MEKPCO FLARE NETWORK DESIGN

ASPEN FLARENET

Content

Flare System Design Procedure

In order to design a flare package, the following procedure is taken:

1. Determination of worst-case scenarios
2. Flare network line sizing using Aspen flarenet and API-527
3. Flare K.O.D sizing using API-527 excel sheet
4. Stack height and diameter calculation by API-527

System Description

The overall Flare system consists of three parts:

1. The first part is made of flare network and K.O.D inside MEKPCO plant. The second part is made of flare main pipes between the tie-in point of the plant and flare area at the northeast. The third part consists of flare stack package which will be located on the north mountain. The stack will be located at X:652388, Y:3051685, Z:135.

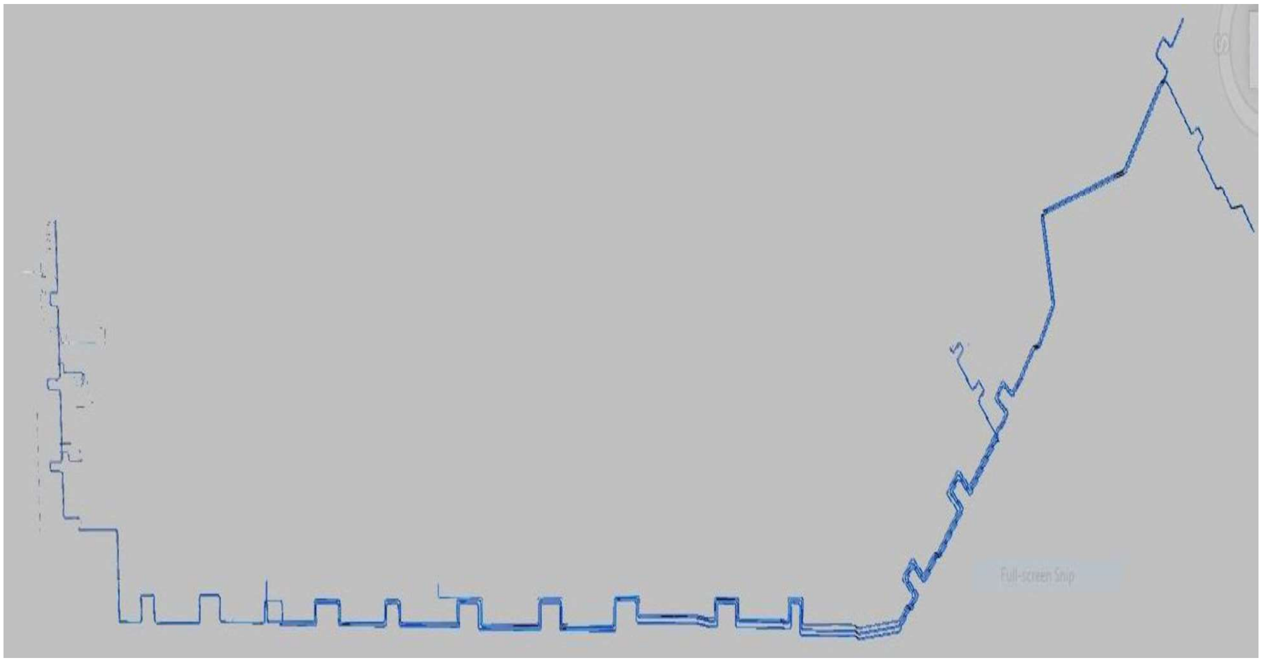
2. The flare main header approximate length is considered 2715 for hydraulic analysis implementation, including the flare piping length 305m between the starting point and the tie-in point in methanol plant and the flare piping length 2410 between the tie-in point and the actual flare site.

3. For the flare piping routing, one stress expansion loop is set at about 60 m distance, about 27 stress expansion loops between the tie-in point and the flare stack.

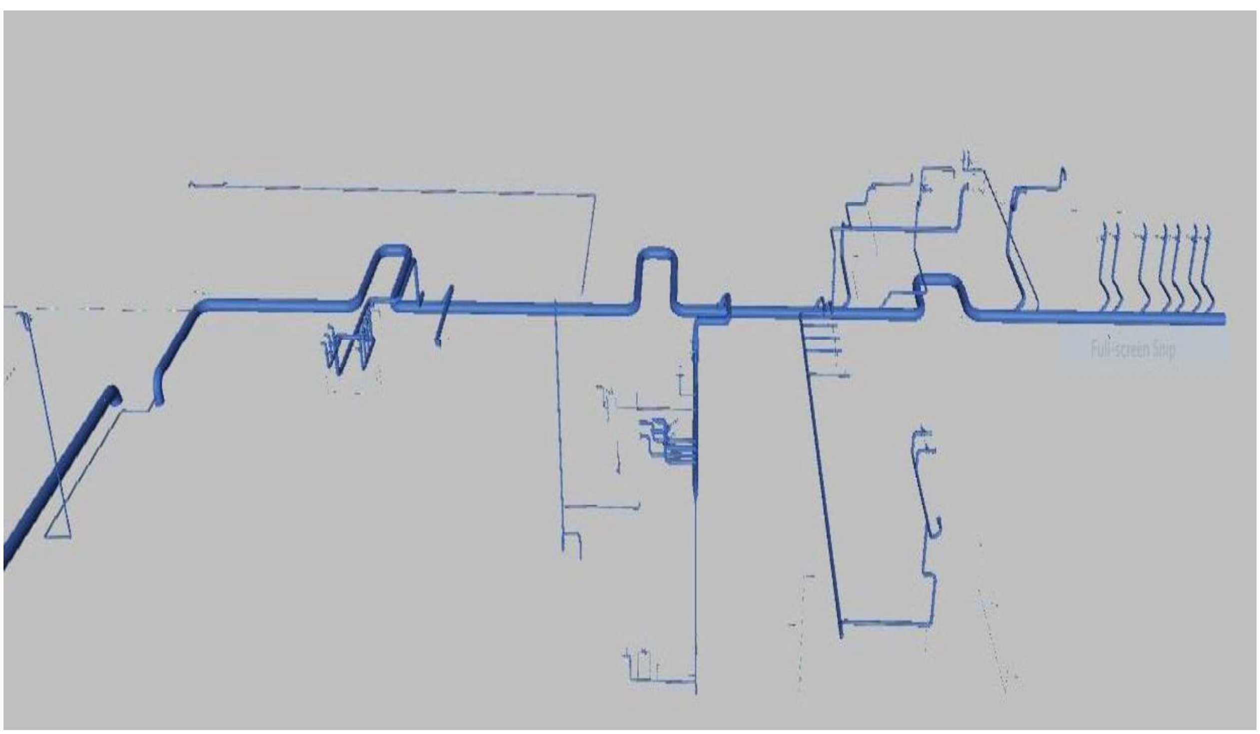
4. For the flare piping routing, the elevation changes between the tie-in location of methanol plant and the actual flare site is about 111m.

5. The backpressure at the flare stack is 1.4 bara.

The Whole Plot



In Site Flare Header



Criteria and Design Basis

The sizing of relief discharge piping can usually be simplified by starting at the system outlet, where the pressure is known, and working back through the system to verify acceptable backpressure at each PRD Calculations is performed in a stepwise manner for each pipe segment of constant diameter.

Several methods for calculating the size of discharge piping have been developed using isothermal or adiabatic flow equations. Actual flow conditions in relief systems are normally somewhere between isothermal and adiabatic conditions. For most cases, the slightly more conservative isothermal equations are recommended.

- For both header and tailpipes, the Mach number of both 0.1 and 0.5 are taken into account.
- The maximum ρv2 for the whole piping should be 150000 kg/m/s2
- The sound/ noise level should not exceed the recommended value of 100 DBA

Determination of worst-case scenario

All possible sources of relief load are summarized below and the worst-case scenario is detected.

PID	Tag No.	Fluid	Contingency	Flow rate (kg/hr)	MW (g/mole)	T (°C)	LHV (kJ/Nm³)	HHV (kJ/Nm³)	Reference stream no.[1]
P01	PSV-1008 / PSV-1009	Natural gas	Inadvertent valve opening of PV-1006	2000	16.74	40	34496	38260	2005
P01	PSV-1013 / PSV-1014	Natural gas	Inadvertent valve opening of PV-1011	27700	16.74	35	34496	38260	7005
P01	PSV-1015	Natural gas	Fire around D 1001	800	16.74	85	34496	38260	2000
P04	PSV-1031	Process gas	Fire around R 1001	1200	16.54	410	33834	37542	2030
P04	PSV-1038	Process gas	Fire around R 1002 1	1200	16.54	410	33834	37542	2040
P04	PSV-1043	Process gas	Fire around R 1002 2	1200	16.54	410	33834	37542	2040
P04	PV-1045	Process gas	Valve failure at normal operating pressure/start-up	63000	16.54	365	33834	37542	2040
P07	PSV-6053	Steam + natural gas	Fire around D 6001	3800	13.14	283	7350	8900	2200
P09	PV-2073	Process gas	Valve failure at normal operating pressure/start-up	165300	17.47	262	13565	16226	2090
P09	PSV-2078	Recycle gas from C 2002	Inadvertent valve opening of FV-2079	1500	11.44	48	10367	11751	3000
P17	PSV-2354 / PSV-2355 / PSV-2356 / PSV-2357 / PSV-2358 / PSV-2359 / PSV-2360 /	Reformed gas	Blocked outlet	510000	13.14	360	7350	8900	2200
P19	PV-2406	Reformed gas	Valve failure at normal operating pressure/trip of downstream units	222400	13.17	165	7350	8900	2200

PID	Tag No.	Fluid	Contingency	Flow rate (kg/hr)	MW (g/mole)	T (°C)	LHV (kJ/Nm³)	HHV (kJ/Nm³)	Reference stream no.[1]
P21	PV-2481	Reformed gas	Valve failure at normal operating pressure/trip of methanol synthesis	282200	11.44	48	10367	11751	3000
P21	USV-2482	Reformed gas	Reformer Trip	29700	11.44	48	10367	11751	3000
P22	HV-3011	Synthesis gas	Small purge (short duration)	4000	11.44	48	10367	11751	3000
P22	PSV-3021	Synthesis gas	Fire around R 3001 1/2/3	5600	9.81	120	10426	12029	3110
P27	PSV-3163	Synthesis gas	Fire around D 3001	19000	9.37	100	10441	12132	3190
P27	PV-3166	Recycle gas	Valve failure at normal operating pressure/start-up	51000	11.4	48	10441	12132	3190
P27	HV-3166	Recycle gas	Maximum flow	51000	11.4	48	10441	12132	3190
P27	PSV-3173 / PSV-3174	Purge gas	Inadvertent valve opening of FV-3169	41800	9.37	48	10441	12132	3190
P28	PSV-3196 / PSV-3197 / PSV-3206	Purge gas	Gas breakthrough from LV-3161	66900	9.37	48	9598	10975	3340
P30	PSV-5058 / PSV-5059 / PSV-5060 / PSV-5061	Methanol vapour	Reflux failure	118800	29.92	116	22076	25549	5030
P32	PV-5109	Off-gas	Maximum case	2400	43.59	48	20664	23009	5145
P34	PSV-5179 / PSV-5180	Methanol vapour	Fire around T 5002	5200	29.08	121	22077	25554	5240
P38	PSV-5250 / PSV-5251 / PSV-5261	Methanol vapour	Reflux failure	100200	27.1	141	16524	19619	5430
P40	HV-5338	Methanol vapour	Manual vent on D 5003	220	32.04	101	28473	32389	5500

