What is Pro/II?

Simulation Applications

•Design new processes

•Evaluate alternate plant configurations

•Modernize and revamp existing plants

•Assess and document compliance with environmental regulations

•Troubleshoot and debottleneck plant processes

•Monitor, optimize, and improve plant yields and profitability

Industries Served

•Oil and gas processing

•Refining and petrochemicals

•Chemicals and pharmaceuticals

•Engineering and construction
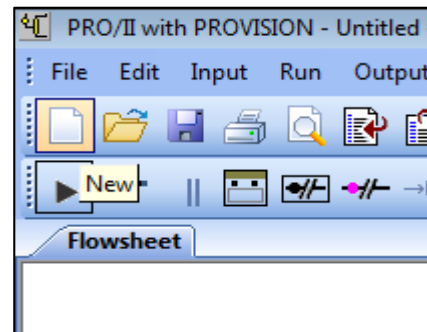
http://www.simsci-esscor.com/

7 Basic Steps

- 1 – Draw Your Flowsheet
- 2 – Define your components
- 3 - Select Your Thermodynamic Calculation Methods
- 4 – Define Your Streams
- 5 – Define Your Units
- 6 – Run Your Simulation
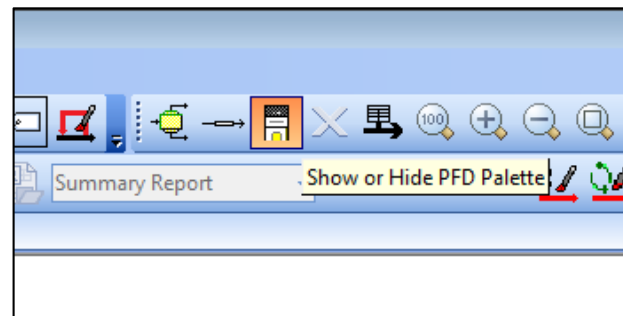- 7 – Review Your Results

Step 1 – Draw Your Flowsheet
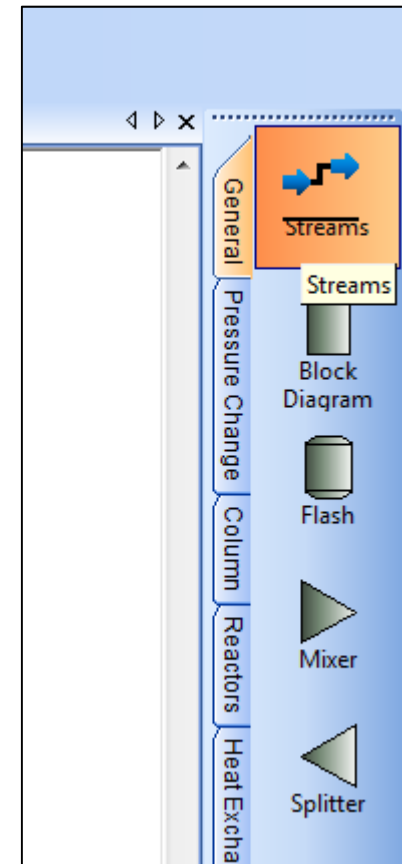
Step 1 – Draw Your Flowsheet

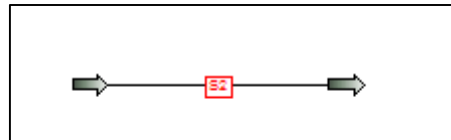1. Open Pro/II
2. Click "New"

