



Aspen Plus[®] Videos for Chemical Engineering Undergraduates

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Fall 2018 Presentation
Monday, Oct. 29th 2018



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KANSAS



What & Why Aspen Plus®?

- Chemical process simulator
- Evaluate complex systems
 - Efficiently
 - User friendly
- Industry
 - Process engineering
 - Chemical plant design



www.aspentech.com



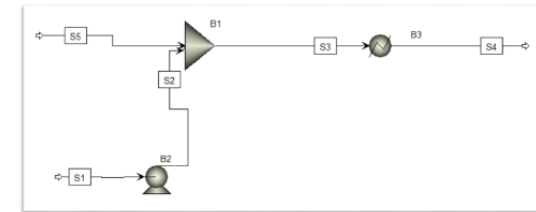
Introducing Aspen Plus®

- Aspen Plus® in the C&PE curriculum
 - Lecture, design, laboratory
- Educational materials developed
 - Written handouts
 - Video modules



9.) To add an inlet stream for the "Mixer" block, click once onto an empty portion of the "Main Flowsheet". Then, drag the cursor to the blue inlet arrow of the "Mixer" block, and then click once on that blue arrow, similarly to step 7.

10.) Add material streams to the remaining blocks. After, the visual simulation should look similar to the one below. To stop inserting streams, select the small cursor button  above the "Material" option of the "Model Palette".



Naming components/streams:

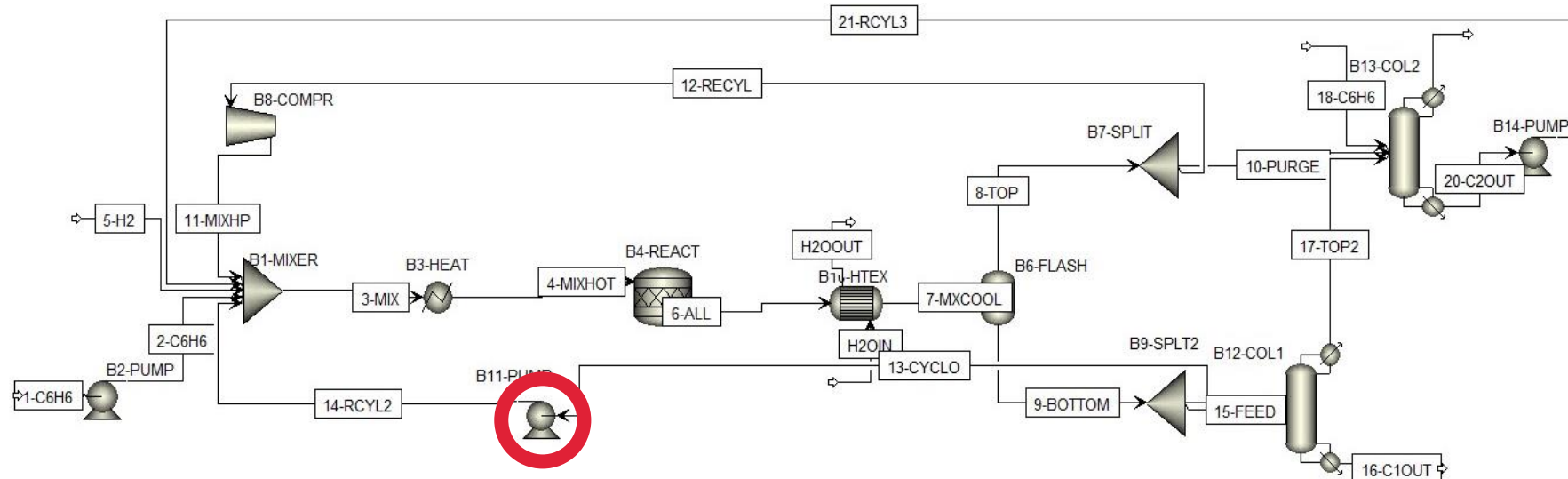
The default naming system in Aspen Plus assigns a number to each stream and block in the flowsheet area depending on the order it was added. To change the name of the stream/block, right click on the stream/block and select "Rename Stream"/"Rename Block". An alternative is to double click on the respective stream/block box with its name, and then type the new name. With the first portion of streams and blocks added to the flowsheet, they will be renamed as stated below. The order which you added your streams/blocks might be different, so the default name for the streams/blocks might be different. But, rename the streams/blocks in accordance to the diagram above from what is stated below:

