

# Current status of ProSim software with regards CAPE-OPEN Standard

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**ProSim**

Software & Services In Process Simulation

# Current status of ProSim software with regards CAPE-OPEN Standard

- CAPE-OPEN PME(s)
- CAPE-OPEN PMC(s)
- Simulis<sup>®</sup> Thermodynamics: a CAPE-OPEN Thermodynamic Heart
- Perspectives

(current implementations are based on COM technology)

# Current status of ProSim software with regards CAPE-OPEN Standard

## CAPE-OPEN PME(s)

- Simulis® Thermodynamics
- ProSimPlus and all its different specific versions:
  - HNO3
  - Energy
  - ProSec
- BatchColumn
- BatchReactor

# Current status of ProSim software with regards CAPE-OPEN Standard

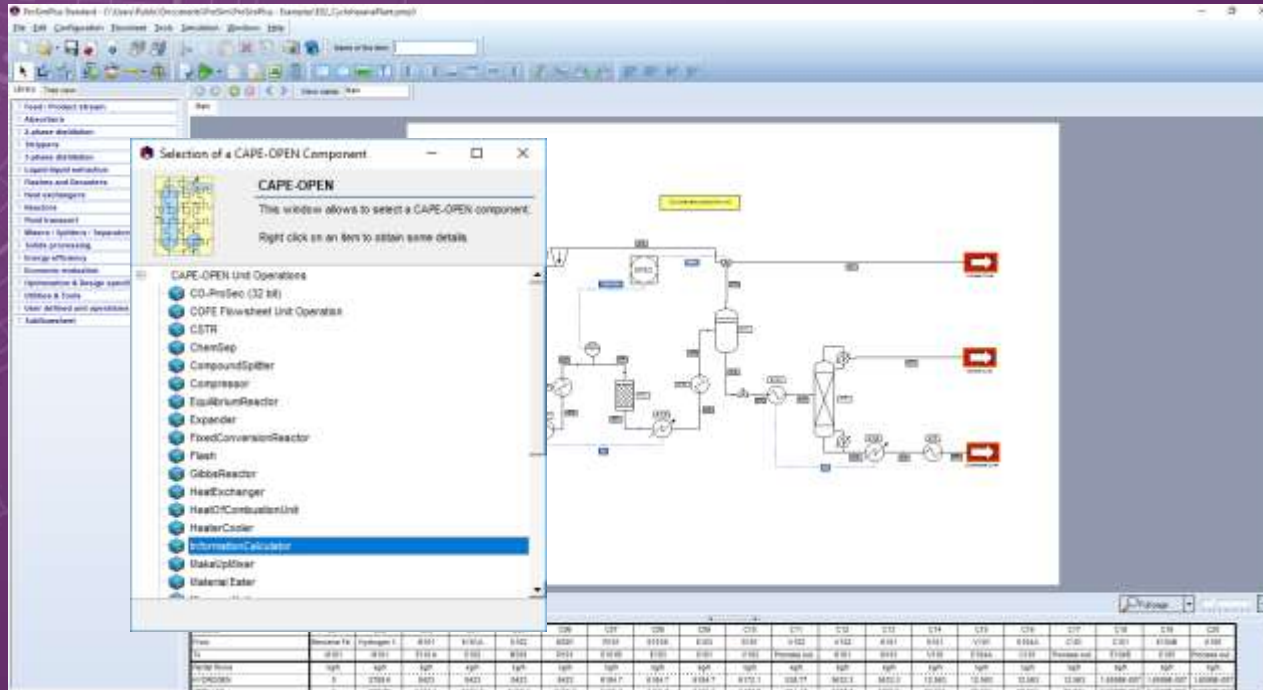
The screenshot displays the ProSim software interface with several windows open. On the left, a 'CALCULATOR' window shows input fields for 'Mixture type' (set to 'CO Property Package Manager'), 'Case ID', 'Container' (set to 'HS (CAPE-OPEN 1.1)'), and 'Units' (set to 'SI'). A 'Selection of a CAPE-OPEN Thermodynamic Property Pack...' dialog box is open, listing various property packages such as 'Water', 'ChemSep Property Package Manager', and 'TEA (CAPE-OPEN 1.1)'. The 'Mixture composition (Mole)' table is visible, showing columns for 'Mole fraction', 'Ethanol', 'Bubble temper.', and 'Dew temperature'. Below this, a 'Results' table lists calculated values for different compositions. On the right, a 'Charts' window displays a 'Bubble temperature - Dew temperature' graph. The x-axis is 'Mixture composition (Ethanol/MAN)' ranging from 0.0 to 1.0, and the y-axis is temperature in Kelvin, ranging from 300 to 324. Two curves are shown: a blue curve for 'Bubble temperature (K)' and an orange curve for 'Dew temperature (K)'. The dew temperature curve is consistently higher than the bubble temperature curve.