3. Click "Show or Hide PFD Palette"

4. Choose "Streams" from PFD Palette →

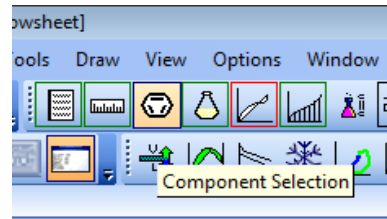# Step 1 – Draw Your Flowsheet

5. Draw a stream – a SIMPLE system

- Red means 'incomplete/didn't work'
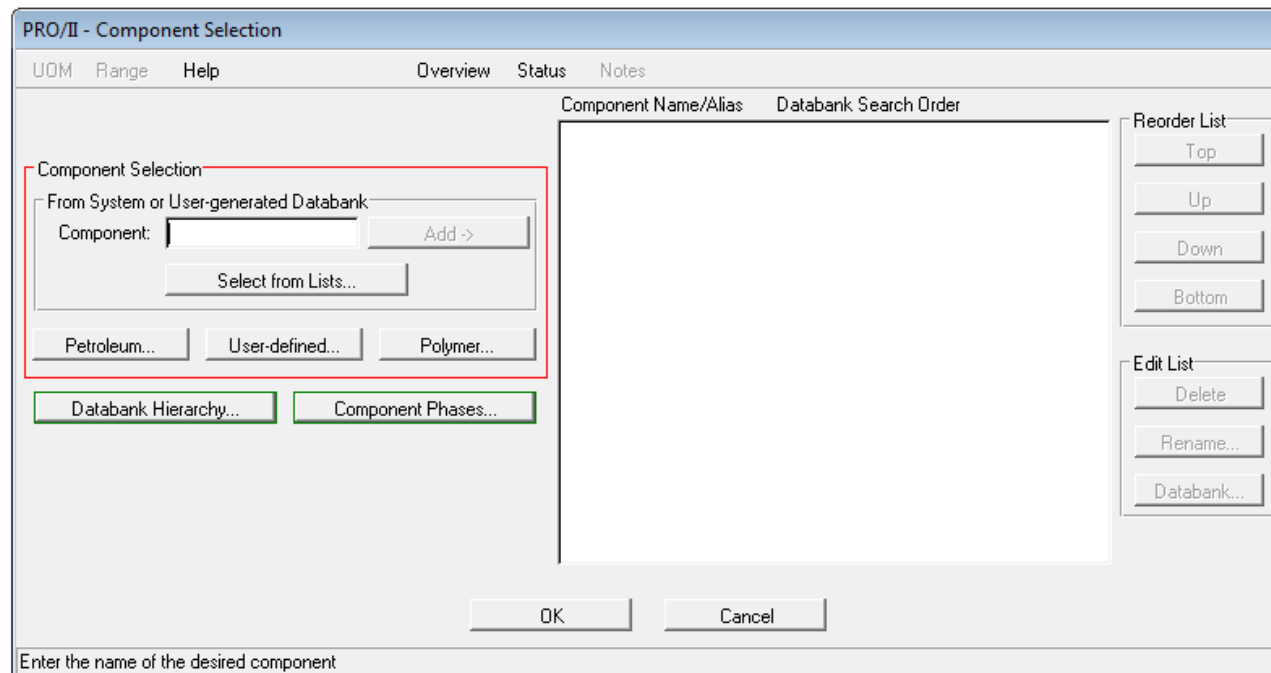- Blue means 'complete/good'
- Yellow means 'warning'