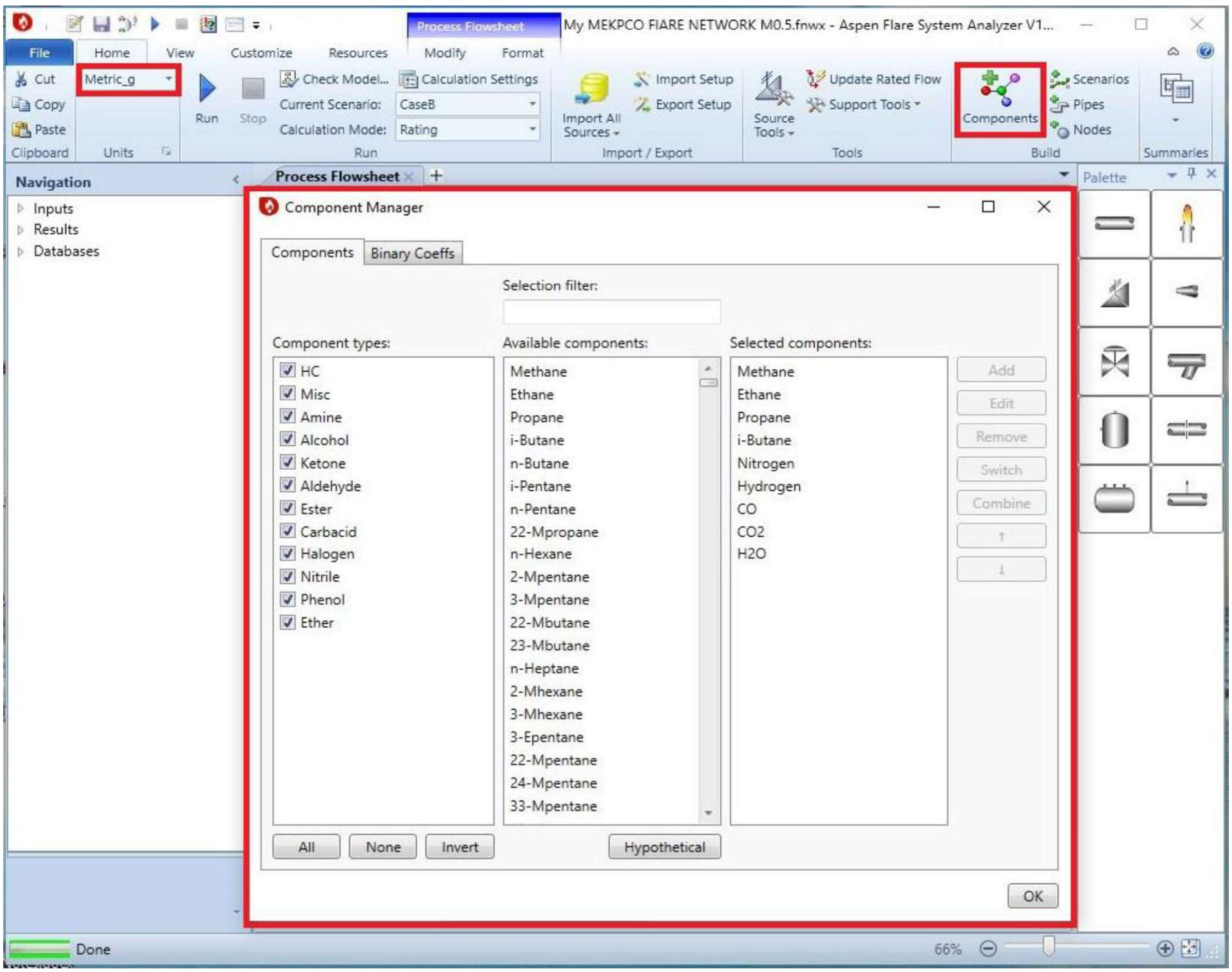
Table 2 - Summary of flaring scenarios cases.

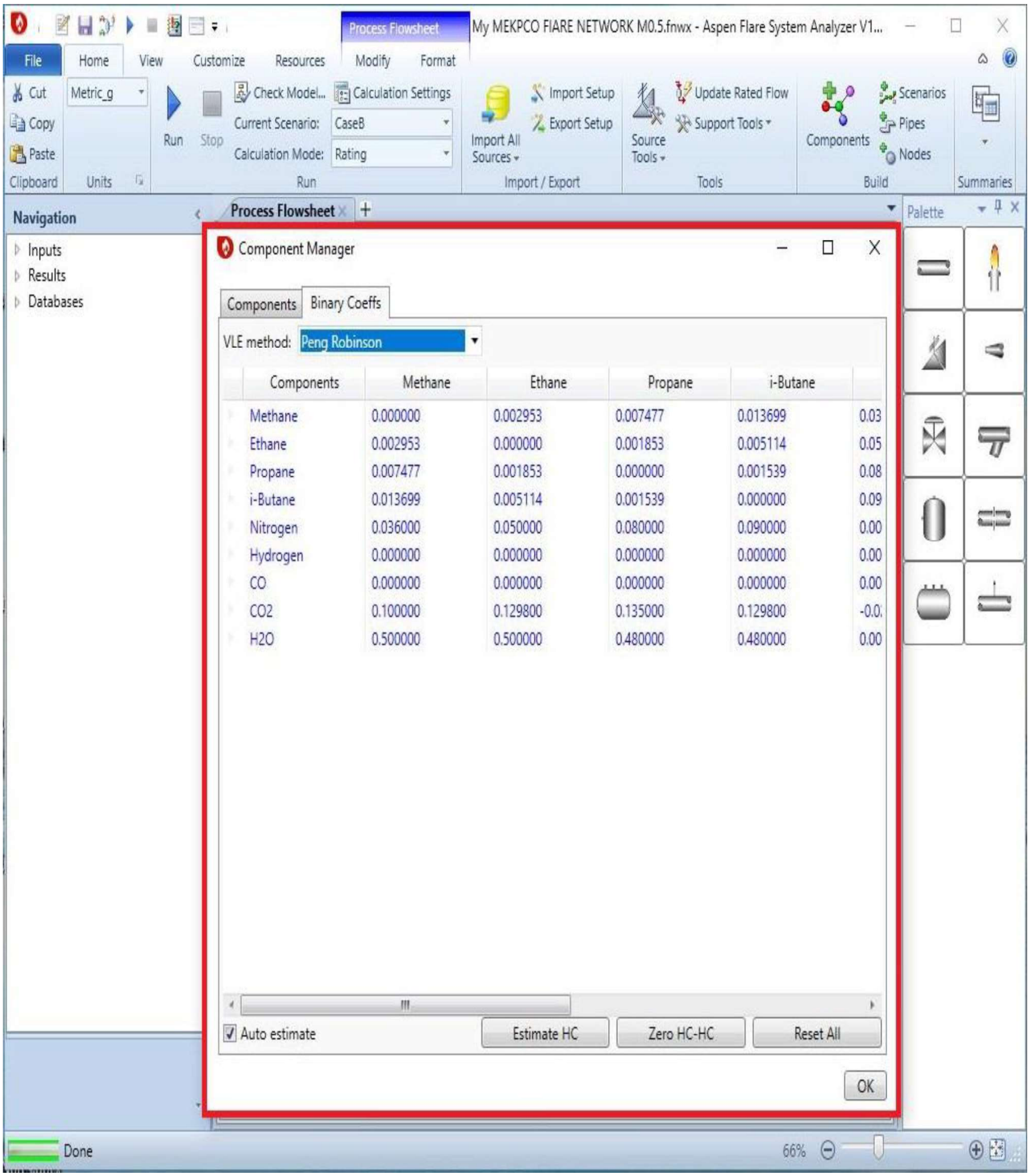
Scenario	Case A	Case B	Case C: Plant Trip
Case Explanation	Reformed gas blocked outlet and overpressure (Maximum discharge case)	Plant Start-up/Shut Down Failure	Valve failure at normal operating pressure/trip of methanol synthesis
Total Mass Flow (Kg/h)	510000	343700	282206
Release source	PSV-2354 PSV-2355 PSV-2356 PSV-2357 PSV-2358 PSV-2359 PSV-2360	PV-2481 USV-2482 PV-2536 B	PV-2481

Flare network line sizing using Aspen flarenet and API-527

Procedure: The discharge load of each release point, the backpressure of flare stack, the diameter and length of each pipe segment is given to seek the Mach number and backpressure alongside each pipe segment.