- Stream 1 (S1) = 1-C6H6
- Stream 2 (S2) = 2-C6H6
- Stream 3 (S3) = 3-MIX
- Stream 4 (S4) = 4-MIXHOT
- Stream 5 (S5) = 5-H2
- Block 1 (B1) = B1-MIXER
- Block 2 (B2) = B2-PUMP
- Block 3 (B3) = B3-HEAT



To Start: Material & Energy Balances

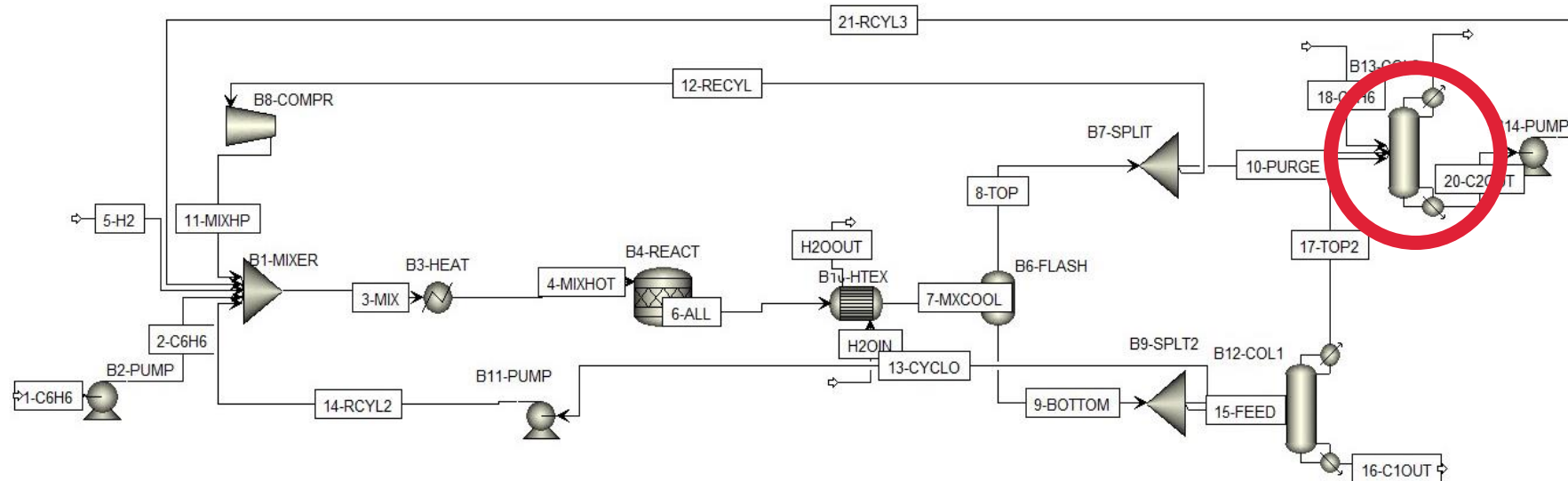
- Material & energy flow
- Unit operations
- Variables
 - Temperature, pressure, enthalpy