❑ Simulis® Thermodynamics

❑ Thermodynamic Socket 1.0 and 1.1

Mixture properties and fluid phase equilibria calculations

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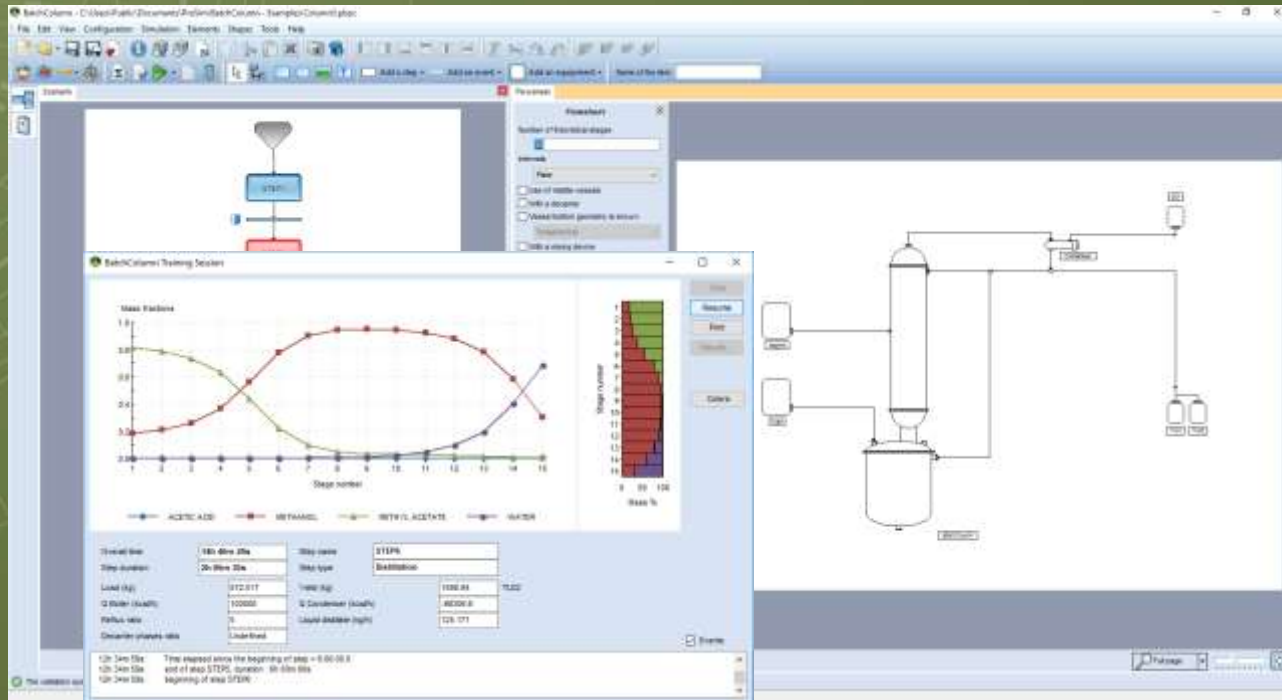


- ❑ ProSimPlus (Simulis® Thermodynamics embedded)
  - ❑ Thermodynamic Socket 1.0 and 1.1
  - ❑ Unit Socket 1.0