1st Step: Create the component and set the unit




Process Flowsheet
My MEKPCO FIARE NETWORK M0.5.fnwx - Aspen Flare System Analyzer V1...
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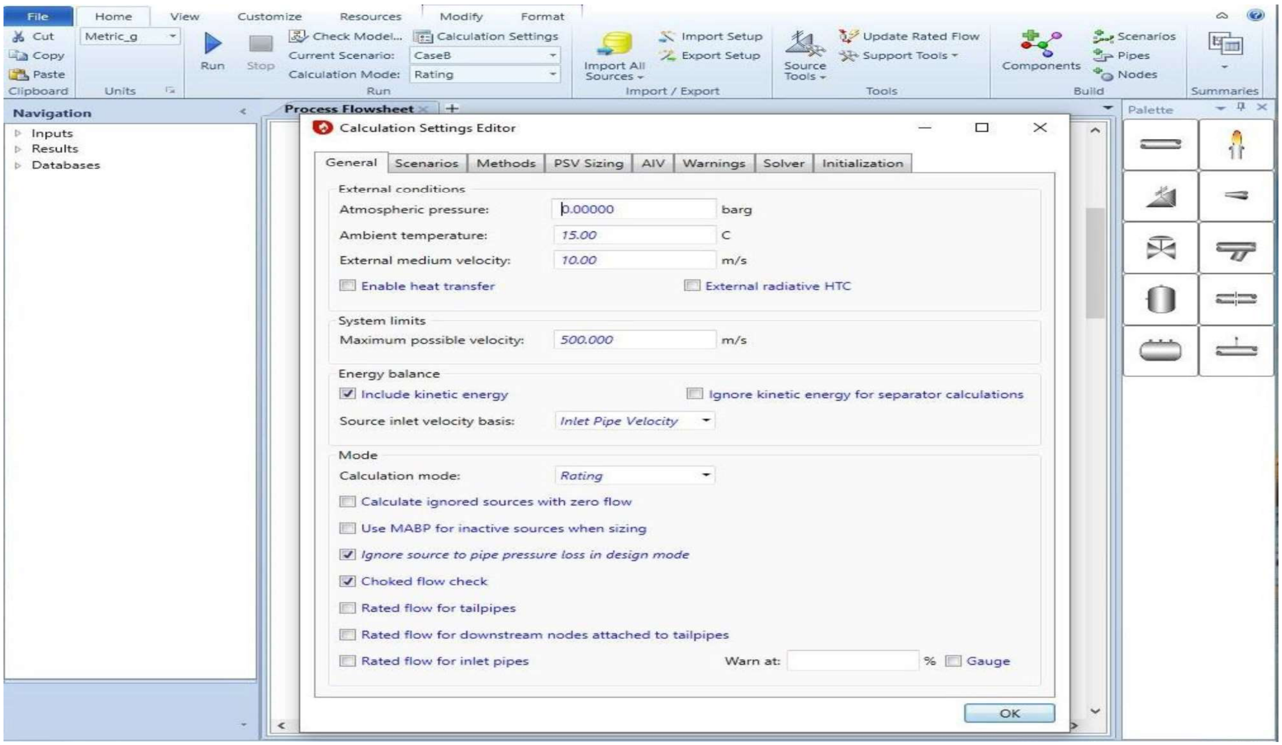
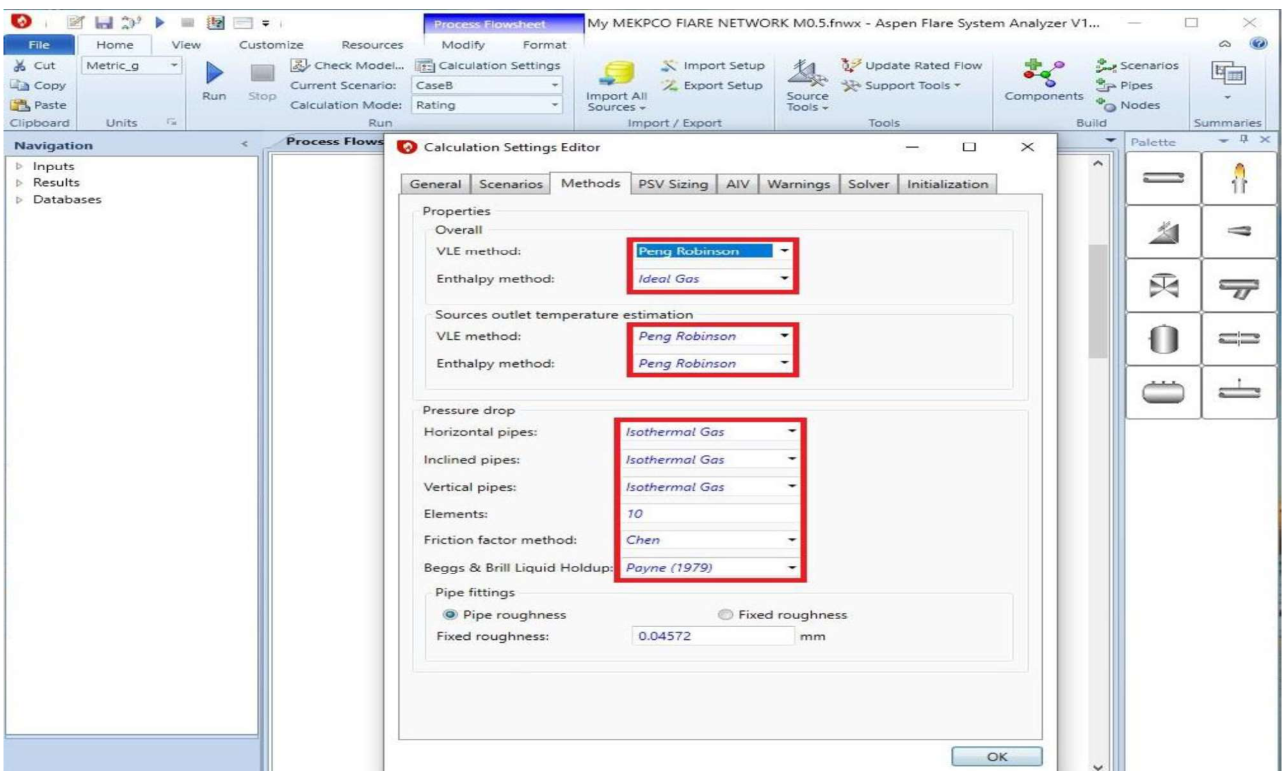
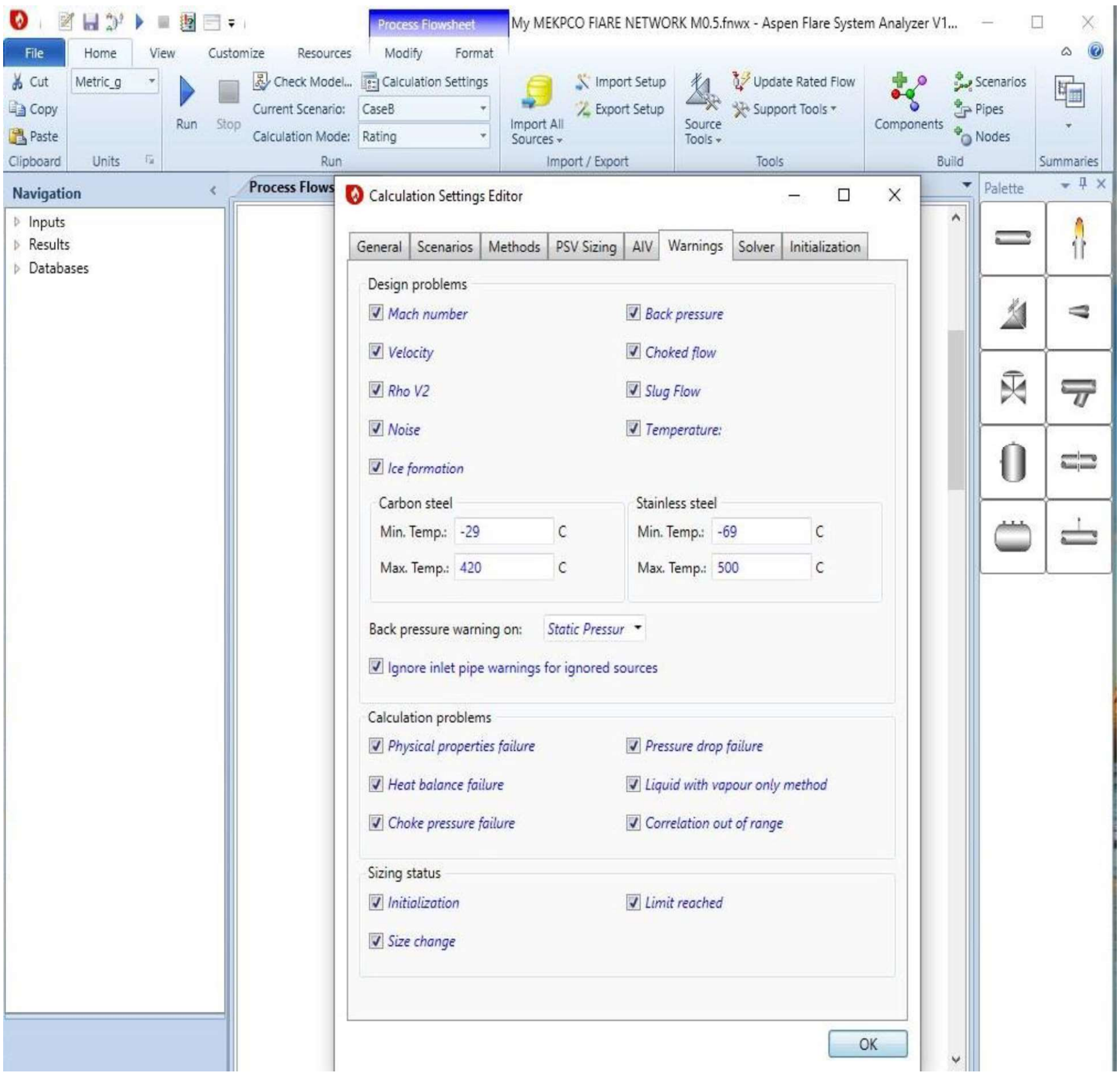
Stop
Check Model...
Calculation Settings
Current Scenario:
CaseB
Calculation Mode:
Rating
Import All Sources
Import Setup
Export Setup
Import / Export
Source Tools
Update Rated Flow
Support Tools
Tools
Components
Scenarios
Pipes
Nodes
Build
Summaries
Navigation
Inputs
Results
Databases
Process Flowsheet
Palette
Component Manager
Components
Binary Coeffs
VLE method:
Peng Robinson
Components | Methane | Ethane | Propane | i-Butane
Methane | 0.000000 | 0.002953 | 0.007477 | 0.013699 | 0.03
Ethane | 0.002953 | 0.000000 | 0.001853 | 0.005114 | 0.05
Propane | 0.007477 | 0.001853 | 0.000000 | 0.001539 | 0.08
i-Butane | 0.013699 | 0.005114 | 0.001539 | 0.000000 | 0.09
Nitrogen | 0.036000 | 0.050000 | 0.080000 | 0.090000 | 0.00
Hydrogen | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.00
CO | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.00
CO2 | 0.100000 | 0.129800 | 0.135000 | 0.129800 | -0.0
H2O | 0.500000 | 0.500000 | 0.480000 | 0.480000 | 0.00
Auto estimate
Estimate HC
Zero HC-HC
Reset All
OK
Done
66%

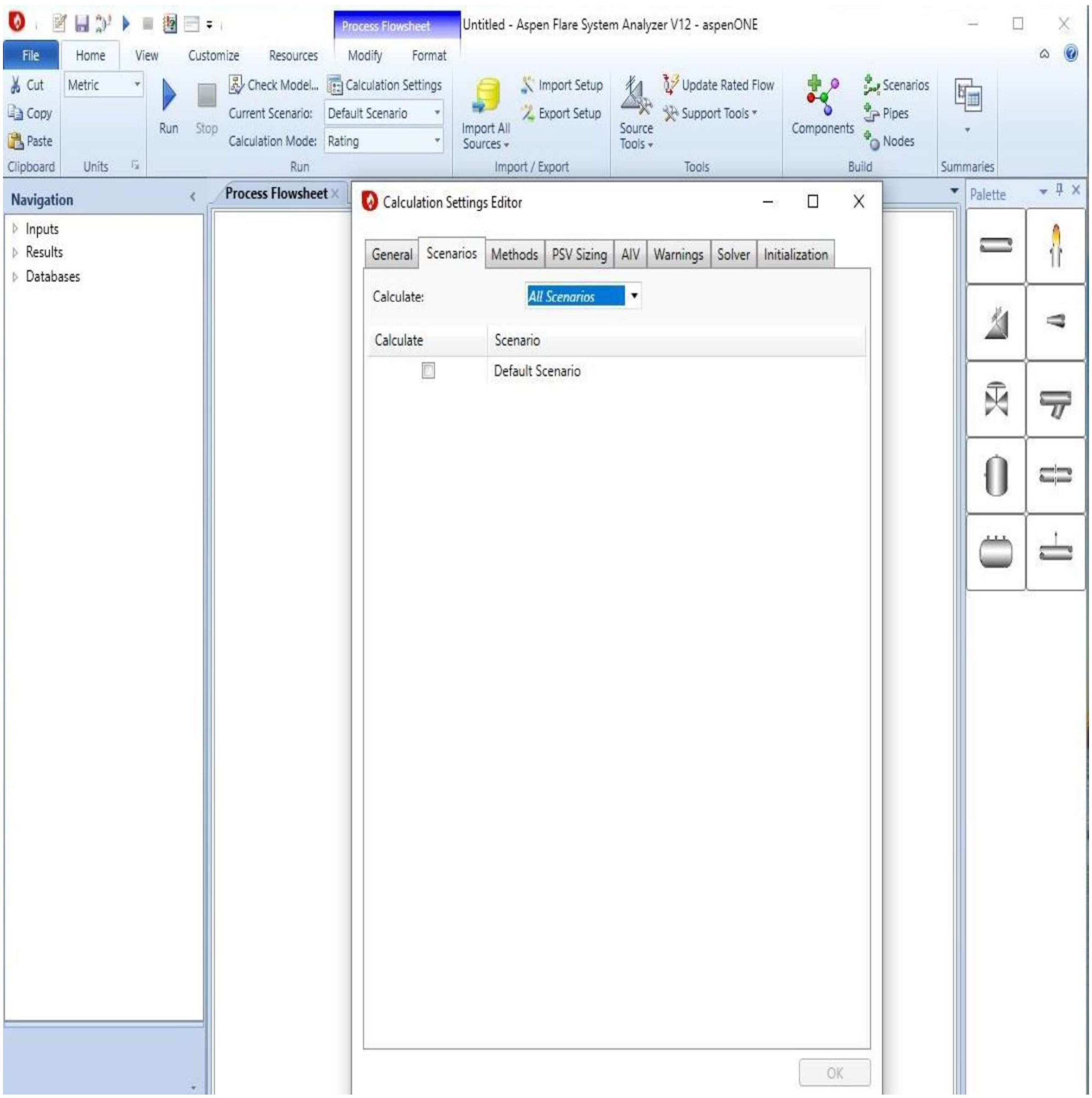
2nd Step: Checking “Calculation Setting”





Note: There is no need to change PSV sizing, Solver, Initialization and AIV tabs in calculation setting.