To Start: Material & Energy Balances

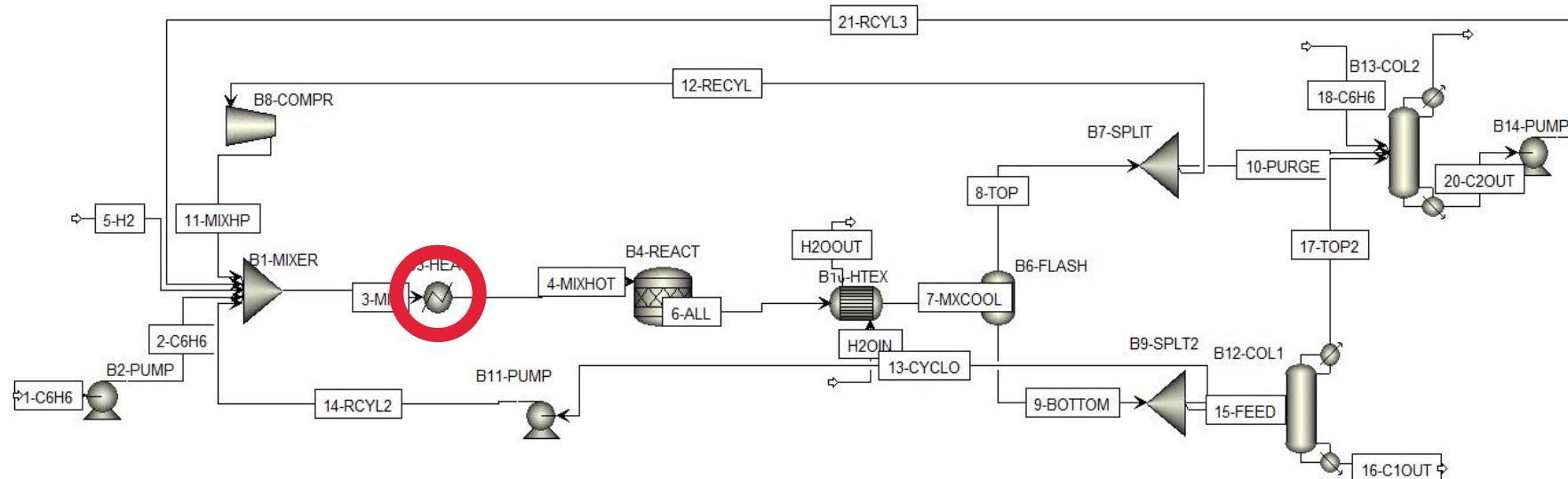
- Material & energy flow
- Unit operations
- Variables
 - Temperature, pressure, enthalpy





To Start: Material & Energy Balances

- Material & energy flow
- Unit operations
- Variables
 - Temperature, pressure, enthalpy





