



OLI Tips #67

Using the OLI Corrosion Analyzer 2.0 in Honeywell's Unisim Design™ R360

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Overview

This is a brief overview on how to use the OLI Corrosion Analyzer inside of Unisim Design R360 and later. There are several Assumptions made in this tutorial.

Assumptions

1. We assume you have Unisim Design version R360 (build 12066) or later installed on your computer.
2. It is assumed that you can operate Unisim Design
3. The OLI Corrosion Analyzer version 2.0 (build 35) or later must be installed with a license for the Automation option.
4. We assume that you can use the OLI Corrosion Analyzer.

Additional OLI Documentation

There are some additional documents you may wish to read to get you started in using Unisim OLI and the Corrosion Analyzer. These are available from the OLI Support Website: <http://support.olisystems.com>

1. Getting Started with Unisim OLI: <http://support.olisystems.com/TIPS/OLI-Tips58-Getting-started-with-Hysys-OLI.pdf>
2. The OLI Corrosion Teach-In guide:
<http://support.olisystems.com/Documents/Manuals/CorrosionTeach-InFullPrint10-20-2005.pdf>

3. The OLI Tricks of the Trade manual for the Analyzers:
<http://support.olisystems.com/Documents/Manuals/Tricks%201st%20Full%20Print%2010-11-2005.pdf>

4.

The Application

This application shows the Unisim Design process flowsheet for an alkanolamine sour-gas sweetening process. This application is fully described in the OLI Application Brief notes: <http://support.olisystems.com/ApplicationBriefs/Briefs%20-%20Gas%20Sweetening%20using%20DEA.pdf>

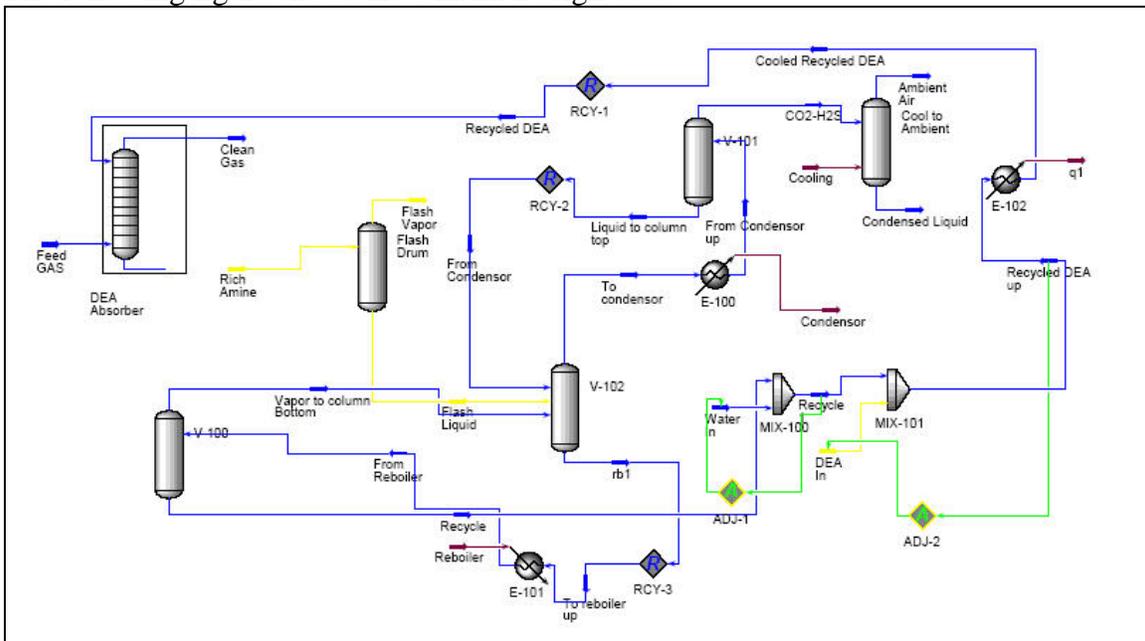
Essentially a sour-gas stream is cleaned by reacting the carbon dioxide and hydrogen sulfide in the stream with diethanolamine. This mixture is then stripped of the carbon dioxide and hydrogen sulfide to regenerate the amine. The resulting off gas, when condensed, may be corrosive.

Case Availability

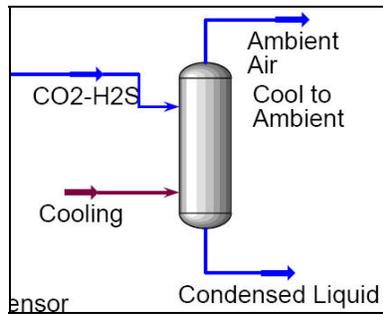
This example case can be downloaded from the OLI support website by following this link:

<http://support.olisystems.com/Documents/Example%20Files/DEA%20ABSORBER%20AND%20REGENERATION-2.USC>

The following figure shows the Unisim Design case.