Steady-state process simulation and optimization

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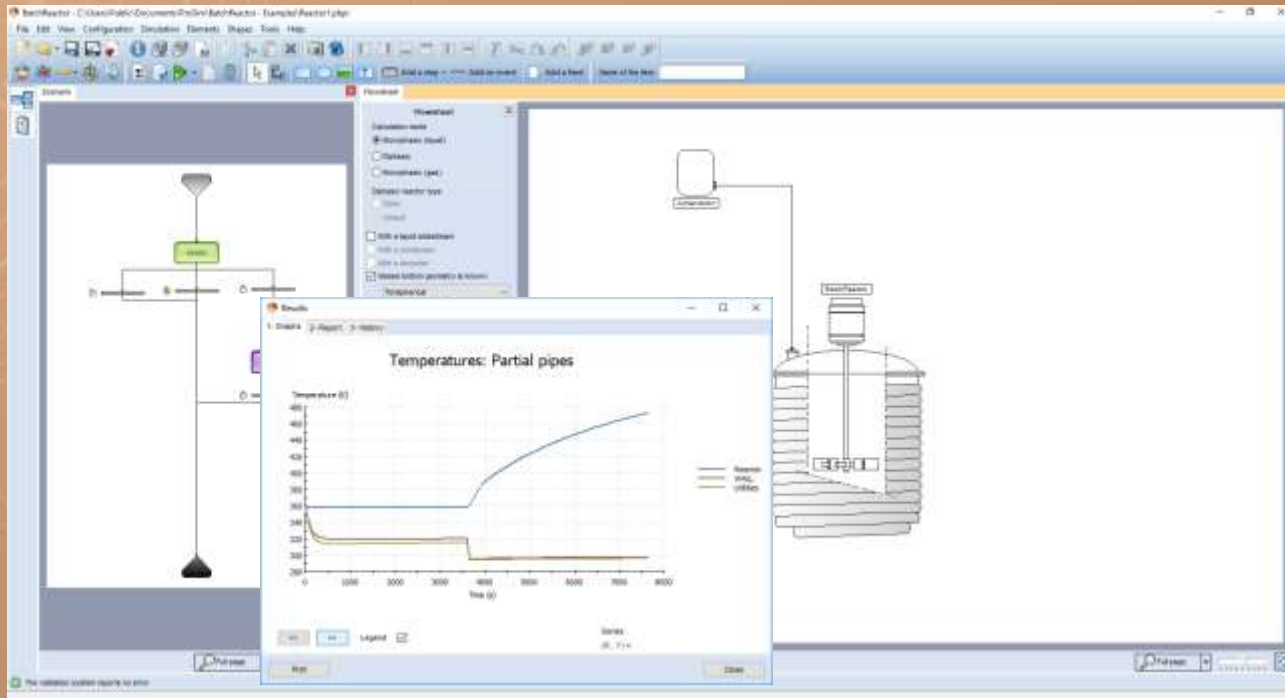
6



- ❑ BatchColumn (Simulis® Thermodynamics embedded)
- ❑ Thermodynamic Socket 1.0 and 1.1

# Current status of ProSim software with regards CAPE-OPEN Standard

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- BatchReactor (Simulis® Thermodynamics embedded)
  - Thermodynamic Socket 1.0 and 1.1

# Current status of ProSim software with regards CAPE-OPEN Standard

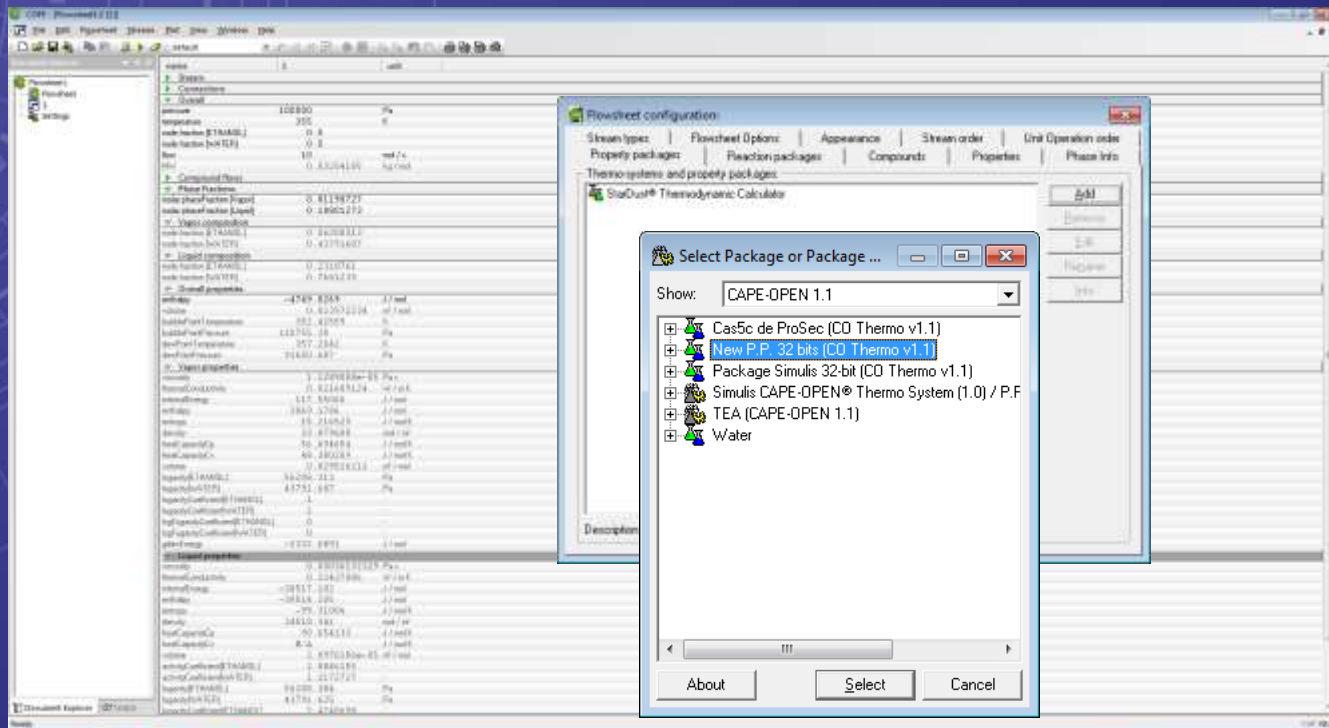
## ☐ CAPE-OPEN PMC(s)