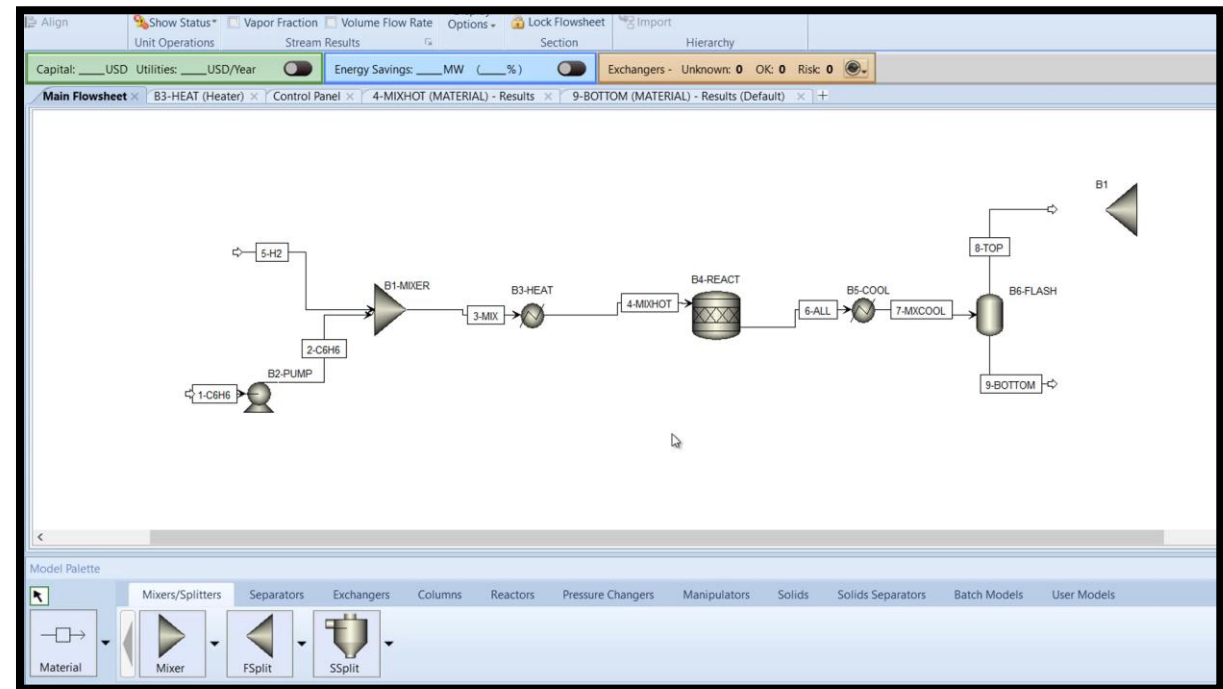
Videos

The Hydrogenation of Benzene to Cyclohexane

Aspen Plus V10.0
Chapter 1: Video 1

The University of Kansas

School of Engineering



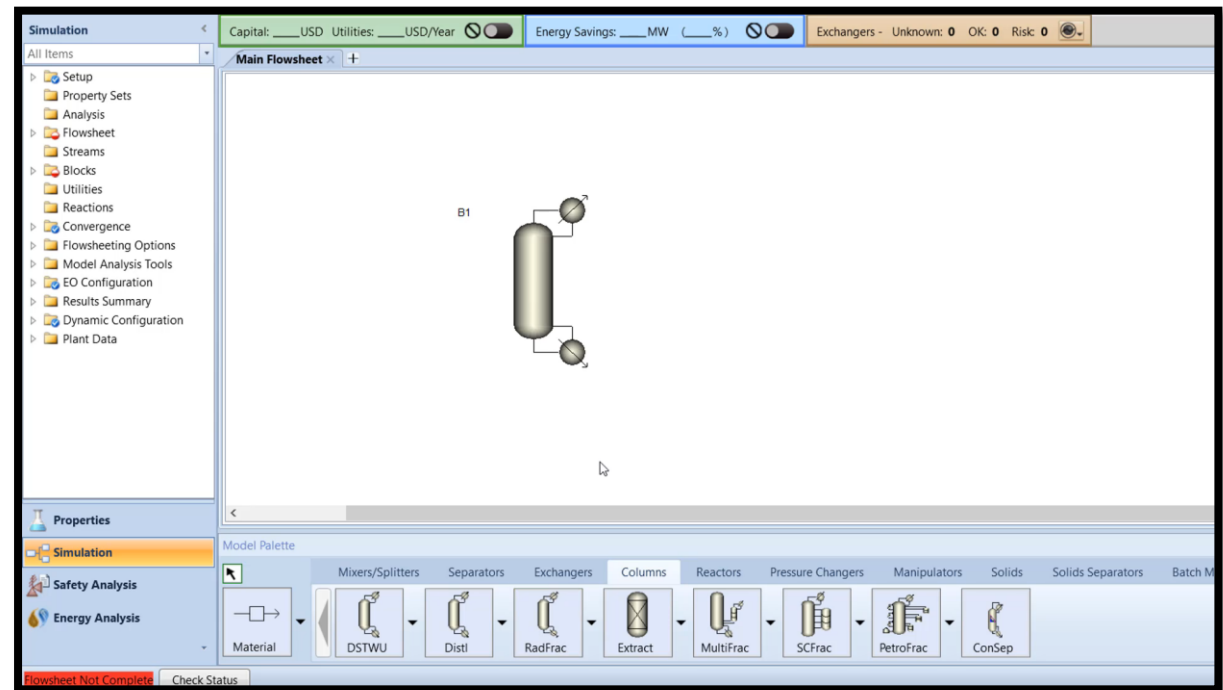


Videos

Simulation 1 (Camtasia).apw - Aspen Plus V10 - aspenONE

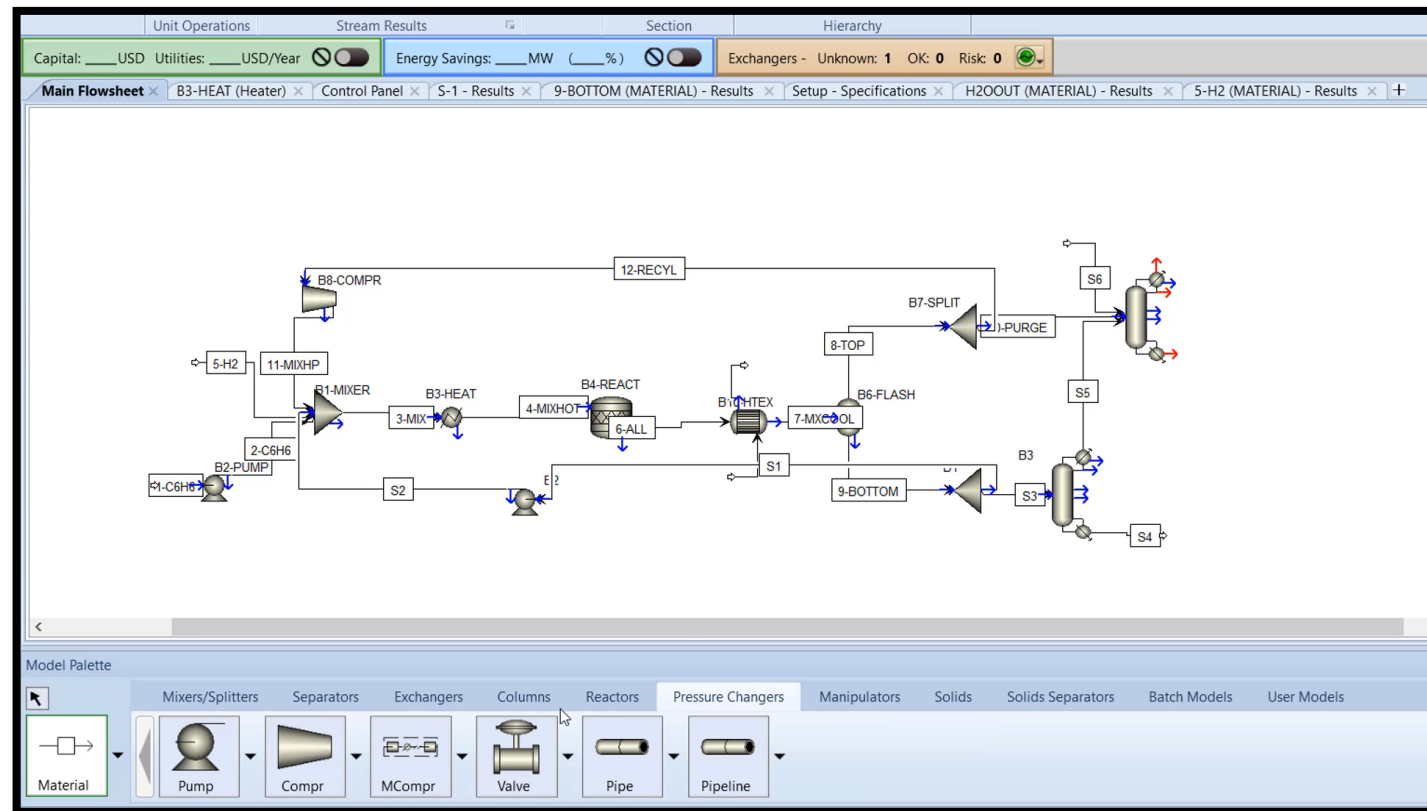