We are going to focus in on the streams leaving the separator V-101. This case is heavily laden with carbon dioxide, hydrogen sulfide and water. This gas is then cooled to ambient conditions (25 °C, 1 atmosphere) in the unit “Cool to Ambient”.



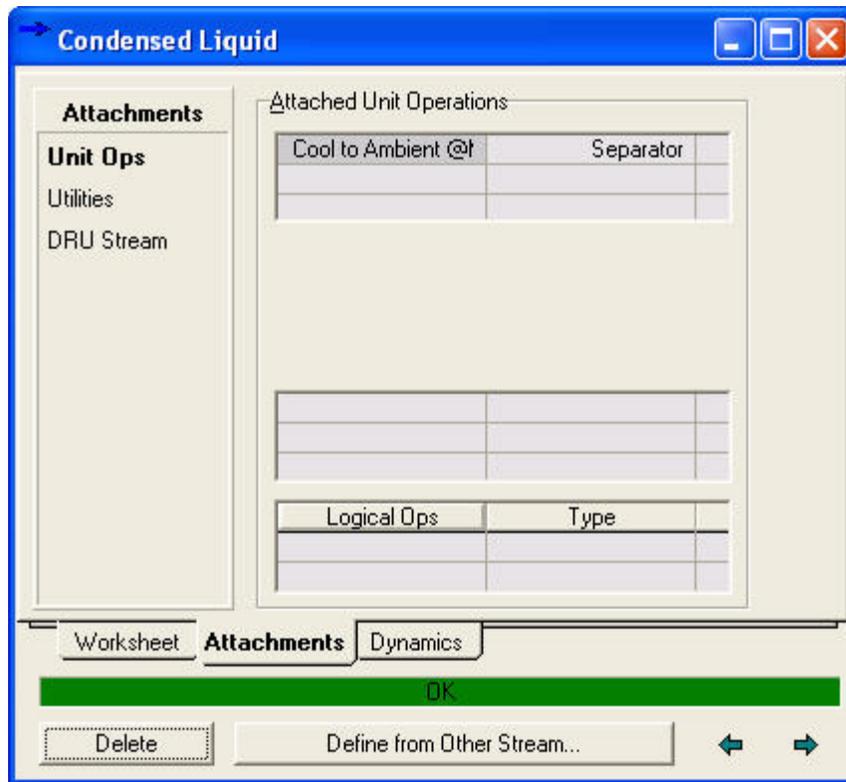
We will now look at the stream “Condensed Liquid”. This stream represents the CO₂-H₂S stream as it condenses out on a steel pipe.

Double-Click the stream *Condensed Liquid*. This will display a standard Unisim Stream dialog.

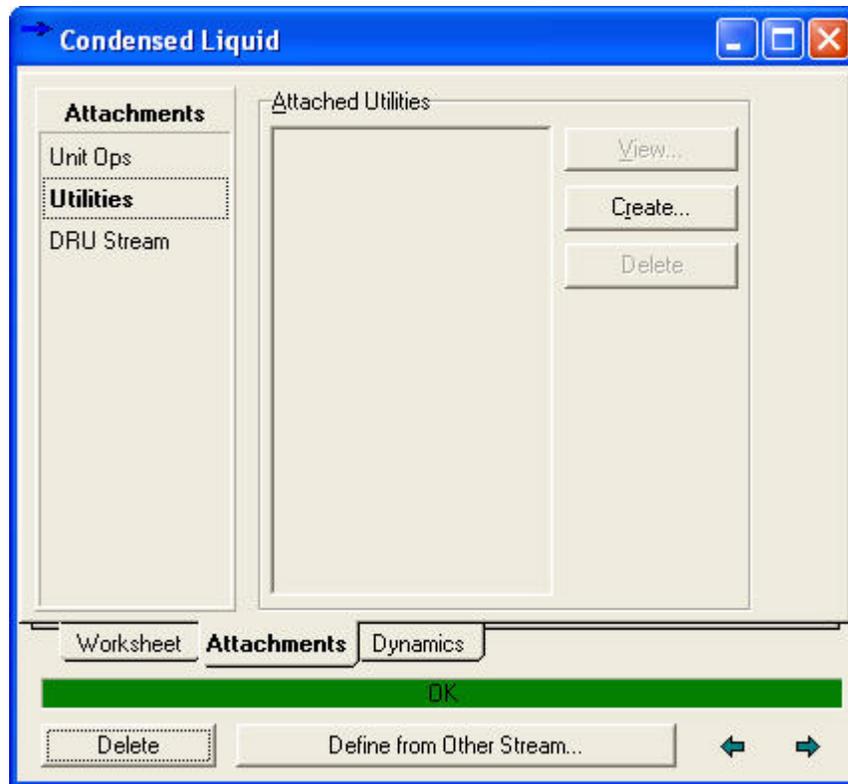
Worksheet	Stream Name	Condensed Liquid
Conditions	Vapour / Phase Fraction	0.0000
Properties	Temperature [C]	25.00
Composition	Pressure [kPa]	121.6
K Value	Molar Flow [kgmole/h]	38.63
Electrolytes	Mass Flow [kg/h]	697.0
User Variables	Std Ideal Liq Vol Flow [m3/h]	<empty>
Notes	Molar Enthalpy [kJ/kgmole]	-2.856e+005
Cost Parameters	Molar Entropy [kJ/kgmole-C]	72.56
	Heat Flow [kJ/h]	-1.103e+007
	Liq Vol Flow @Std Cond [m3/h]	<empty>
	Fluid Package	Basis-1

