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 1 atm
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
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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
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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

<table>
<thead>
<tr>
<th>Stream Name</th>
<th>Stream Description</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase</td>
<td></td>
<td>Vapor</td>
<td>Vapor</td>
<td>Vapor</td>
</tr>
<tr>
<td>Temperature</td>
<td>F</td>
<td>77.000</td>
<td>77.000</td>
<td>77.000</td>
</tr>
<tr>
<td>Flowrate</td>
<td>LB/MOL/HR</td>
<td>100.000</td>
<td>50.000</td>
<td>50.000</td>
</tr>
<tr>
<td>Composition</td>
<td>AIR</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>
Step 7 – Review Your Results

Alternatively Generate a more detailed report