

# Introduction to Flowsheeting

Spoken Tutorial Project  
<http://spoken-tutorial.org>

National Mission on Education through ICT  
<http://sakshat.ac.in>

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# Learning Objectives

We will learn to

- Simulate a mixer
- Follow it up with a separator
- Learn how to give a mixed phase feed



# System Requirements

- **DWSIM 3.4**
- **Any OS: Windows, Linux, Mac OS X or FOSSEE OS on ARM**



# Prerequisites

- **Introductory exposure to DWSIM**
- **Prerequisite tutorials are mentioned on our website**  
**<http://spoken-tutorial.org>**



# Contents of flow-begin.dwxml

Thermodynamics: Raoult's law

Units: CGS

	Inlet1	Inlet2
<b>Mole fractions</b>		
<b>Benzene</b>	<b>0.8</b>	<b>0.2</b>
<b>Toluene</b>	<b>0.2</b>	<b>0.8</b>
<b>Molar flow rate (mol/s)</b>	<b>100</b>	<b>100</b>
<b>T (°C)</b>	<b>25</b>	<b>25</b>
<b>P (atm)</b>	<b>1</b>	<b>1</b>



# Summary

**We defined a simple flowsheet**

- **Explained how to create mixed feed**
- **Introduced mixer and separator**
- **Showed how to connect them**
- **Explained how to simulate**



# Assignment 1: Verify Flow Rates

- Check if the molar flow rate of  $\text{Inlet1} + \text{Inlet2} = \text{mixer-out}$ , and  $\text{Inlet1} + \text{Inlet2} = \text{Vapour} + \text{Liquid}$
- Check if the flow rate of the **Vapour** stream is equal to the flow rate of vapour fraction in **mixer-out**
- Do the same thing for **Liquid**



# Assignment 2: Verify Mole Fractions

- Check if the mole fractions of benzene and toluene in **mixer-out** = that of **Liquid**





# Assignment 3: Get rid of mixer

- As the **Separator** has 6 inputs, **Inlet1** and **Inlet2** can directly be connected to two input ports - do this
- Remove the **mixer** and **mixer-out**
- See if you get the same answers



# Assignment 4: Energy Stream

- Click on Separator
- Change **Override separation temperature** to true
- Change the resulting temperature value to 100° C
- Bring **Energy stream** from **Object Palette** to the Flowsheet
- Connect this stream to the **Energy Stream** of the **Separator**

fossee

Simulate and analyse your results



# About the Spoken Tutorial Project

- Watch the video available at [http://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](http://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- It summarises the Spoken Tutorial project



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- It summarises the Spoken Tutorial project
- If you do not have good bandwidth, you can download and watch it



# Spoken Tutorial Workshops

## The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)



# Forum to answer questions

- Do you have questions in **THIS Spoken Tutorial?**
- Choose the minute and second where you have the question.
- Explain your question briefly.
- Someone from the **FOSSEE** team will answer them.

Please visit <http://forums.spoken-tutorial.org/>



# Textbook Companion Project

- The FOSSEE team coordinates coding of solved examples of popular books
- We give honorarium and certificate to those who do this

For more details, please visit this site:

[http://dwsim.fossee.in/Textbook\\_Companion\\_Project](http://dwsim.fossee.in/Textbook_Companion_Project)



# Lab Migration Project

- The FOSSEE team helps migrate commercial simulator labs to DWSIM
- We give honorarium and certificates to those who do this

For more details, please visit this site:

<http://dwsim.fossee.in/lab-migration-project>





# Acknowledgements

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- More information on this mission is available at

<http://spoken-tutorial.org/NMEICT-Intro>



# Thanks!

<http://dwsim.inforinside.com.br/>