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Untitled - Aspen Flare System Analyzer V12 - aspenONE
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Home
View
Customize
Resources
Modify
Format
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Paste
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Metric
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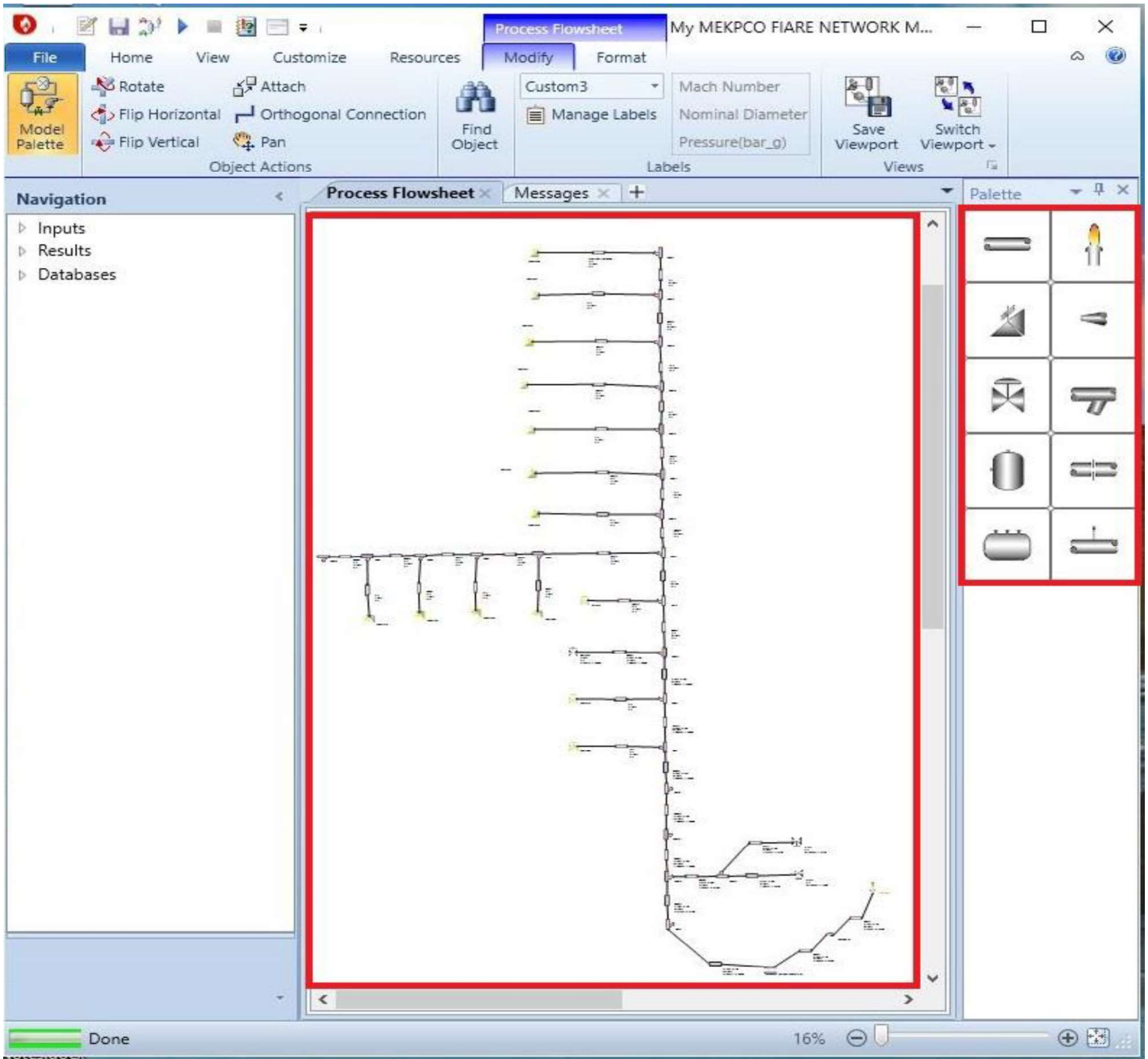
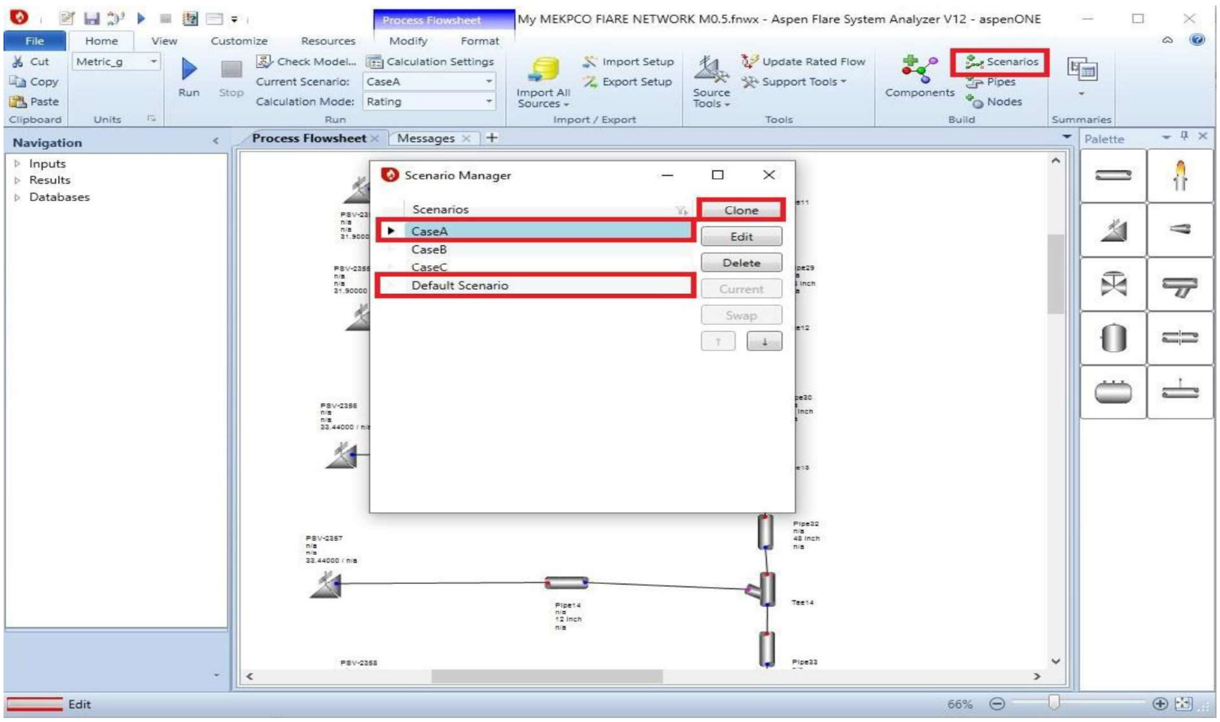
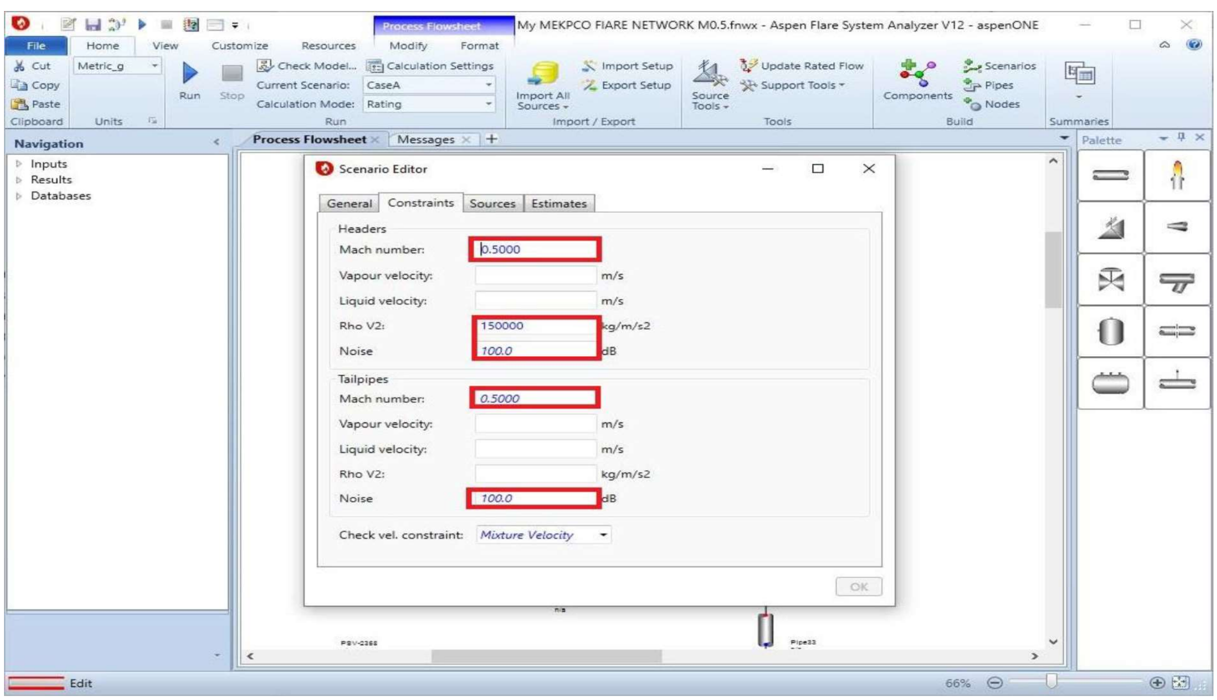
Run
Stop
Check Model...
Calculation Settings
Current Scenario:
Default Scenario
Calculation Mode:
Rating
Import All Sources
Import Setup
Export Setup
Import / Export
Source Tools
Update Rated Flow
Support Tools
Tools
Components
Scenarios
Pipes
Nodes
Build
Summaries
Navigation
Inputs
Results
Databases
Process Flowsheet
Calculation Settings Editor
General
Scenarios
Methods
PSV Sizing
AIV
Warnings
Solver
Initialization
Calculate:
All Scenarios
Calculate
Scenario
Default Scenario
OK
Palette

