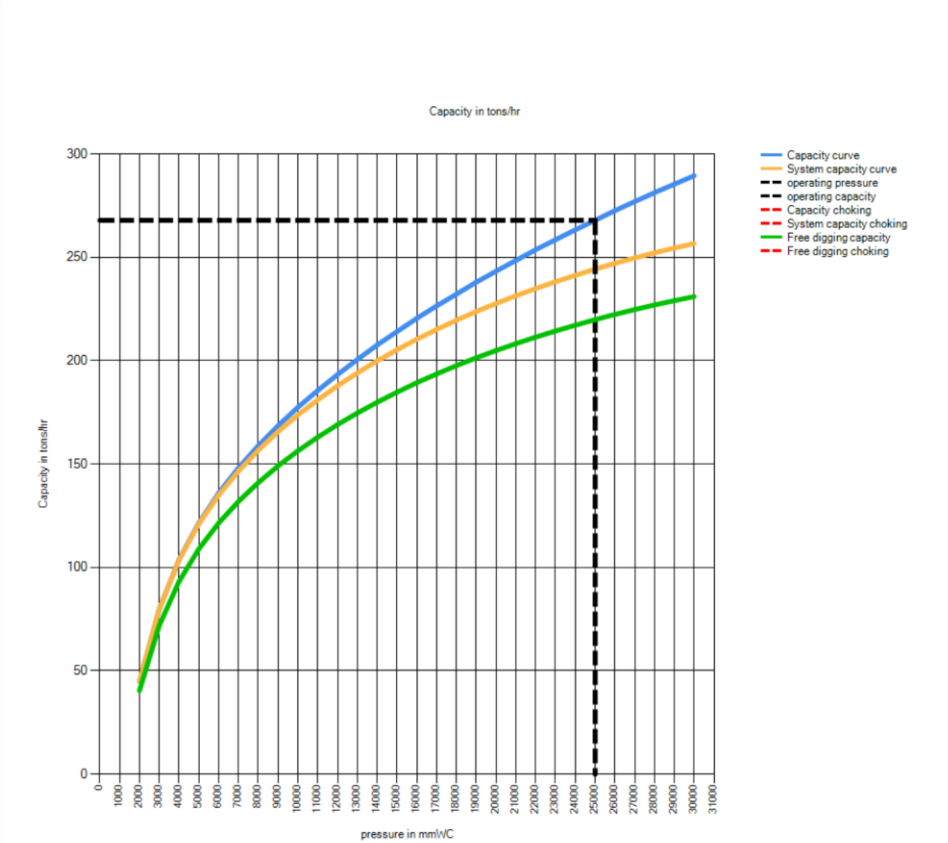
Pneumatic vacuum/discharge ship unloader system orientational calculation.

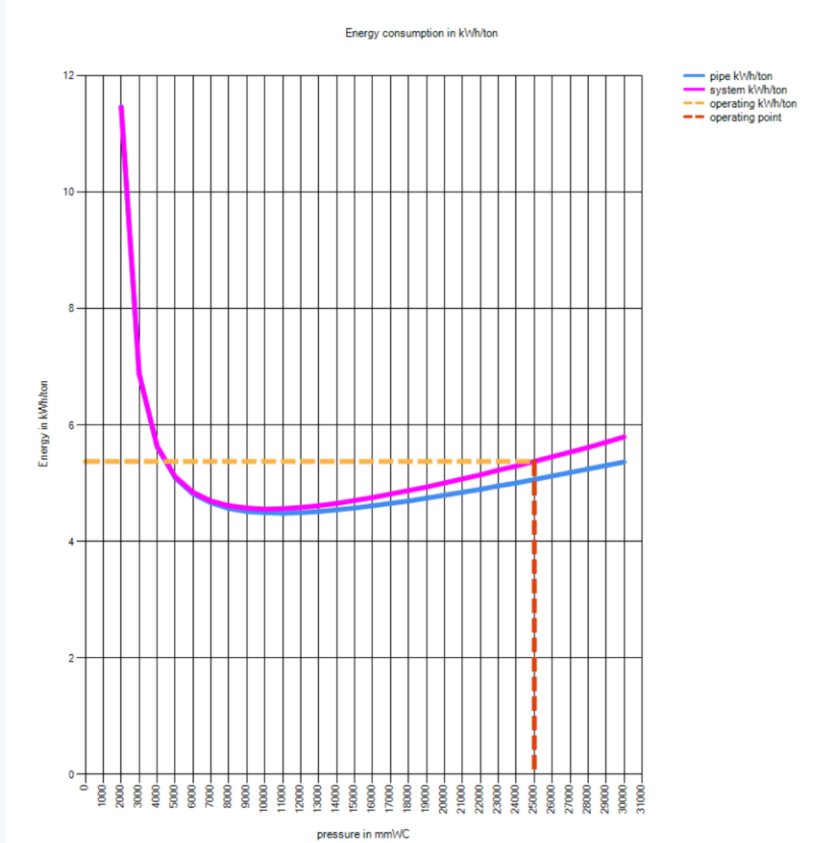


Capacity graph

djk-sugarcube-20inch.txt



Sugar cube



Close

Operating point 267,9 tons/hr at 2,5 barg

System operating point 244,3 tons/hr

(Screwcompressor)

