

Custom Unit Operation using Python

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

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

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Learning Objectives

In this tutorial, we will learn to:



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- Create a custom unit operation using **Python**



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- Calculate **Overall mass** and **mole flow rate**



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- Create a custom unit operation using **Python**
- Calculate **Overall mass** and **mole flow rate**
- Calculate **Enthalpy** and **outlet pressure**



System Requirement



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



System Requirement

- DWSIM v 5.6 Update 8 (Classic UI)
- Windows 10



System Requirement

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



Prerequisites

To practice this tutorial, you should know to



Prerequisites

To practice this tutorial, you should know to

- Add components to a **flowsheet**



Prerequisites

To practice this tutorial, you should know to

- Add components to a **flowsheet**
- Select **thermodynamic** packages



Prerequisites

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

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



Components and Property Package

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



Inlet Stream Conditions

Inlet Streams	Methanol	Water
Temperature	300K	320K
Pressure	101325 Pa	202650 Pa
Mass Flow	20 kg/s	10 kg/s



Code Files



Code Files

- **DWSIM-Python** file is provided as code files on our site



Code Files

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- Download the files from **Code Files** link



Summary

In this tutorial, we have learnt to:

- Create a custom unit operation using Python
- Calculate Overall mass and mole flow rate
- Calculate Enthalpy and outlet pressure



Assignment

- Components: **Water** and **Methanol**
- Mass Flow: **1000 kg/h**
- Property Package: **Raoult's Law**
- Temperature: **50 K**
- Pressure: **1 bar**
- Separation Pressure: **0.075 bar**



About the Spoken Tutorial Project

- Watch the video available at https://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- It summarises the Spoken Tutorial project



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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



Forum for specific questions

- Do you have questions in this Spoken Tutorial?
- Please visit <https://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
<https://dwsim.fossee.in/flowsheeting-project>



Textbook Companion Project

- 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
<https://dwsim.fossee.in/textbook-companion-project>



Lab Migration Project

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



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Thanks

- Thanks for joining