3rd Step: Create the layout

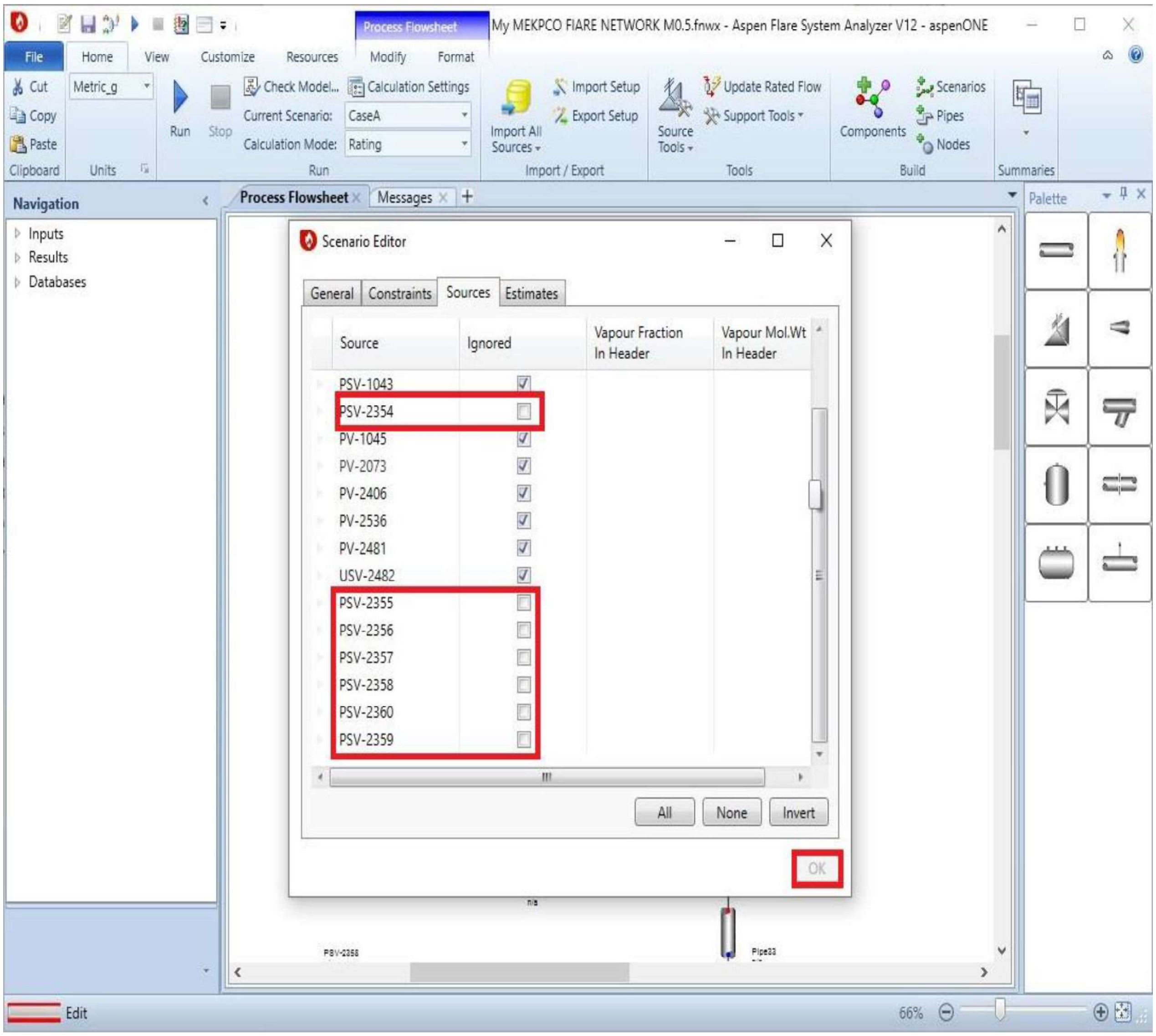


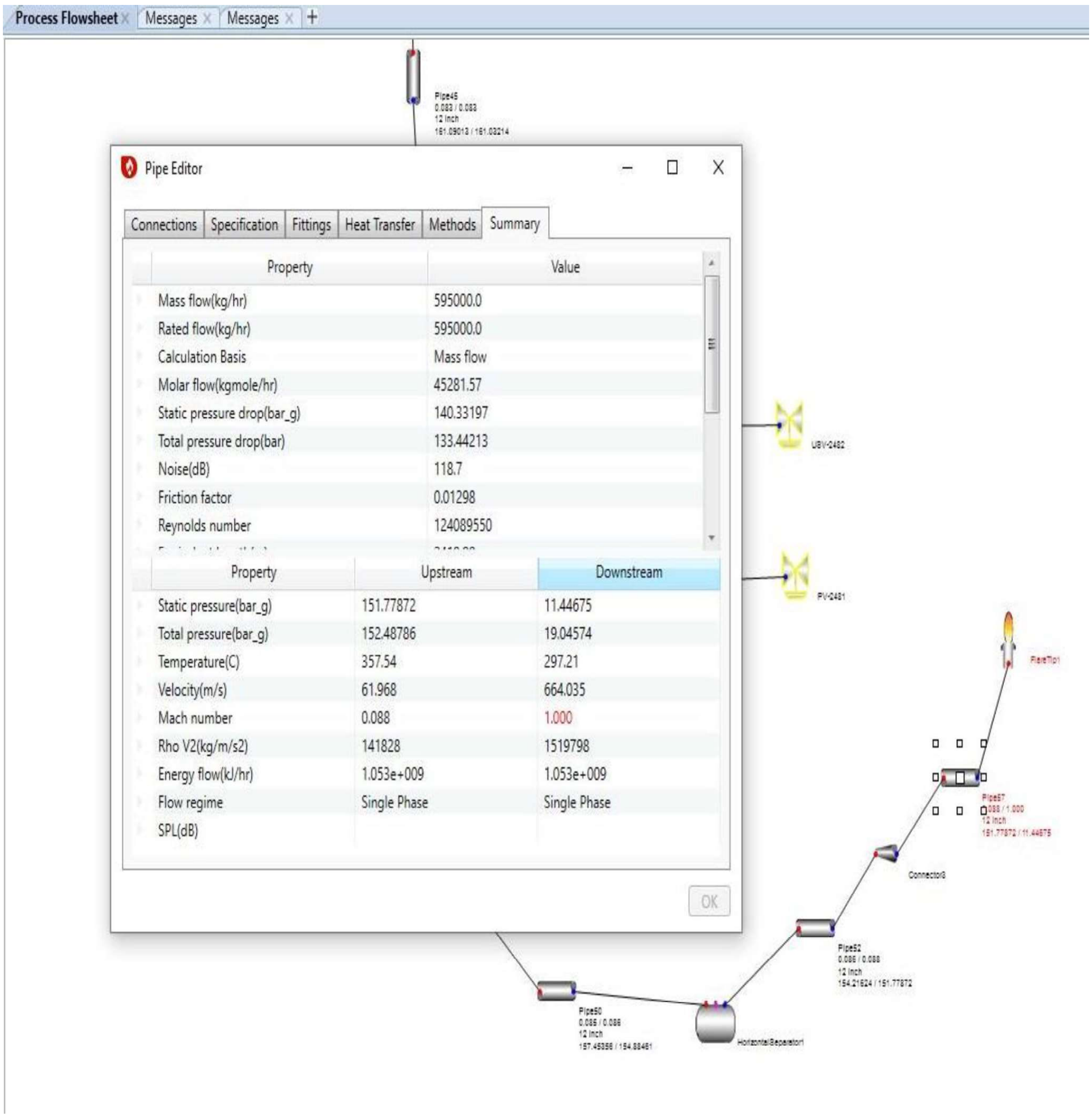
4th Step: Definition of Scenarios



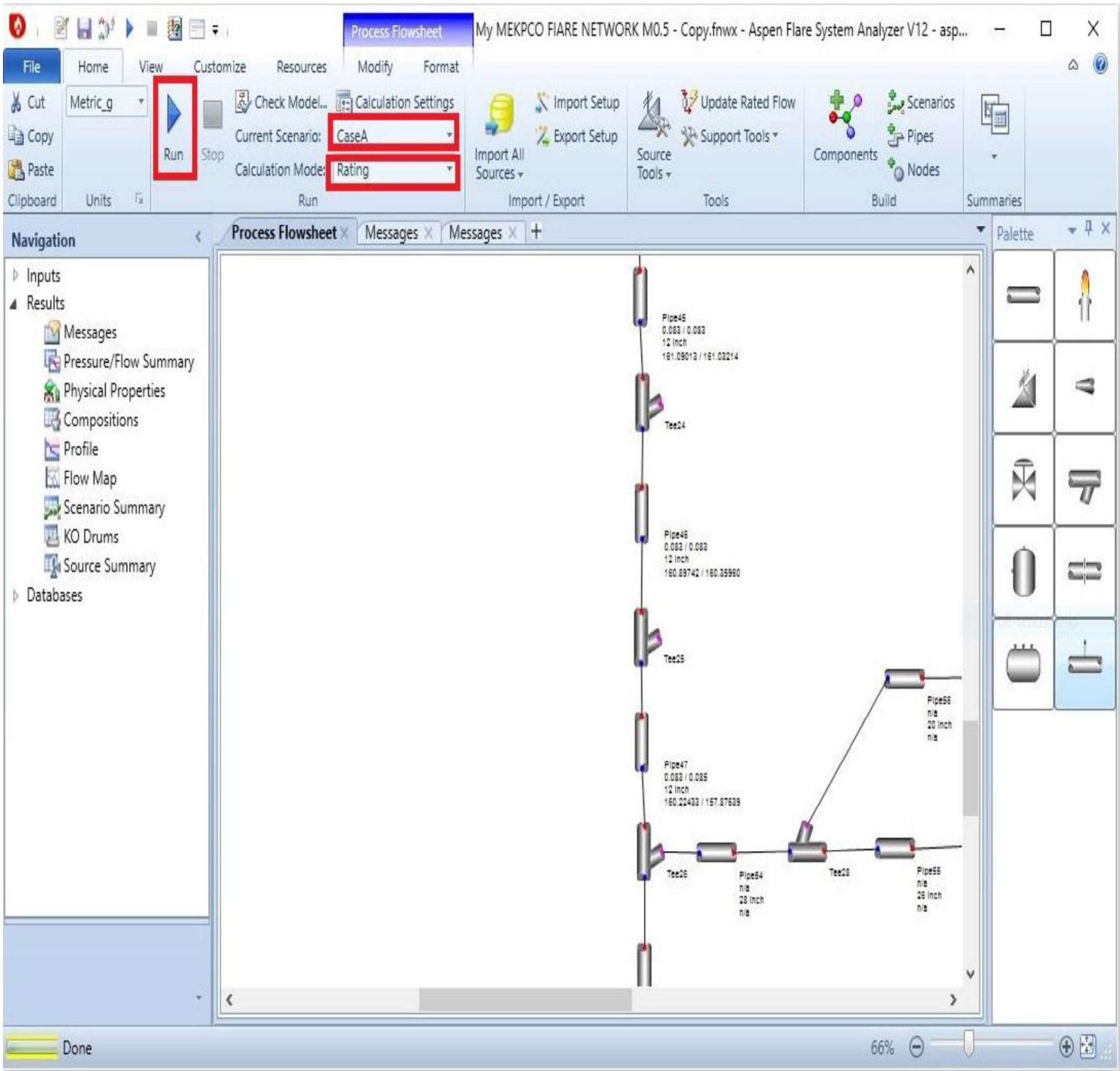


In order to define a scenario, at first "clone" a new scenario from default scenario and then complete the Scenario. Also, in "sources" tab, do not select the PSVs included in the scenario.