Attaching the Utility

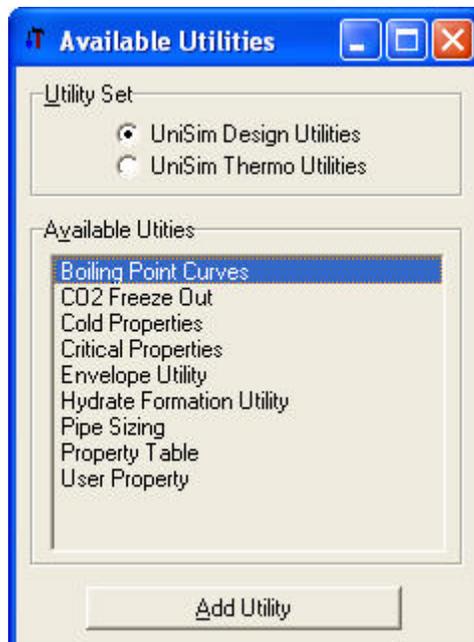
Click on the *Attachments* tab.



Now click on the *Utilities* item.

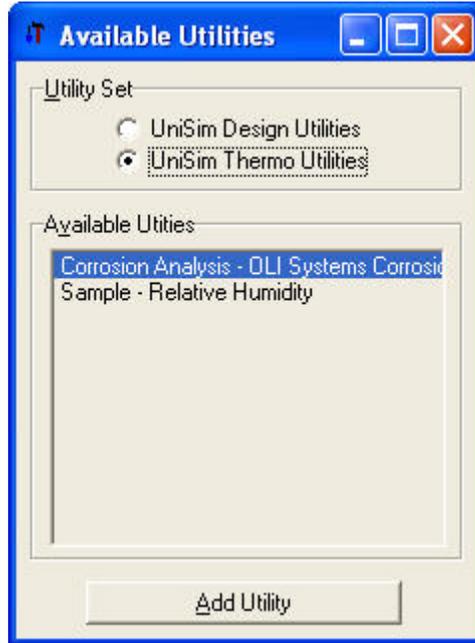


Click on the Create button.



We can now attach several types of calculations to this stream. For our purposes we will be attaching a thermodynamic utility.

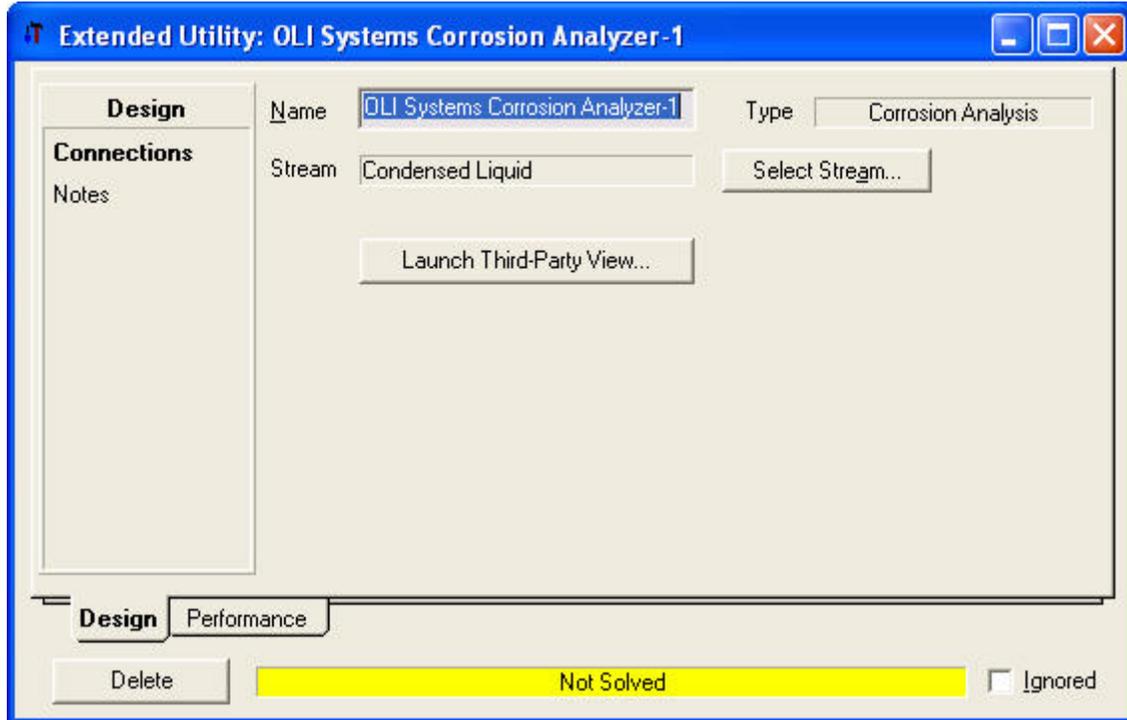
Click the *Unisim Thermo Utilities* radio button.