Step 2 – Define your components

Step 2 – Define your components
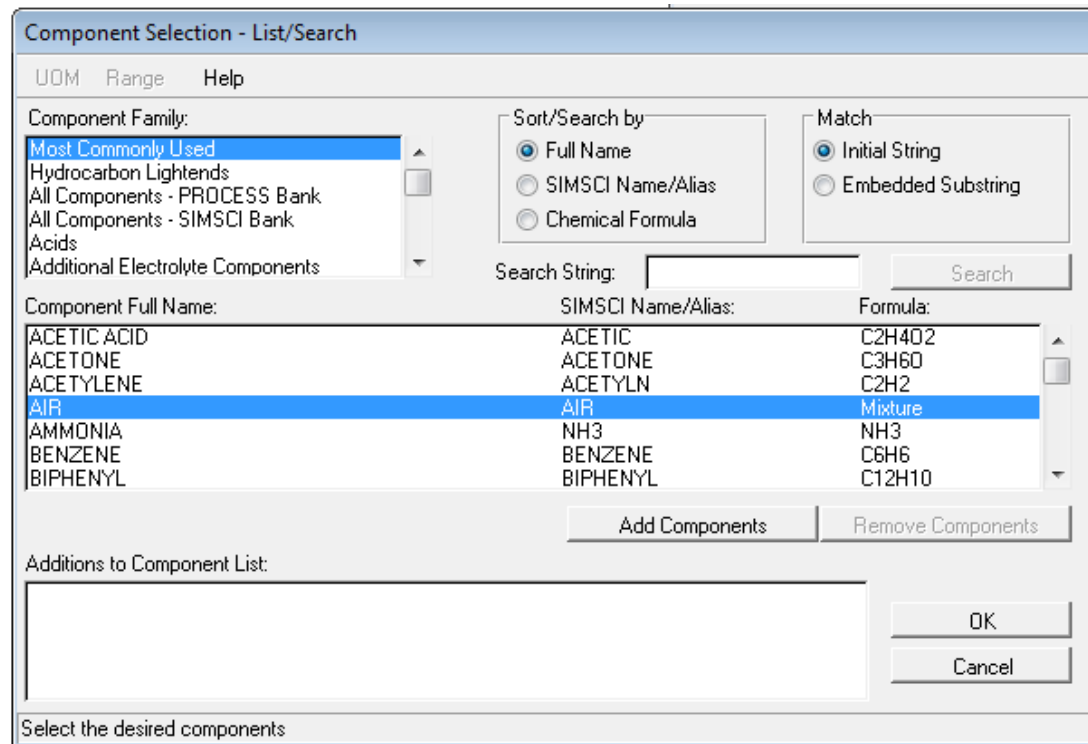
1. Push the RED "Component Selection" button
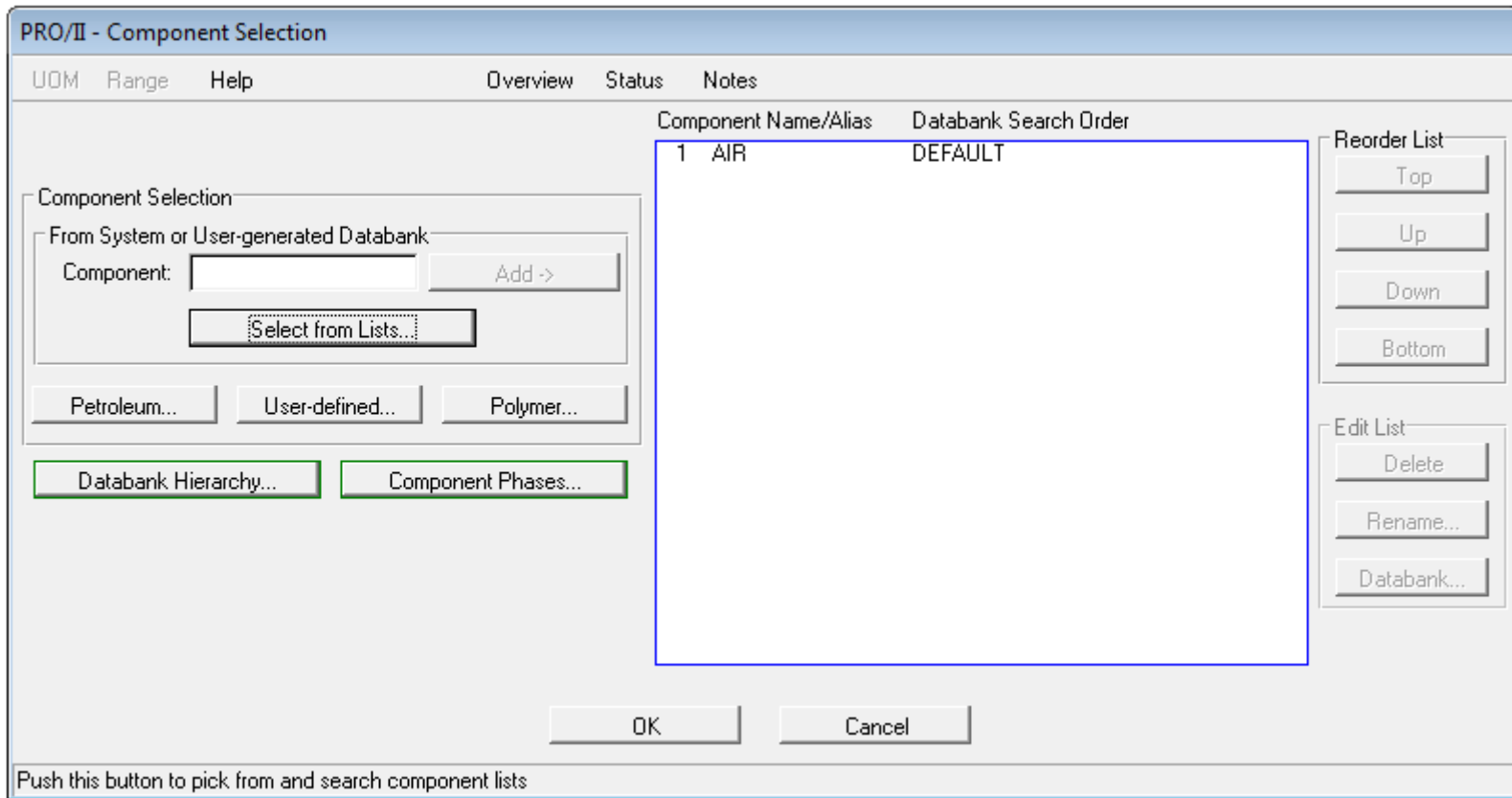