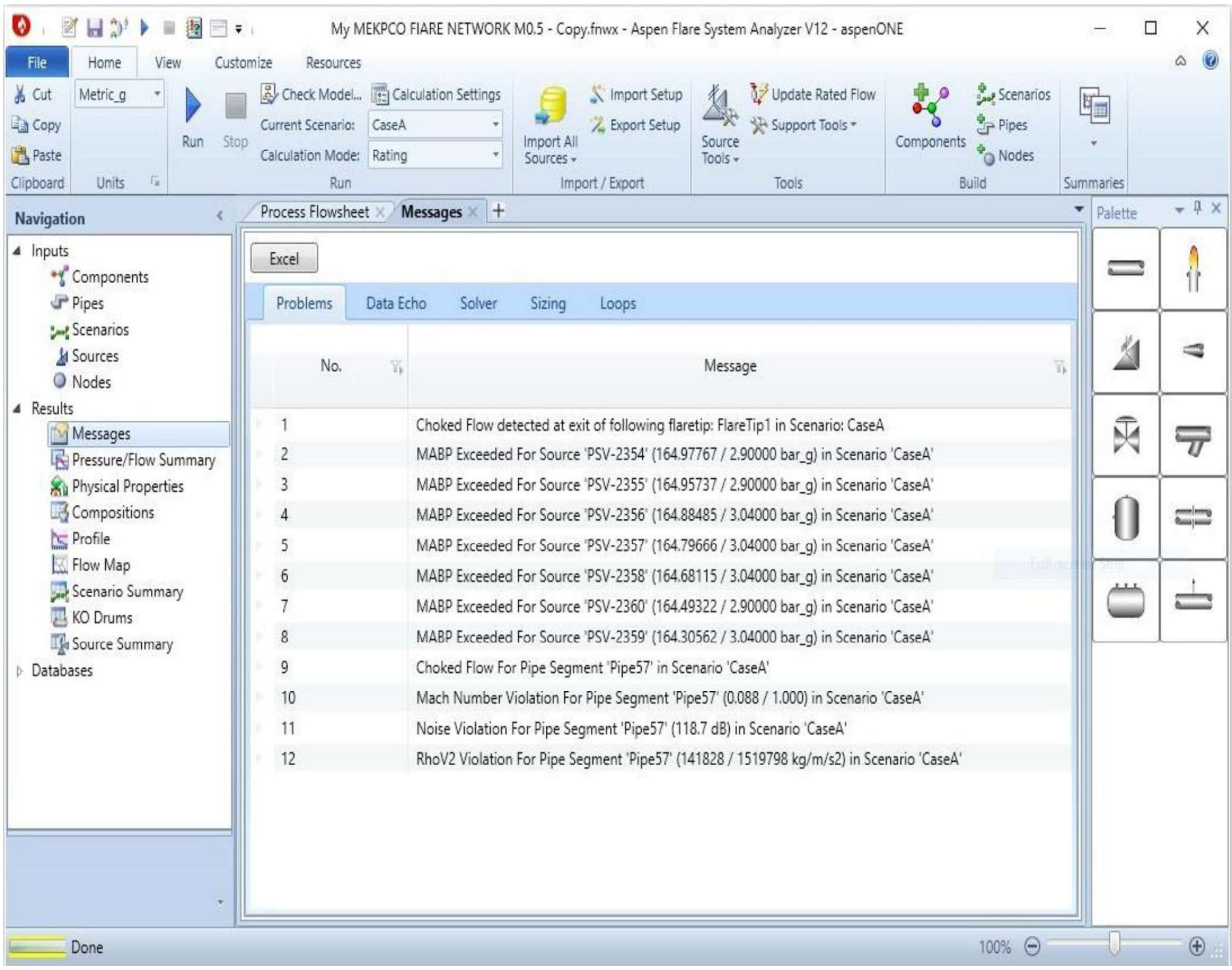



Process Flowsheet
Messages
Messages
Pipe Editor
Connections
Specification
Fittings
Heat Transfer
Methods
Summary
Property
Value
Mass flow(kg/hr) 595000.0
Rated flow(kg/hr) 595000.0
Calculation Basis Mass flow
Molar flow(kgmole/hr) 45281.57
Static pressure drop(bar_g) 140.33197
Total pressure drop(bar) 133.44213
Noise(dB) 118.7
Friction factor 0.01298
Reynolds number 124089550
Property
Upstream
Downstream
Static pressure(bar_g) 151.77872 11.44675
Total pressure(bar_g) 152.48786 19.04574
Temperature(C) 357.54 297.21
Velocity(m/s) 61.968 664.035
Mach number 0.088 1.000
Rho V2(kg/m/s2) 141828 1519798
Energy flow(kJ/hr) 1.053e+009 1.053e+009
Flow regime Single Phase Single Phase
SPL(dB)
OK

5th Step: Act accordingly and Run the software



Results



My MEKPCO FIARE NETWORK M0.5 - Copy.fnwx - Aspen Flare System Analyzer V12 - aspenONE
File
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Check Model...
Calculation Settings
Current Scenario:
CaseA
Calculation Mode:
Rating
Import All Sources
Import Setup
Export Setup
Import / Export
Source Tools
Update Rated Flow
Support Tools
Tools
Components
Scenarios
Pipes
Nodes
Build
Summaries
Navigation
Inputs
Components
Pipes
Scenarios
Sources
Nodes
Results
Messages
Pressure/Flow Summary
Physical Properties
Compositions
Profile
Flow Map
Scenario Summary
KO Drums
Source Summary
Databases
Process Flowsheet
Messages
Palette
Excel
Problems
Data Echo
Solver
Sizing
Loops
No.
Message
1 Choked Flow detected at exit of following flaretip: FlareTip1 in Scenario: CaseA
2 MABP Exceeded For Source 'PSV-2354' (164.97767 / 2.90000 bar_g) in Scenario 'CaseA'
3 MABP Exceeded For Source 'PSV-2355' (164.95737 / 2.90000 bar_g) in Scenario 'CaseA'
4 MABP Exceeded For Source 'PSV-2356' (164.88485 / 3.04000 bar_g) in Scenario 'CaseA'
5 MABP Exceeded For Source 'PSV-2357' (164.79666 / 3.04000 bar_g) in Scenario 'CaseA'
6 MABP Exceeded For Source 'PSV-2358' (164.68115 / 3.04000 bar_g) in Scenario 'CaseA'
7 MABP Exceeded For Source 'PSV-2360' (164.49322 / 2.90000 bar_g) in Scenario 'CaseA'
8 MABP Exceeded For Source 'PSV-2359' (164.30562 / 3.04000 bar_g) in Scenario 'CaseA'
9 Choked Flow For Pipe Segment 'Pipe57' in Scenario 'CaseA'
10 Mach Number Violation For Pipe Segment 'Pipe57' (0.088 / 1.000) in Scenario 'CaseA'
11 Noise Violation For Pipe Segment 'Pipe57' (118.7 dB) in Scenario 'CaseA'
12 RhoV2 Violation For Pipe Segment 'Pipe57' (141828 / 1519798 kg/m/s2) in Scenario 'CaseA'
Done
100%

Solution

In order to resolve the warnings, pipe diameters (all 12’) are increased till the constrains are met. The Starting point is from last pipe segment. When the pipe ID is increased to 54’ then the Mach number for last segment is decreased to 0.46. it was observed that only last pipe has experience Mach number violation.

This could be justified by the fact that the pressure in other pipe is too high that the volumetric flow has reduced dramatically in a way that Mach number is not a problem for these pipes. Interesting!!

Then other pipe segment diameter were increased and when other pipe ID, one by one, reached 46’, the whole header and tail pipes Mach number met the constraints. By the way for smaller diameters like 42’ the tests were carried out but the pipes in the middle of header could not bear and Mach number criterion was not met.

Also, tail pipe ID were increased to 20’ but the backpressure on PSV-2356-60 was higher than the set value, therefore, the PSV type were changed to balanced type and their compatibility to system backpressure was increased and as a result, the warning disappeared. The final diameter for tail pipes were 12’ and smaller diameter were tested but the Mach number criterion failed. So, 12’ was selected.

Also, case B and C were tested and for PV-2481, the pipe ID of 28’ was suitable. For PV-2536B the pipe ID of 8’ was found suitable.

All above calculation are based on Mach number of max 0.5. It is interesting to notice that in Marjan Project the main header before K.O.D is 48’ and the header after K.O.D to flare site is expanded to 64’. It seems that in Marjan Project the max Mach number of 0.5 has been considered as basis of design.

In MEKPCO Project, the max Mach number of 0.1 has been regarded as design basis and as a result, the main header before K.O.D is 56’ and the header after K.O.D to flare site is expanded to 64’.Also ,in next page the comparison between IMPLANT and ASPEN FLARENET results for Mach number of 0.1 is shown.

Case A

PSV-2354	PSV-2355	PSV-2356	PSV-2357	PSV-2358	PSV-2359	P-52-in	P-52-out	P-57-in Mach	P-57-ou Mach
2.836	2.837	2.838	2.845	2.849	2.85	2.474	2.427	0.11	0.129
2.02	2.05	2.12	2.17	2.17	2.13	1.55	1.48	0.18	0.33

Case B

PV-2481	USV-2482	PV-2536	P-52-in	P-52-out	P-57-in Mach	P-57-out Mach
1.37	1.36	1.34	1.22	1.20	0.08	0.09
0.87	0.99	0.78	0.67	0.65	0.11	0.14

Discussion

It sounds that TCC has set Mach number of 0.1 as the criterion in order to have noise level within reasonable limits. Furthermore, Implant and Aspen Flarenet results are compared which shows good Compatibility.

Also, the deviation might stem from different composition because in absence of exact composition, MW Of each source were given to Aspen Flarenet and aspen flarenet estimates the composition.

Flare K.O.D Sizing

1.Knockout drums are typically located on the main flare line upstream of the flare stack or any liquid seal. If there are particular pieces of equipment or process units within a plant that release large amounts of liquid to the flare header, it is desirable to have knockout drums inside the battery limits to collect these liquids. This reduces the sizing requirements for the main flare knockout drum, as well as facilitates product recovery.

2. The economics of drum design can influence the choice between a horizontal and a vertical drum. If a large liquid storage capacity is desired and the vapor flow is high, a horizontal drum is often more economical. Also, the pressure drops across horizontal drums is generally the lowest of all the designs. Vertical knockout drums are typically used if the liquid load is low or limited plot space is available. They are well suited for incorporating into the base of the flare stack.