System energy consumption 5,37 kWh/ton

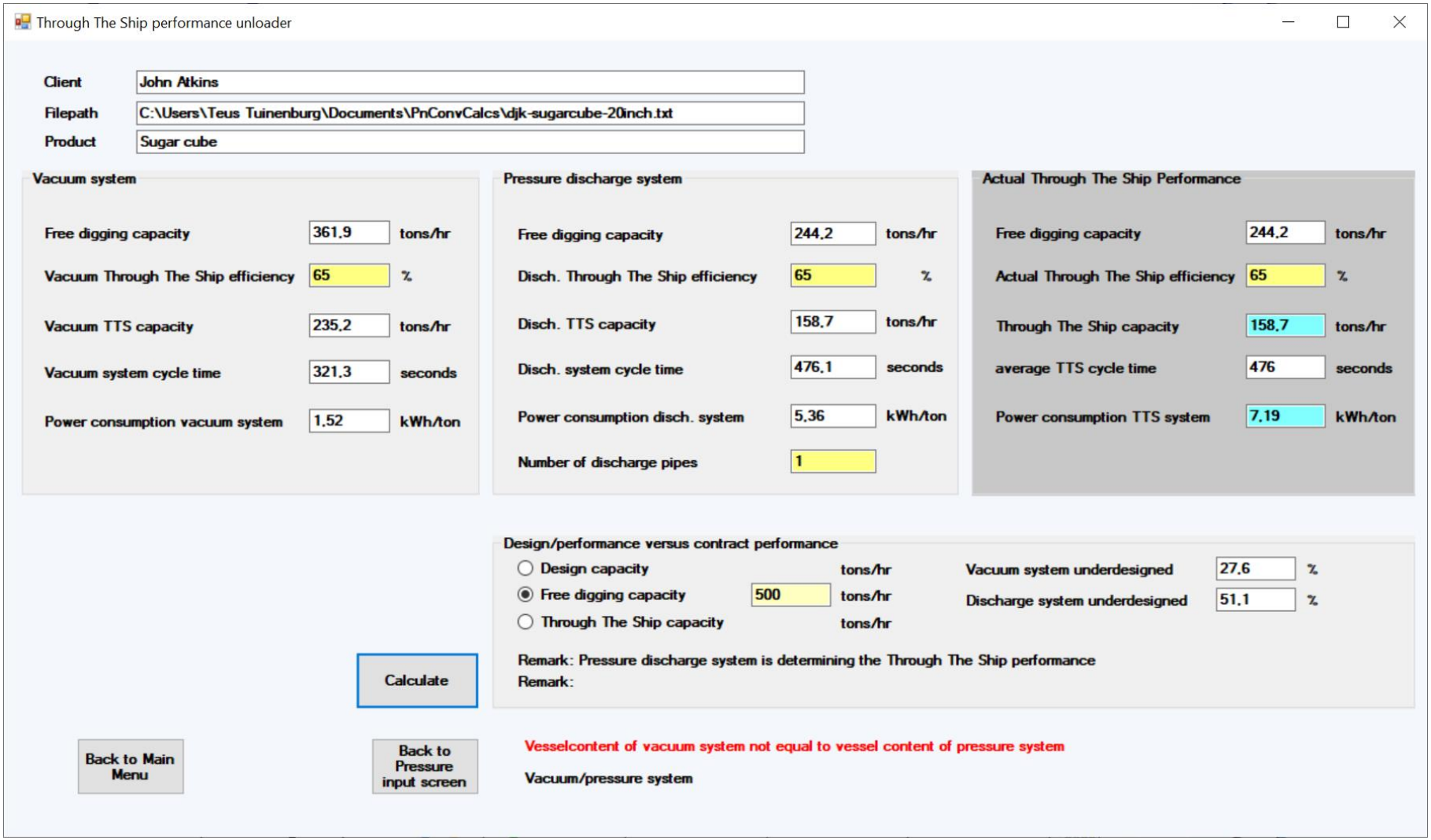
Sugar cube 750 micron

Compressor power 1358,3 kWh

Compressor displacement 6 m3/sec

Booster displacement 0 m3/sec

○ ship unloader ◉ No shipunloader


Through The Ship performance unloader
Client
John Atkins
Filepath
C:\Users\Teus Tuinenburg\Documents\PnConvCalcs\djk-sugarcube-20inch.txt
Product
Sugar cube
Vacuum system
Free digging capacity
361,9
tons/hr
Vacuum Through The Ship efficiency
65
%
Vacuum TTS capacity
235,2
tons/hr
Vacuum system cycle time
321,3
seconds
Power consumption vacuum system
1,52
kWh/ton
Pressure discharge system
Free digging capacity
244,2
tons/hr
Disch. Through The Ship efficiency
65
%
Disch. TTS capacity
158,7
tons/hr
Disch. system cycle time
476,1
seconds
Power consumption disch. system
5,36
kWh/ton
Number of discharge pipes
1
Actual Through The Ship Performance
Free digging capacity
244,2
tons/hr
Actual Through The Ship efficiency
65
%
Through The Ship capacity
158,7
tons/hr
average TTS cycle time
476
seconds
Power consumption TTS system
7,19
kWh/ton
Design/performance versus contract performance
Design capacity
tons/hr
Free digging capacity
500
tons/hr
Through The Ship capacity
tons/hr
Vacuum system underdesigned
27,6
%
Discharge system underdesigned
51,1
%
Remark: Pressure discharge system is determining the Through The Ship performance
Remark:
Calculate
Back to Main Menu
Back to Pressure input screen
Vesselcontent of vacuum system not equal to vessel content of pressure system
Vacuum/pressure system

Comments

This calculation is the first step in the design process.

The next step in the procedure is to improve the design, by searching for the optimum solotion based on material flow- and pneumatic conveying lab tests