Capital: ___USD

Row/Case	Status	VARY 1 5-H2 MIXED TOTAL MO LEFLOW KMOL/HR	H2MOLFLO /BZMOLFL O KMOL/HR
1	OK	280	3.06942
2	OK	285	3.70245
3	OK	290	4.36009
4	OK	295	5.02292
5	OK	300	5.68795
6	OK	305	6.35414
7	OK	308	6.75424





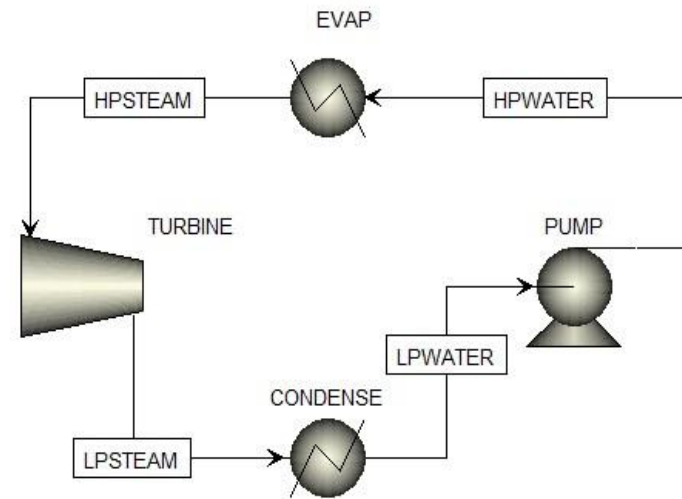
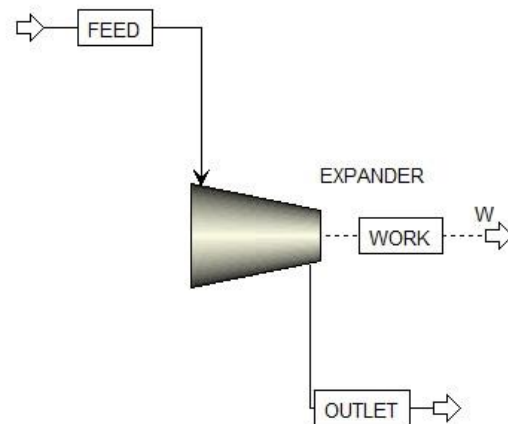
Videos





