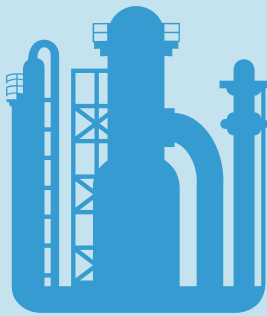


Do you need chemical engineers who can simulate your plant?

We are aware of good chemical engg students who are capable of simulating your plants using DWSIM

# DWSIM

DWSIM is a multiplatform, CAPE-OPEN compliant chemical process simulator for Windows, Linux, Android, macOS and iOS. DWSIM is built on the top of the Microsoft .NET 4.5 and Mono Platforms and featuring a rich Graphical User Interface (GUI). It allows chemical engineering students and chemical engineers to better understand the behavior of their chemical systems by using rigorous thermodynamic and unit operations' models with no cost at all.



An open source alternative to commercial chemical process simulator

[dwsim.fossee.in](http://dwsim.fossee.in)

**fossee**  
better  
education

[fossee.in](http://fossee.in)



IIT BOMBAY

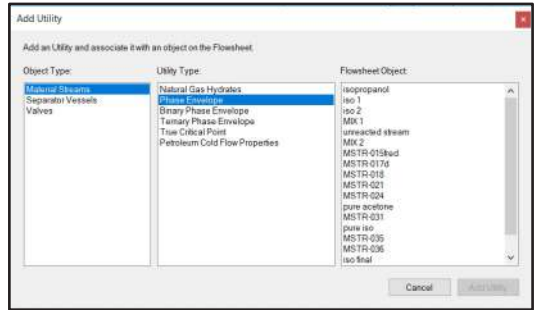
Contact us:  
[contact-dwsim@fossee.in](mailto:contact-dwsim@fossee.in)

# Features

## Utilities

DWSIM includes a set of utilities to do special calculations

- Natural Gas Hydrate
- Phase Envelopes
- Binary and Ternary Phase Envelopes
- Pressure Safety Valve Sizing



## Thermodynamic Models

DWSIM includes the most common thermodynamic models in the industry, covering everything related to

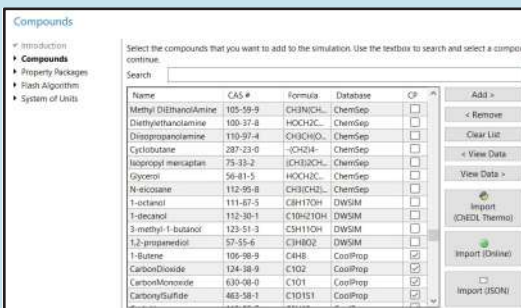
- Vapor Liquid Equilibria from hydrocarbon mixtures using Equations of State
- Highly non ideal azeotropic systems using Activity Coefficient models



## Unit Operations

DWSIM extensively provides support for a large number of unit operations that can be used to perform any operation in chemical industries. Some of them are

- Rigorous Distillation Column
- Reactors (CSTR, PFR, Gibbs, etc)
- Heat Exchanger



## Component Database

DWSIM supports adding of compounds from different databases such as

- ChemSep
- CoolProp
- KDB/CHERIC Thermo Database
- ChemoE Database
- Electrolytes, Biodiesel

## DWSIM Flowsheeting Project

FOSSEE, IIT Bombay has taken the initiative of hosting the DWSIM files for typical process development projects undertaken by students as their final semester/year project or any mini project during undergraduate or higher studies.

The Flowsheeting project aims to port the flowsheet created for any process development project using the Free and Open Source Software DWSIM.

### The objectives of this project are:

- To make it easy for students to create their process flowsheet directly in DWSIM.
- To make available a large number of flowsheeting examples through crowdsourcing.
- To demonstrate the power of DWSIM to the industry and to encourage them to adopt it.
- To bring good students to the attention of industry for possible internship and employment.
- To increase the number of examples available for case study for college faculty.
- To serve as the starting point for more advanced simulations, such as dynamic simulation, startup and shut down simulations, using other open source simulators, such as OpenModelica.
- To improve the documentation available for DWSIM.