- ☐ Thermodynamic component
  - ☐ Simulis<sup>®</sup> Thermodynamics<sup>(\*)</sup>
  
- ☐ Unit component
  - ☐ CO-ProSec<sup>(\*)</sup>

(\*) available in 32 and 64 bits



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❑ Simulis® Thermodynamics

❑ Thermodynamic Plug 1.0 and 1.1

Mixture properties and  
fluid phase equilibria calculations

# Current status of ProSim software with regards CAPE-OPEN Standard

The image displays two overlapping screenshots of the ProSim software interface. The background screenshot shows the 'CO-PROSEC' simulation window with a schematic of a heat exchanger and a graph of temperature (°C) versus time. The foreground screenshot shows the 'EXCHANGER TOOLS' configuration window, which includes a schematic of a heat exchanger and a list of parameters for the 'INT (shell ?)' component.

**EXCHANGER TOOLS - CO-PROSEC - CO-ProSec**

**PARAMETERS | STREAMS | FINS | REFERENCE LAYERS | INFORMATION PORTS | REPORTS | RESULTS | VALIDATION**

Stream	Phase	Temperature (°C)	Pressure (bar)	Mass flow (kg/s)
E.T.	A	13.82201749212	13.842017138	13.842017138
E.T.	A	15.2359132718232	15.244330706	15.244330706
S.A.S.	A	18.8166568111111	18.84665681111	18.84665681111
S.A.S.	A	18.3811111111111	18.38111111111	18.38111111111
S.T.E.	A	18.4789192388889	21.261123889	21.261123889
S.C.T.	A	18.822017138232	18.822017138232	18.822017138232

**INT (shell ?)**

Block height: 200 mm  
 Head: 50  
 PORT fin: 7644  
 TURB fin: 2344  
 CO fin: 7644  
 Number of heads: 1  
 Number of packings: 1  
 Distributor spacing (Dd): 200 mm  
 Distributor height (Hd): 200 mm  
 Pivoting diameter (Dp): 0 mm  
 Head height (Hh): 100 mm  
 Stream #1: HOT  
 Intermediate type: Feed  
 Selectstream: Side\_HOT

❑ CO-ProSec

❑ CAPE-OPEN Unit using Thermodynamic 1.0 or 1.1

Simulation of brazed plate fin heat exchangers

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Simulis® Thermodynamics: a CAPE-OPEN Thermodynamic Heart

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## Perspectives

### Flowsheet Monitoring

- Interest for an implementation in ProSimPlus

- Interest to develop some compliant PMC(s)

### Chemical reactions

- Interest for an implementation in Simulis<sup>®</sup> Reactions which is embedded in:

  - BatchColumn

  - BatchReactor

### COBIA

- As existing COM mechanism shall continue to run, no new development have been planned at the moment.

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Thank you for your attention

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