2. Push "Select from lists…"; notice the red

Step 2 – Define your components

3. Click "Most Commonly Used" and then choose "AIR"

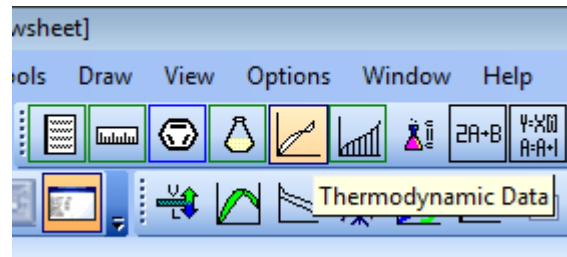4. Click "Add component" and "OK"
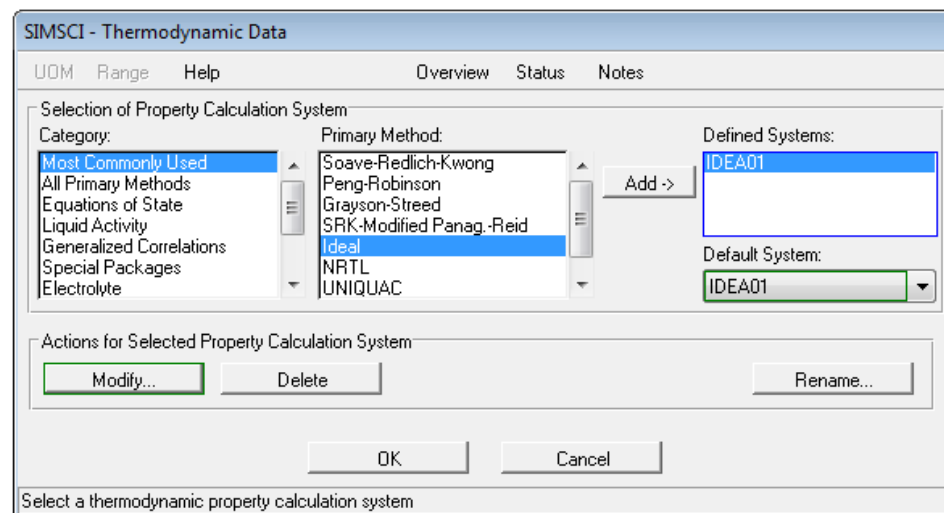
Step 2 – Define your components

BLUE means done!!!