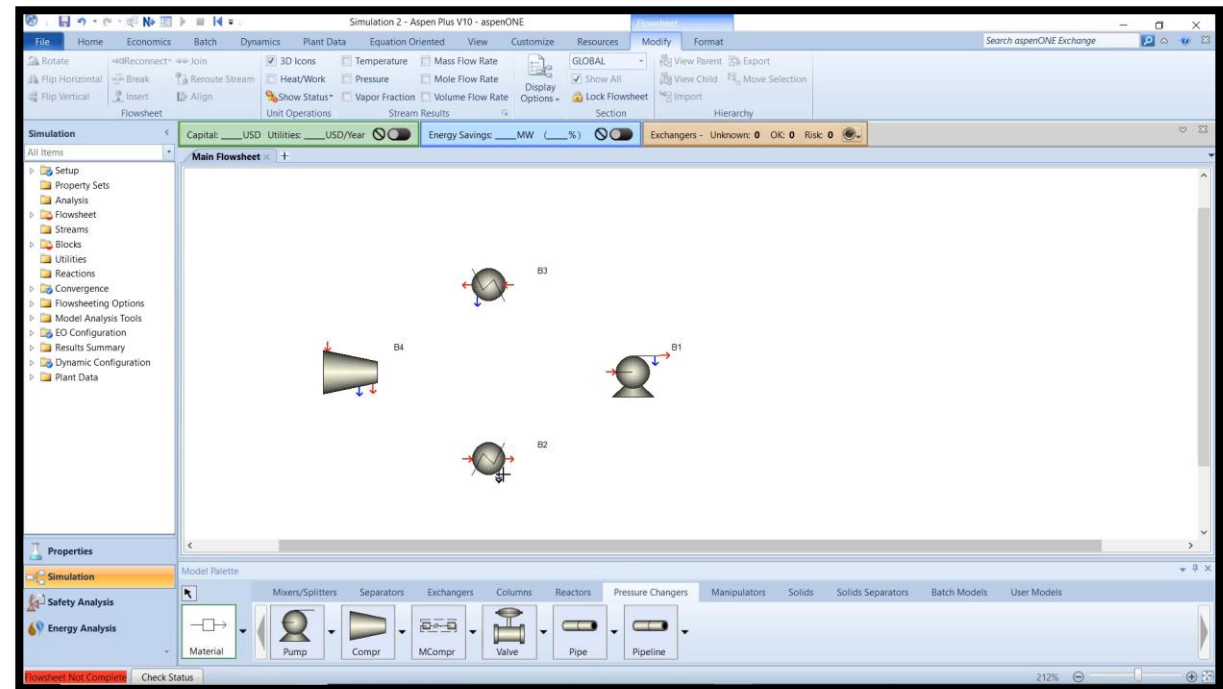
Chemical Engineering Thermodynamics I

- Conservation of energy
- Cycles
 - Power & refrigeration
- Thermodynamic quantities
 - Entropy, heat, work





Videos





Video Library www.shiflettresearch.com

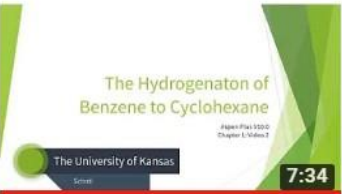


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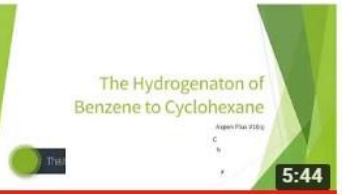
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The Hydrogenation of Benzene to Cyclohexane
Aspen Plus V10.0 Chapter 1: Videos 1
The University of Kansas
7:34

Aspen Plus V10.0 Series - Chapter 1: The...

