Honeywell UniSim CAPE-OPEN Improvement

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Honeywell UniSim Group

Honeywell

Enhancements and Improvements

Resource: After UniSim R410 Release, Honeywell has designated one resource specifically for CAPE-OPEN development.

Progress: Between UniSim R410 and R430 releases, totally **33** enhancements/bugs have been dealt with and finished. The followings are some examples:

1.Successfully Make UniSim Design Adjust Work with CAPE-OPEN Unit Op Plug-Ins

Description: Improvement has been made in Unit Op socket to make the adjust successfully work with a proprietary Unit Op module (Plug-In). And the parameters inside the CAPE-OPEN Unit Op can also be updated correctly. This will help with all the CAPE-OPEN Unit Op work with UniSim Adjust.

2. Improve UniSim Unit Op Socket Performance

Description: Changes have been made to improve the performance of Unit Op socket . For example, in a case in UniSim which use adjust with a proprietary Unit Op module (Plug-In), the executing time has been decreased from 499s to 187s.

3. Improve UniSim Unit Op Socket to Work with CAPE-OPEN Unit Op Plug-Ins Better

Description: Several improvements has been made on Unit Op socket to work with CAPE-OPEN Unit Op Plug-Ins much better. Such as make the flash name insensitive, improvement on the Thermo Material Object etc.

4. Fixed the Problem of Variable lost on Store and Recall

Description: Resolved this store and recall problem on UniSim Unit Op socket

5. Improve Material Object for Setting Vapor Phase Fraction to Overall Phase Instead of Vapor Phase

Description: Improve the way the Material Object setting vapor phase fraction property. It makes UniSim CAPE-OPEN socket to work with Unit Op Plug-Ins much better.

6. Solved the interoperability problem between CAPE-OPEN Thermo Socket and UniSim Property Package Plug-ins

Description: Fixed the problem when get name description of the UniSim Thermo CAPE-OPEN Plug-in from a CAPE-OPEN Thermo Socket.

7. Enhance UniSim Property Package Plug-In on Enumerated Compound properties

Description: Fix the problem when enumerated pure compound properties of UniSim Thermo plug-in is used

8. Improvement on error handling methods of UniSim Material Object

Description: Added support on the Material object to use standard error handling method for non-Implemented properties

9. Enhancement on UniSim CAPE-OPEN Log File When Run as Non-Admin User

Description: Enhancements has been made for the log system to enable non-Admin user to generate new log files when they have no write access to the default log file location

Use REFPROP GERG 2008 Model in UniSim

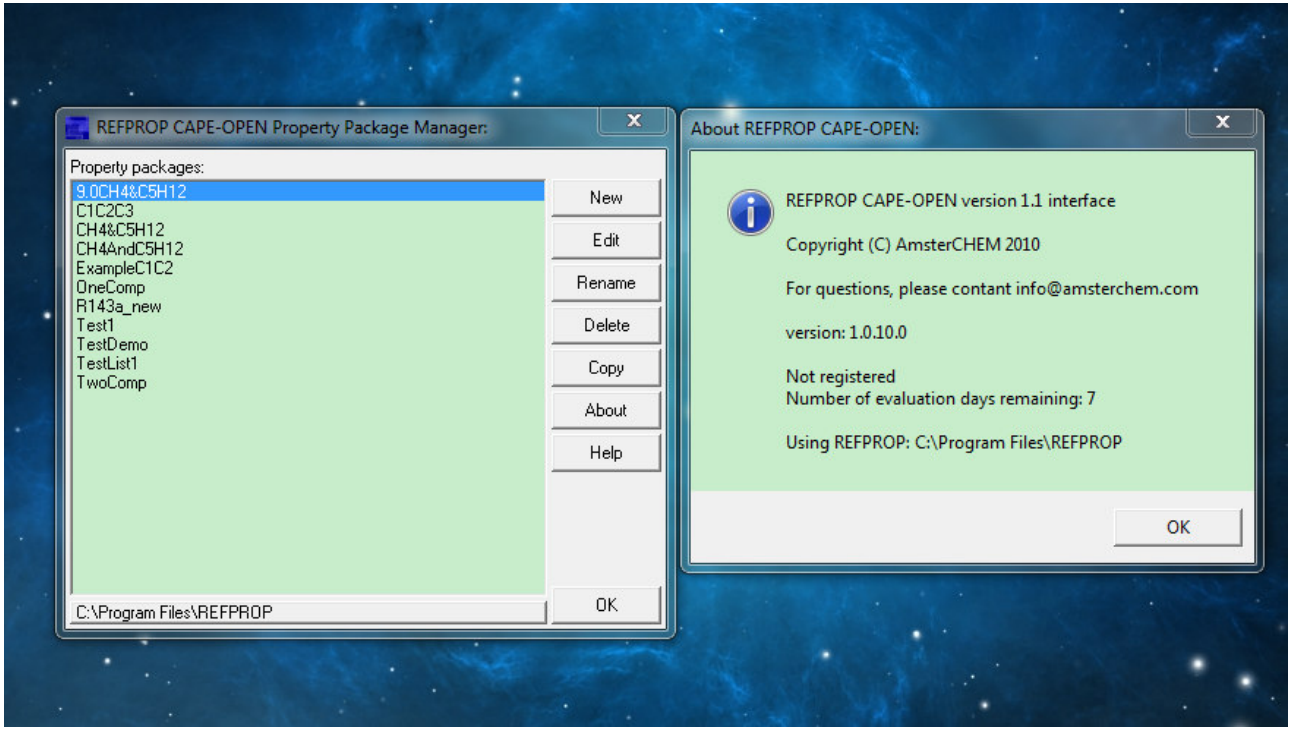
- For LNG (liquefied natural gas) system, GERG 2008 model is the equation of state that can appropriate represent for nearly all of the technical applications and satisfy the demands on the accuracy in the calculation of thermodynamic properties over the entire fluid region. Currently, UniSim has not have this model, but NIST REFPROP has successfully implemented.

- AmsterCHEM has made the CAPE-OPEN wrapper for REFPROP, with AmsterCHEM's help on the REFPROP side and our effort on UniSim side, GERG 2008 model in REFPROP can be successfully used in UniSim Design thought Cape-Open 1.0 interface.

- The following is a demo for a simple C1-C2-C3 system by using REFPROP GERG model in UniSim.

Demo for Use REFPROP GERG 2008 Model in UniSim

- **Step 1: Create a REFPROP GERG CAPE-OPEN Property Package by Using REFPROP CAPE-OPEN Property Package Manager (click the following picture)**



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Demo for Use REFPROP GERG 2008 Model in UniSim

- **Step 2: Load the created a REFPROP GERG CAPE-OPEN Property Package in UniSim, then created a stream, do the flash and property calculation by Using REFPROP GERG 2008 model (click the following picture)**

(if link is not working, please open file "Load REFPROP CO package in UniSim.mp4")