Step 3 - Select Your Thermodynamic Calculation Methods
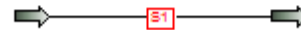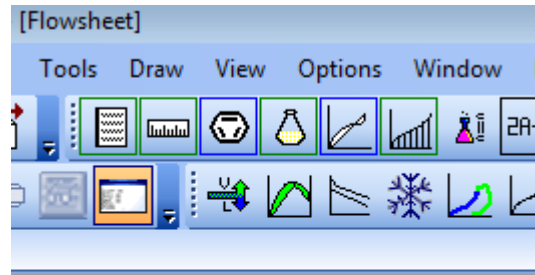
Step 3 - Select Thermodynamic

1. Click the *other* RED button

2. Click "Most Commonly Used", then choose "Ideal"

3. Click "Add" and "OK"

Step 3 - Select Thermodynamic

BLUE means done!!!

Step 4 – Define Your Streams

Step 4 – Define Your Streams

1. Double click the stream and fill in things in RED
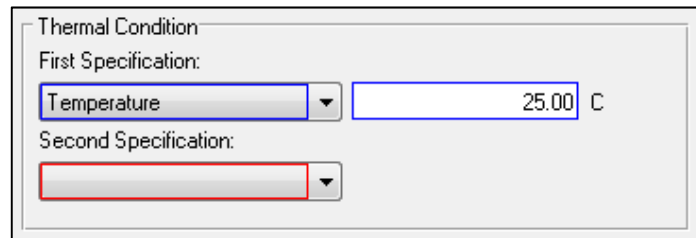
Step 4 – Define Your Streams

2. Specify the Temperature to be 25°C
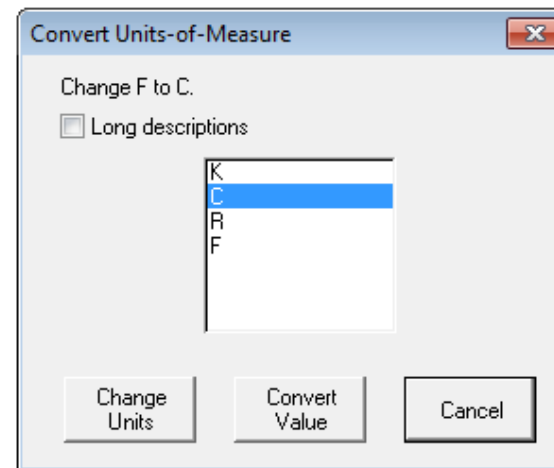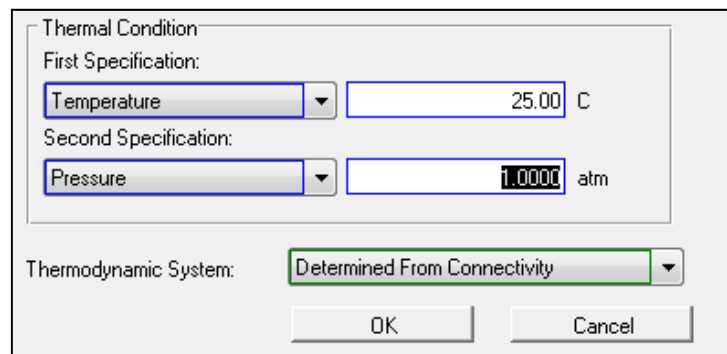
Notice the unit conversion! (go to UOM)

3. Specify the Pressure to be 1atm

Step 4 – Define Your Streams

4. Define Flowrate …

100 lbmol/hr

Note: mass & volumetric flowrates are also in UOM

5. …and composition (must add up to 1 or 100)