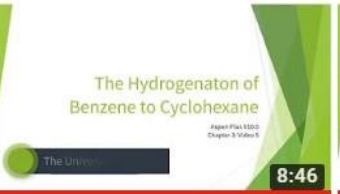
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The Hydrogenation of Benzene to Cyclohexane
Aspen Plus V10.0 Chapter 5: Videos 1
The University of Kansas
5:44

Aspen Plus V10.0 Series - Chapter 5: The DSTWU Model

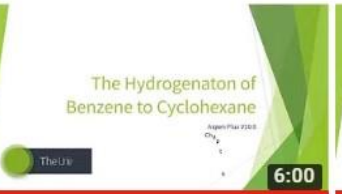
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The Hydrogenation of Benzene to Cyclohexane
Aspen Plus V10.0 Chapter 3: Videos 1
The University of Kansas
8:46

Aspen Plus V10.0 Series - Chapter 3: Heat Exchanger...

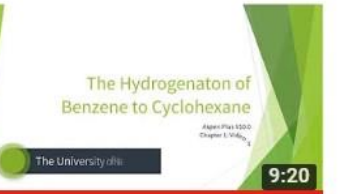
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The Hydrogenation of Benzene to Cyclohexane
Aspen Plus V10.0 Chapter 2: Videos 1
The University of Kansas
6:00

Aspen Plus V10.0 Series - Chapter 2: Sensitivity...

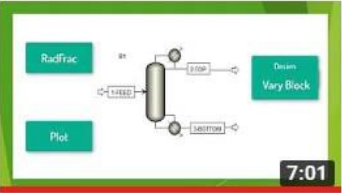
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The Hydrogenation of Benzene to Cyclohexane
Aspen Plus V10.0 Chapter 1: Videos 1
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9:20

Aspen Plus V10.0 Series - Chapter 1: The...

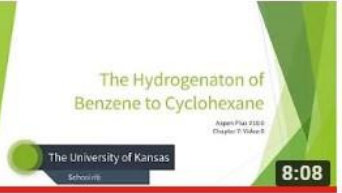
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RadFrac
Distill
Plot
Distill
Vary Block
7:01

Aspen Plus V10.0 Series - Chapter 6: The RadFrac...

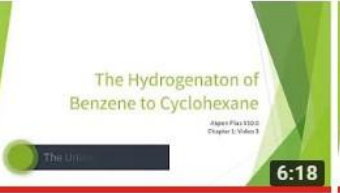
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The Hydrogenation of Benzene to Cyclohexane
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8:08

Aspen Plus V10.0 Series - Chapter 7: Finalization of th...

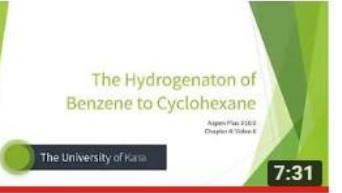
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6:18

Aspen Plus V10.0 Series - Chapter 1: The...

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The Hydrogenation of Benzene to Cyclohexane
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The University of Kansas
7:31

Aspen Plus V10.0 Series - Chapter 4: Calculator Block

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Future Work

- C&PE Courses

- C&PE 211 Material & Energy Balances ✓
- C&PE 221 Chemical Engineering Thermo I ✓
- C&PE 511 Momentum Transfer C
- C&PE 512 Chemical Engineering Thermo II C
- C&PE 522 Economic Appraisal
- C&PE 524 Kinetics & Reactor Design
- C&PE 525 Heat & Mass Transfer
- C&PE 611 Design I
- C&PE 613 Design II
- C&PE 615 Process Dynamics & Control
- C&PE 616 Unit Operations Lab I
- C&PE 624 Process Safety & Sustainability
- C&PE 626 Unit Operations Lab II



Concluding Remarks

- Aspen Plus® is beneficial for chemical engineering students for their academic and professional prospects.
- Videos and handouts created by a fellow student allows for a smooth understanding of the content.
- Future Aspen Plus® videos and handouts will be created for a comprehensive study of the software.



