Custom Unit Operation using Scilab

Spoken Tutorial Project
https://spoken-tutorial.org

National Mission on Education through ICT
https://sakshat.ac.in

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- **Calculate Molar flow rate and Enthalpy**

System Requirement

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- **DWSIM v 5.6 Update 8 (Classic UI)**

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- **Windows 10**

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- DWSIM v 5.6 Update 8 (Classic UI)
- Windows 10
- Any OS: Linux, Mac OS X or FOSSEE OS on ARM

Prerequisites

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- **Add components to a flowsheet**

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- **Select thermodynamic packages**

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To practice this tutorial, you should know to

- **Add components to a flowsheet**
- **Select thermodynamic packages**
- **Add material streams and specify their properties**

Prerequisite Tutorials and Files

- **http://spoken-tutorial.org**
- **You can access these tutorials and all the associated files from this site**

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- **You should also have Scilab 5.02 (or higher) installed on your system**

Scilab CAPE-OPEN Unit Operation

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- **Unit operation implementation for which the calculations can be entered in Scilab**

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- **For more details, see the Additional reading material link**

Components and Property Package

- **Components: Water, Methanol and Ethanol**
- **Property Package: Raoult's Law**
- **Outlet pressure: Average of Inlet Streams**

Inlet Stream Conditions

Inlet Streams	Water	Methanol	Ethanol
Temperature	300K	305K	310K
Pressure(Pa)	100000	150000	200000
Mass Flow	10 kg/s	15 kg/s	20 kg/s

Summary

In this tutorial, we have learnt to:

- **Create a custom unit operation using Scilab**
- **Calculate the Outlet pressure of product stream**
- **Calculate Molar flow rate and Enthalpy**

Assignment

- Components: Water and Methanol
- Molar Flow: 100 kmol/h
- Property Package: Raoult's Law
- Inlet Stream Temperature: 300 K
- Temperature Difference: 350 K
- Pressure Drop: 1.1 atm

About the Spoken Tutorial Project

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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**

Forum for specific questions

- Do you have questions in this Spoken Tutorial?
- Please visit http://forums.spoken-tutorial.org
- Choose the minute and second where you have the question
- Explain your question briefly
- Someone from the FOSSEE team will answer them

DWSIM Flowsheeting Project

- **The FOSSEE team coordinates conversion of existing flow sheets**
- **We give honorarium and certificates for those who do this**
- **For more details, please visit this site http://dwsim.fossee.in/flowsheeting-project**

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- The FOSSEE team coordinates coding of solved examples of popular books
- We give honorarium and certificates for those who do this
- For more details, please visit this site http://dwsim.fossee.in/textbook-companion-project

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- The FOSSEE team helps migrate commercial simulator labs to DWSIM
- We give honorarium and certificates for those who do this
- For more details, please visit this site http://dwsim.fossee.in/lab-migration-project

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Thanks

- **Thanks for joining**