3. Among disparate configurations proposed in API-527, a combination of a vertical drum in the base of the flare stack and a horizontal drum upstream to remove the bulk of the liquid entrained in the vapor has been selected for MEKPCO. Horizontal drum with the vapor entering one end of the vessel and exiting at the top of the opposite end (no internal baffling);

4.A split-entry or split-exit configuration can be used to reduce the drum diameter (but increase the length) for large flow rates and should be considered if the vessel diameter exceeds 3.66 m (12 ft). Careful consideration should be given to the hydraulics of split-entry configurations to ensure the flow is indeed split in the desired proportion. Inlet nozzles should include means such as baffles or long sweep elbows to prevent re-entrainment of liquid. Long sweep elbows are typically used up to DN 300 (NPS 12) inlet diameter. Baffles are typically used for larger inlet diameters. Neither of these rules has been applied for MEKPCO application.

5. In general, vapor outlet nozzles should not be fitted with any devices (e.g. deflection plates, baffles, demister pads, vane packs, etc.), because of the potential for such devices to fail or plug and obstruct the outlet. Such devices should be used only if the drum is equipped with an alternate outlet nozzle sized for the drum's design vapor flow rate and fitted with a rupture disk (or pin-actuated device) whose burst pressure is selected both to protect the drum against overpressure and to permit proper operation of the drum and relief system in the event the normal vapor outlet becomes obstructed.

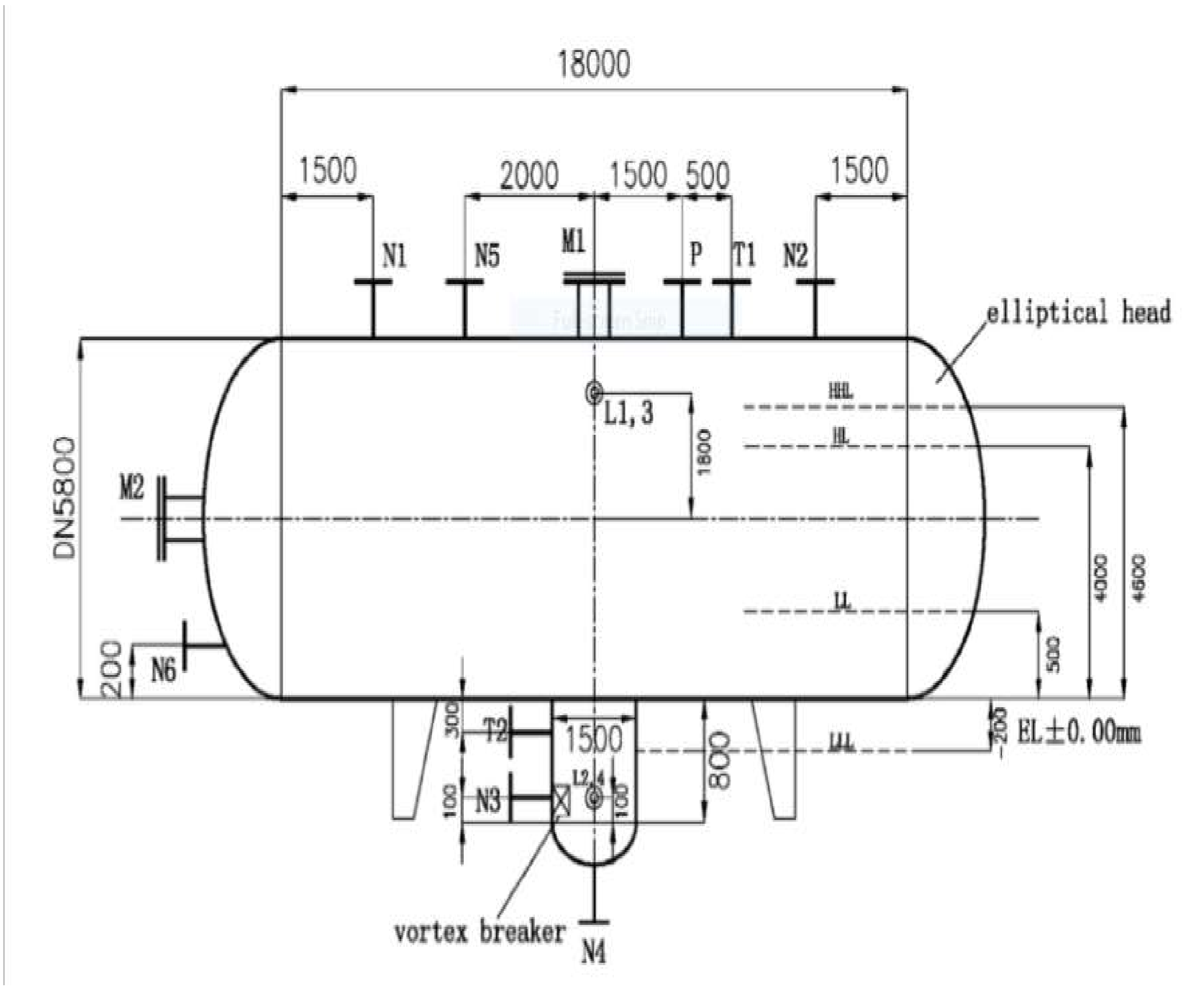
6. Liquid droplets 300 um and larger may drop out of the gas stream at less than 2 m/s. If liquids are not drained from the system, flare flows with gas velocities exceeding about 3 m/s or 4 m/s can entrain liquid droplets up to 1000 μm in size. Liquid droplets exceeding 1000 μm can readily lead to burning rain regardless of flare type.

7. Among different flare burner types alluded to in API-527 steam and air-assisted flare burner has been selected for MEKPCO project. For this design, Flare gases containing less than 1 % by mass of liquids up to a liquid droplet size of 600 μm can be handled smokeless and without burning rain. Some air assisted burners with small ports and operated at significant pressures can handle larger amounts, and with larger droplet size, without smoke.

8. The liquid holdup capacity of a flare knockout drum is based on consideration of the amount of liquid that can be released during an emergency situation without exceeding the maximum level for the intended degree of liquid disengagement. The holdup times vary between users, but the basic requirement is to provide sufficient volume for a 20 min to 30 min emergency release. Longer holdup times might be required if it takes longer to stop the flow. This holdup should also consider any liquid that can have previously accumulated within the drum that was not pumped out. If there has been a liquid discharge to the knockout drum whereby the liquid level exceeds the maximum level required for adequate vapor-liquid separation, then liquid shall be removed to reduce the level back below this maximum level.

9. It is important to realize as part of the sizing considerations that the maximum vapor release case might not necessarily coincide with the maximum liquid. Therefore, the knockout drum size

should be determined through consideration of both the maximum vapor release case as well as the release case with the maximum amount of liquid. If no valid liquid case exists and the vapor is either condensable or has a condensable component, then the design liquid case should be a minimum of 2 wt. % of the maximum gas rate to the flare knockout drum.



1st Step: Nozzle Sizing

The criterion for inlet nozzle sizing is velocity limitation which should be 7-13 m/s.

The criterion for gas outlet nozzle sizing is velocity limitation which should be 15-30 m/s.

The criterion for inlet nozzle sizing is velocity limitation which should be 2-4 m/s.

Parameter	Inlet Nozzle	Gas Outlet Nozzle	Water Outlet Nozzle
Mass	**540000 kg/h**	**510000 kg/h**	**30000 kg/h**
Density		**6.82 kg/m3**	**988 kg/m3**
Qv	**20.25m3/s**	**20.24 m3/s**	**0.01 m3/s**
ID-TCC	**64'**	**72'**	**4'**
Velocity	**9.76 m/s**	**7.7 m/s**	**1.04 m/s**
My ID	**64'**	**64'**	**3'**
Velocity	**9.76 m/s**	**9.76 m/s**	**1.85 m/s**

Note that according to API-521, when there is no criterion stipulating the exact amount of water which should be separated a minimum of 2% by weight of total vapor mass could be selected as basis for calc.

But TCC has assumed 30000 m3/h as the rated capacity of K.O.D pump which is Another matter is that the vendor has selected 72' as outlet nozzle ID which is a bit bigger than what the criterion stipulates. Perhaps the vendor was more concerned with droplet sizing so that the higher the outlet nozzle ID, the lower particle sizing. Probably maximum 300 um has been taken for Design Basis.

2^{nd} Step: K.O.D Diameter and Length Sizing

1. Assume Diameter and consider L= 2.5 or 3 D

2. Calculate AL and AT according to the following equation:

AL = Q.t/ (L.N) AT = Π(D^2)/4 t = Hold-up time

3. Calculate AL/AT and calculate hL/D from the following equation:

$$A_L/A_T=(\theta - \sin\theta)/(2\pi) \text{ and } \theta = 2\arccos(1-2h_L/D),\ \theta \text{ in radians}$$

4. Calculate hV = D. (1 – hL/D)

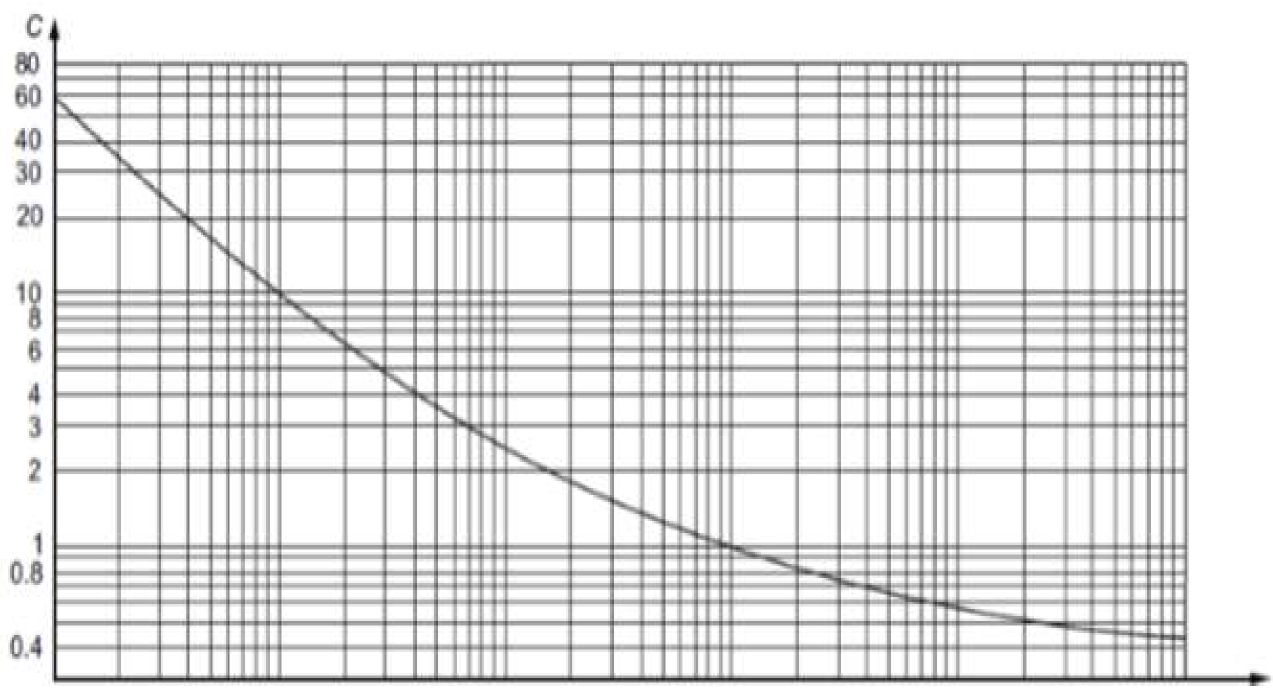
Parameters	Values
Vapor mass kg/h	**510000**
Liquid mass kg/h	**30000**
ρv Kg/m3	**6.8**
ρl Kg/m3	**990**
Dp um	**300**
Hold-up time minute	**30**
L/D	**3**
D meter	**3.5**
L meter	**10.5**

5.Calculate uc by following equation:

$$u_c = 1.15\sqrt{\frac{g \times D(\rho_l - \rho_v)}{\rho_v \times C}}$$

where

- g is the acceleration due to gravity [= 9.8 m/s² (32 ft/s²)];
- D is the particle diameter, expressed in m (ft);
- ρ_l is the density of the liquid at operating conditions, expressed in kg/m³ (lb/ft³);
- ρ_v is the density of the vapor at operating conditions, expressed in kg/m³ (lb/ft³);
- C is the drag coefficient (see Figure 5).