Acknowledgements



- Dr. Mark Shiflett



- Alejandra Rocha



- Emily Bruggeman



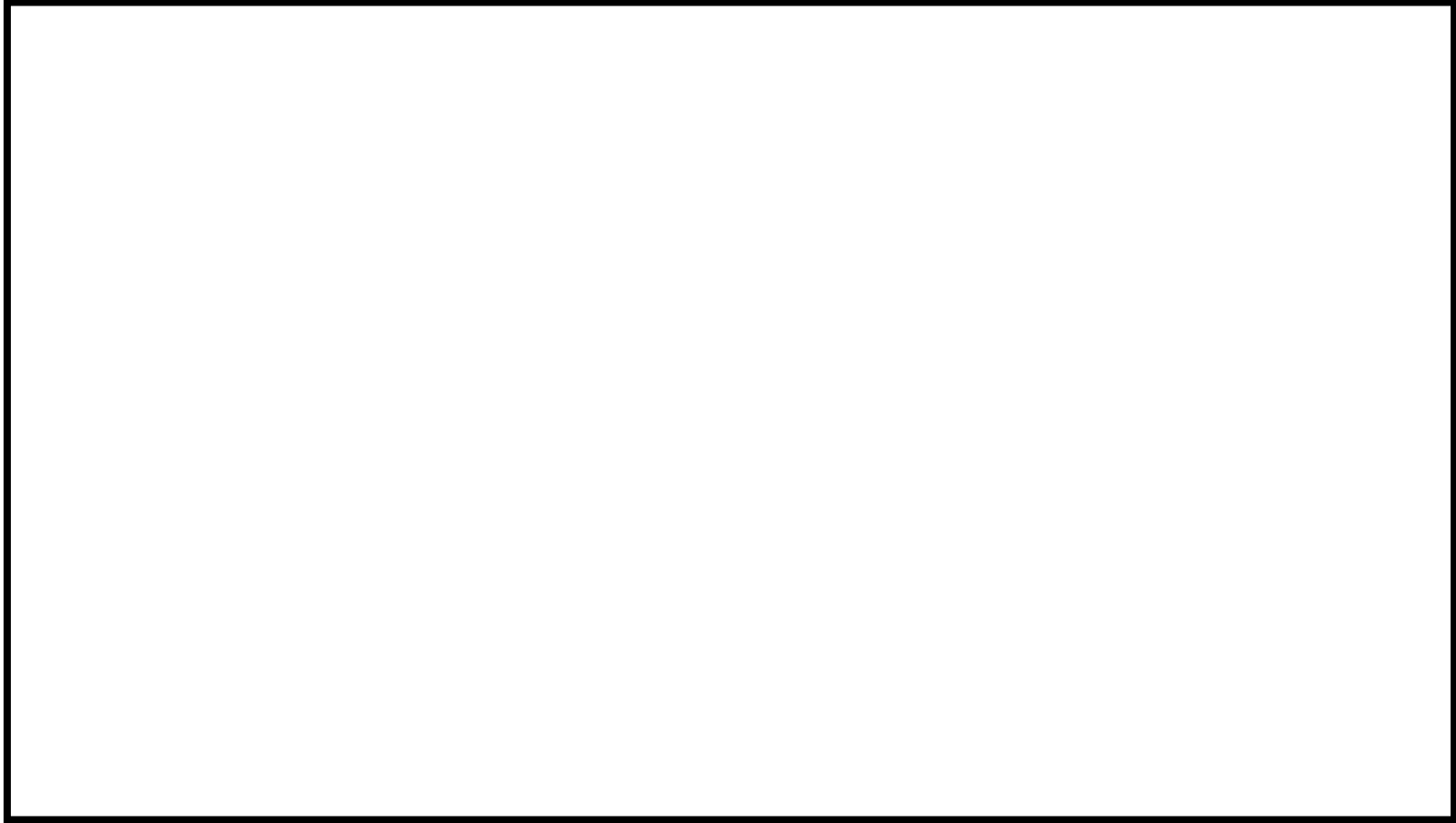
- Dr. Sheng-Lung Lien



- Dr. Prajna Dahr



- Dr. Arghya Paul





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