Step 4 – Define Your Streams

- The stream is no longer red
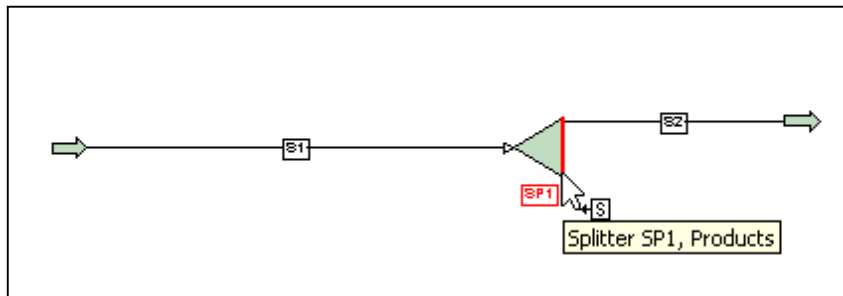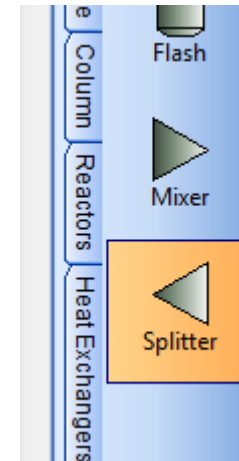- All buttons are blue
- Run button is no longer red
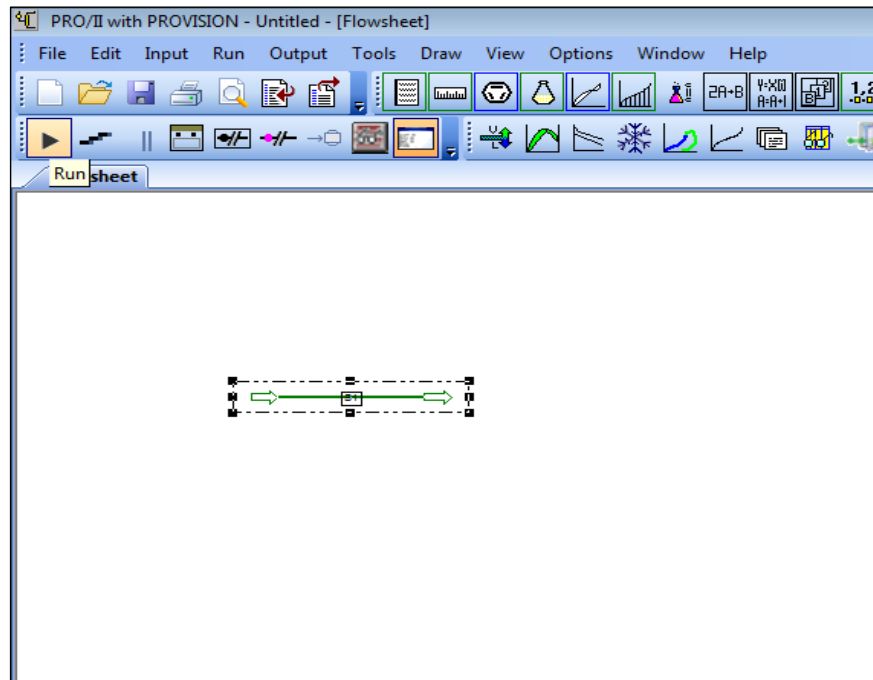
- … we can run! … but…

Step 5 – Define Your Units
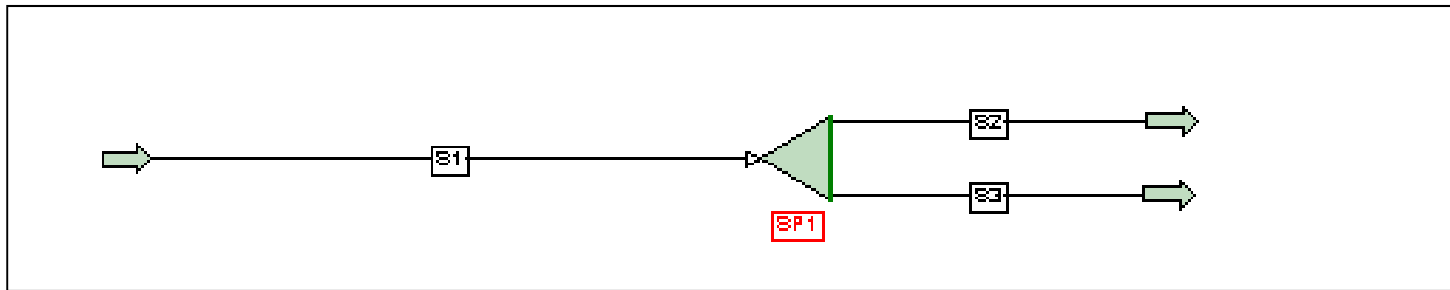
(make life exciting)