6. Calculate φ = hv/uc
7. Calculate AV = AT-AL
8. Calculate Uv = Qv / (Av.N)
9. Calculate Lreq = Uv. φ .N

Parameters	Value
AL	1.44
AT	9.62
AL/AT	0.15
hL/D	0.21
ERROR	Goal Seek Function
hV/D	0.79
hV	2.77
Uc	0.75
φ	3.7
AV	

Parameters	Value
Uv	**2.55**
Lmin **m**	**9.42**
Inlet ID **inch**	**64**
Outlet ID **inch**	**72**
LT	**14.6**

If initial volume is not zero and is about 50 m3

Parameters	Value
AL	6.2
AT	9.62
AL/AT	0.64
hL/D	0.61
ERROR	Goal Seek Function
hV/D	0.39
hV	1.35

Parameters	Value
Uc	0.75
φ	1.8
AV	3.42
Uv	6.1
Lmin m	10.98
Inlet ID inch	64
Outlet ID inch	72
L	10.5

10.Verification: If L_{Req} is greater than L, increase the drum diameter and repeat the L_{Req} calculations again until L_{Req} is less than L. Also, hl/D should be max 0.5.

Since L_{Req} is less than L then, we ought to increase K.O.D ID to 4 meter and repeat the procedure.

So for doing this, we use Goal seek function in Excel to help us reach exact point of hL/D.

Parameters	Value
D	4
L/D	3
L	12
Uc	0.75

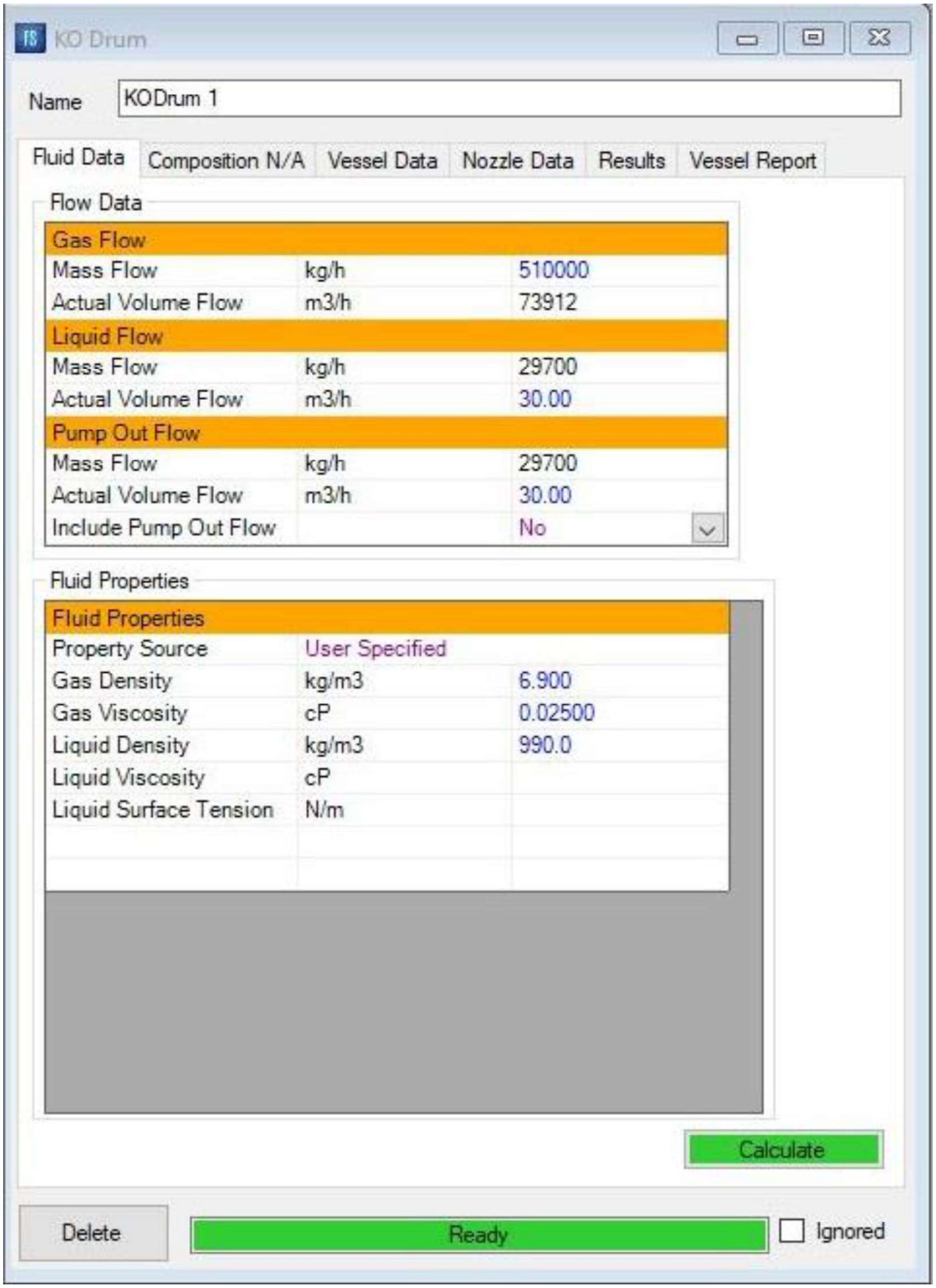
Parameters	Value
AL	5.43
AT	12.57
AL/AT	0.43
hL/D	0.44
ERROR	Goal Seek Function
hV/D	0.55
hV	2.21

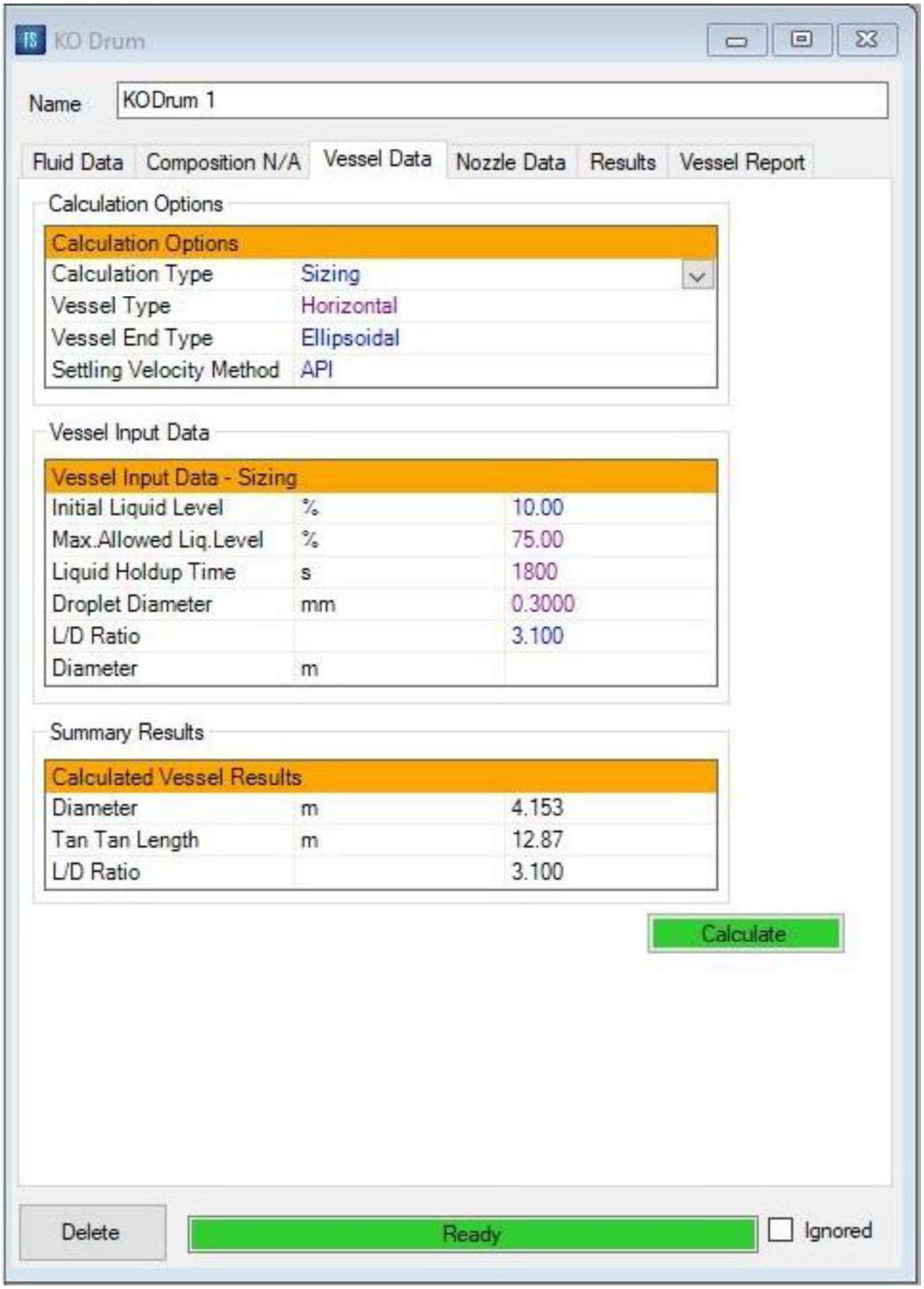
Parameters	Value
φ	2.95
AV	7.14
Uv	2.92
Lmin m	8.62
Inlet ID inch	64
Outlet ID inch	72

TCC has ordered a K.O.D with the following sizing which is oversized in my opinion but appears to be good in handling such amount of gas and condensate.

Parameters	TCC	API-521	Sabalan
Diameter	5.8 m	4 m	5m
Length	18 m	14 m	10m

Flaresim Design




KO Drum
Name
KODrum 1
Fluid Data
Composition N/A
Vessel Data
Nozzle Data
Results
Vessel Report
Calculation Options
Calculation Options
Calculation Type Sizing
Vessel Type Horizontal
Vessel End Type Ellipsoidal
Settling Velocity Method API
Vessel Input Data
Vessel Input Data - Sizing
Initial Liquid Level % 10.00
Max.Allowed Liq.Level % 75.00
Liquid Holdup Time s 1800
Droplet Diameter mm 0.3000
L/D Ratio 3.100
Diameter m
Summary Results
Calculated Vessel Results
Diameter m 4.153
Tan Tan Length m 12.87
L/D Ratio 3.100
Calculate
Delete
Ready
Ignored