## Completed Flowsheets

- Nitrogen Liquefaction using Linde Cycle
- Production of Methane from Carbon Monoxide and Hydrogen(using Recycle)
- Petroleum Distillation
- Simple LNG Exchanger Custom Unit Operation
- Production of Natural Gas
- Extractive Distillation of Methanol and Acetone
- Hydrogen Production through Methane Catalytic Steam Reforming
- Solid Carbon Combustion
- Production of Biodiesel
- Removal of Isopentane in Gasoline Manufacturing Plant
- Separation of Benzene from Air using Compression
- Distillation of Aqueous Acetone
- Closed Loop Steam Turbine
- Open Cycle Steam Turbine
- Methanol Water Distillation with Preheating Carnot Engine
- Vapor Compression Refrigeration Cycle
- A Simple De Humidification System
- Benzene Toluene Fractionation Unit
- A Heat Pump System using CO<sub>2</sub> as Refrigerant(r744)
- Production of Ammonia through Haber's Process.
- Azeotropic Distillation Of Butanol and Water
- Separation of Refinery Light Ends
- Extractive distillation of Methylal from Methanol using DMF
- BTX Separation Chain and Energy Optimization
- Esterification of Acetic Acid with Methanol to Methyl Acetate
- Process Development for the Production of Mono Propylene Glycol from Propylene Oxide
- Separation of Natural Gas
- Synthesis of Methanol
- Extractive Distillation of Isopropanol and Water System using DMSO as Entrainer
- Extractive Distillation of Toluene and Methylcyclohexane using Phenol
- Cumene Production from Benzene and Propylene
- Process Development for the Production of Propylene Glycol Monomethyl Ether
- Production of Benzene via the Hydrodealkylation of Toluene
- Esterification of Acetic Acid with 1 Butanol to N Butyl Acetate
- Heterogeneous Azeotropic Distillation of Ethanol and Water

- Claude Refrigeration of Methane
- Production of Formalin from Methanol
- Air Separation Unit
- Extractive Distillation of Acetone Methanol Mixture using Dimethyl Sulfoxide

- Production of Cyclohexane through Catalytic Hydrogenation of Benzene
- Dehydration of Ethanol Using Glycerol As Entrainer

For more details, visit: <http://dwsim.fossee.in/flowsheeting-project/completed-flowsheet>

## Flowsheets in progress

- Toluene Production from Dehydration of N Heptane
- Production of Phenol from Cumene
- Dehydration of Methanol to Produce Dimethyl Ether
- Production of Industrial Grade Heavy Water From Natural Water Source
- Ethylbenzene Production from Ethylene and Benzene
- Pressure Swing Thf / Water Azeotropic Distillation
- Separation of Ethanol and Water using Pervaporization
- Steady State Simulation of Conversion of Propylene Oxide and Water to Propylene Glycol in Cstr Reactor
- Steady State Simulation of Separation Column for Propylene Propane Mixture
- Btx Petlyuk / Divided Wall Column
- Production of Ethylene Glycol by Non Catalytic Liquid Phase Hydration of Ethylene Oxide
- Industrial Production of Acetone by Dehydrogenation of Isopropanol.
- Ethanol Fermentation Process and Separation of By Products.
- Separation of CO<sub>2</sub> from Synthesis Gas
- Simulation and Optimisation of Reactive Packed Distillation Process for Purification of Ethyl Acetate
- Production of Vinyl Chloride from Ethylene
- Production of Acrylonitrile by Propylene Ammoxidation
- Reactive Distillation for Producing Tert Amyl Methyl Ether
- Production of PVC By Emulsion Polymerisation
- Dealkylation of Toluene to Benzene using Hydrogen
- Drying of Natural Gas
- Supercritical Fluid Extraction using Carbon Dioxide
- Maleic Anhydride Production from Benzene
- Production of Acrylic Acid from Partial Oxidation of Propylene
- Simulation of Freezing Systems and Heat Pumps
- Organic Rankine Cycle Simulation
- C3mr Lng Refrigeration Cycle for Natural Gas
- Dehydrogenation of 2 Butanol to Methyl Ethyl Ketone
- Production of Butadiene by the Dehydrogenation of Butane
- Production of Butyl Acetate from Methyl Acetate and Butanol

For more details, visit: <http://dwsim.fossee.in/flowsheeting-project/flowsheet-progress>

## Colleges that partnered with us until now:

- Bapatla Engineering College, Guntur (2)
- BMS College of Engineering, Bangalore (17)
- Nirma University, Ahmedabad (1)
- MVJ College of Engineering, Bangalore (4)
- National Institute of Technology Karnataka, Surathkal (17)
- SASTRA University, Thanjavur (2)
- National Institute of Technology, Warangal (1)
- Pacific School of Engineering, Surat (5)
- National Institute of Technology, Tiruchirapalli (1)
- Sri Venkateswara College of Engineering, Sriperumbudur (1)
- Visvesvaraya National Institute of Technology, Nagpur (5)