Step 5 – Define Your Units

1. Choose a "Splitter" from palette

2. Place it in your flow sheet

3. Attach the stream to it

4. And add some output streams

Step 5 – Define Your Units

Pro/II will calculate the output streams, but the simulation is RED…

Step 5 – Define Your Units

5. Double click the RED splitter

Step 5 – Define Your Units

6. Click on "Parameter'
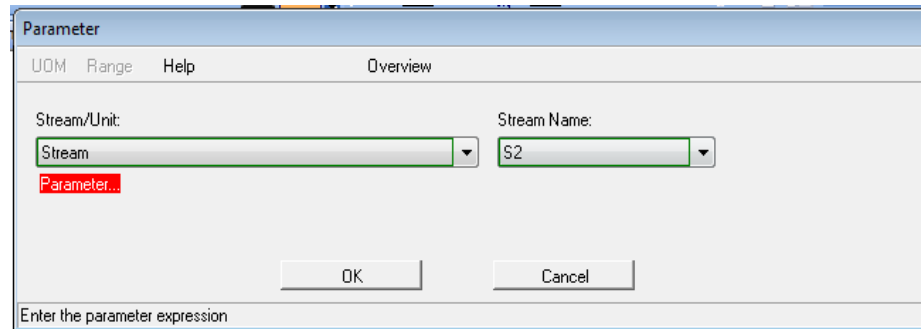
7. And click on "Parameter" again, then click "Flowrate"

Step 5 – Define Your Units

8. Choose "All components" and click "OK",
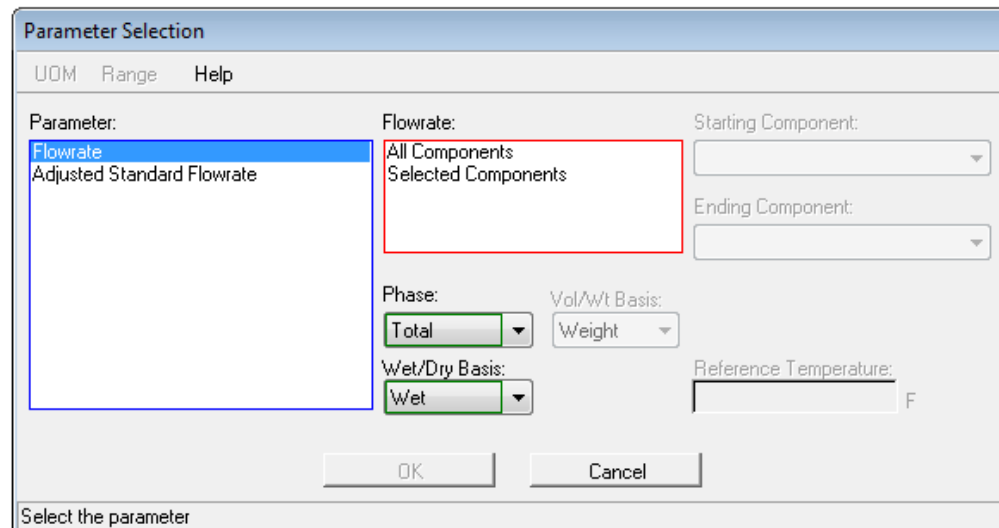
(Click to the unit if you want to change it)

9. Click "Value" on the right of '=' and enter'50'
(*this splits the stream in half*)

Step 5 – Define Your Units

We are now ready to roll!!!
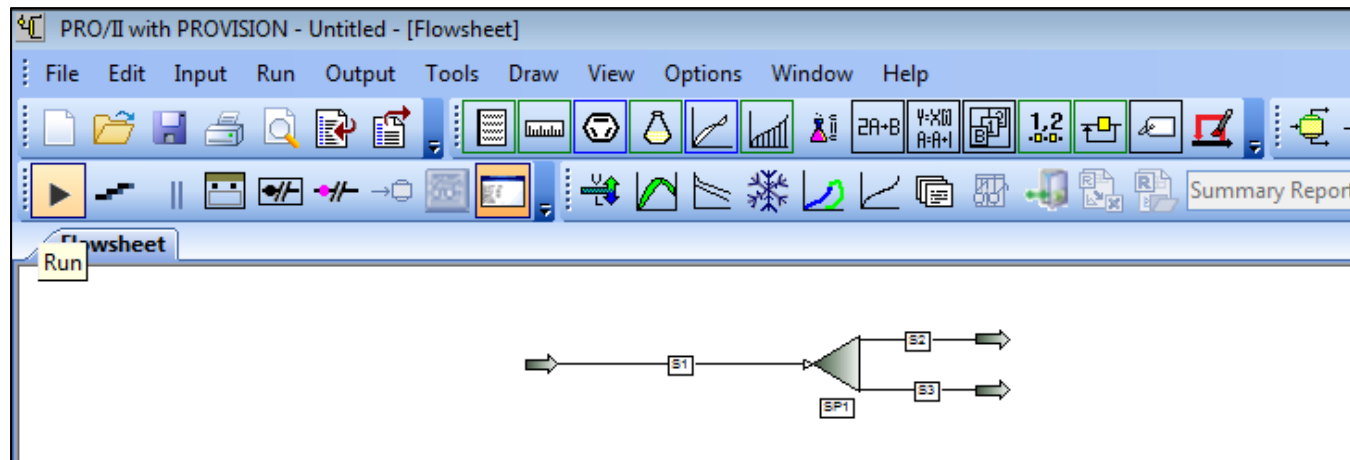
Step 6 – Run Your Simulation

Step 6 – Run Your Simulation

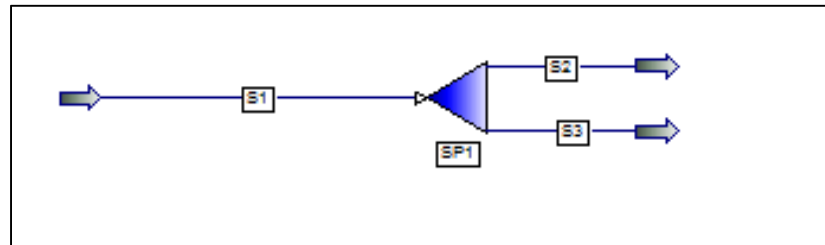1. Push the "Run" button and watch your simulation turn BLUE

Step 6 – Run Your Simulation

- A BLUE simulation means it solved correctly from a *mathematical* point of view.

- You must use your engineering knowledge to check if the answers make *physical* sense.
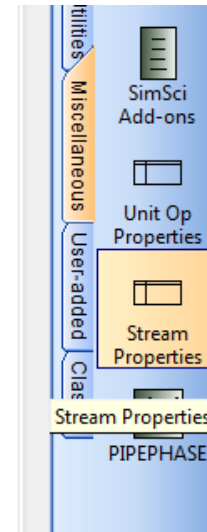
Step 7 – Review Your Results

Step 7 – Review Your Results

Ways to Look at Results:

- Create a Table

- Generate Report

- Right Click on Unit of Interest

- Export to Excel

- Graphs (*more advanced*)

Step 7 – Review Your Results

1. Choose a "stream properties" table from "Miscellaneous" tab on the palette

2. The double click on the "Property Table"

Step 7 – Review Your Results

2. Select on the options in the "Property List to be used"

3. In the "Available Streams" section, click the stream you want to display and click "Add" or click "Add All" if you want all of them
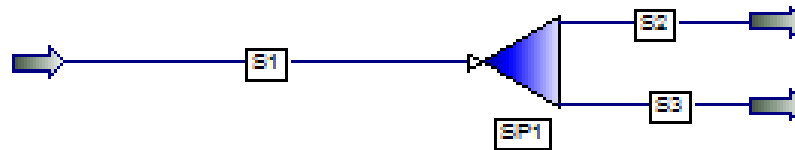
Step 7 – Review Your Results

Stream Name Stream Description		S1	S2	S3
Phase		Vapor	Vapor	Vapor
Temperature	F	77.000	77.000	77.000
Pressure	PSIA	14.696	14.696	14.696
Flowrate	LB-MOL/HR	100.000	50.000	50.000
Composition AIR		1.000	1.000	1.000

Step 7 – Review Your Results

Alternatively Generate a more detailed report