Multiple thermodynamic utilities may be displayed. Select *Corrosion Analysis – OLI Systems Corrosion Analyzer*.

Click the *Add Utility* button.

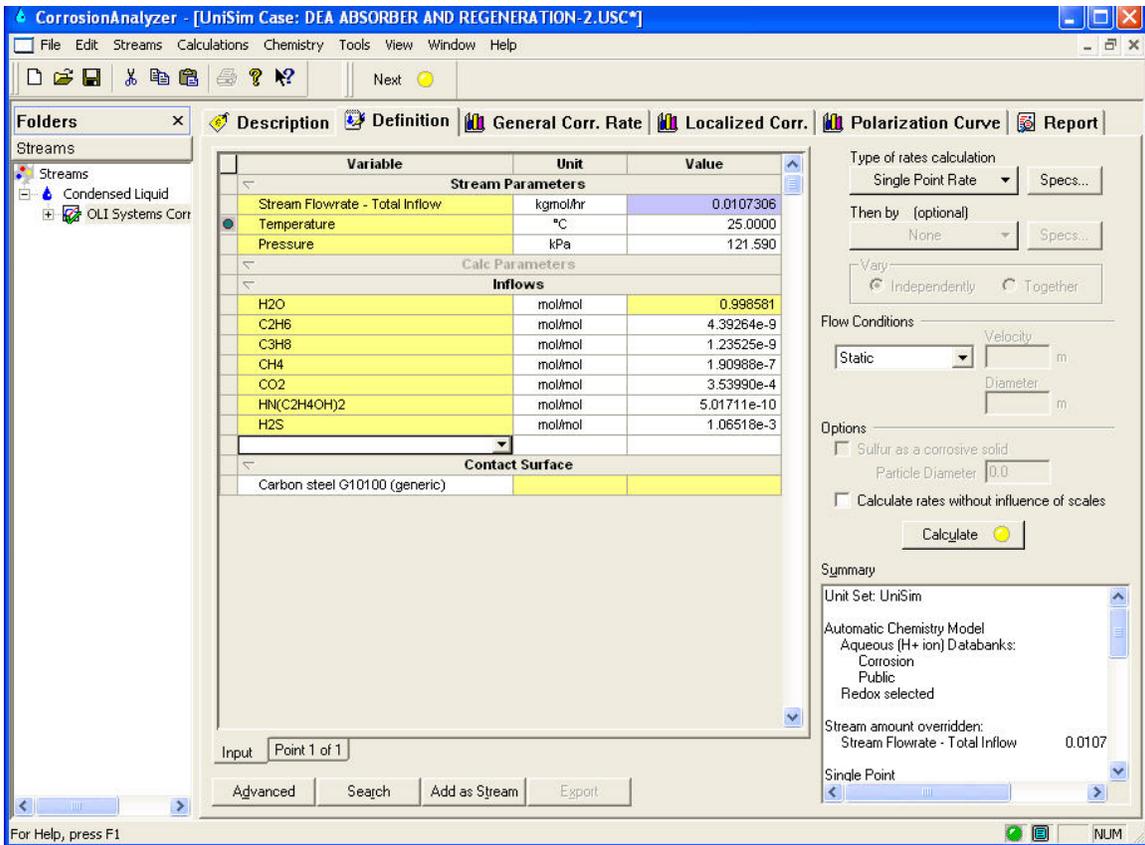
Launching the Application



This will bring up the dialog to launch the thermodynamic utility. The OLI Corrosion Analyzer is set to launch automatically. If it does not or you want to re-launch the program, click the **Launch Third-Party View...** button.

The default corrosion calculation is to be an isothermal (at the temperature and pressure of the Unisim Design stream) for carbon steel G10100 under static flowing conditions. The program will run and complete in a few minutes. Please note, the Unisim Design Cause is paused during the calculation.

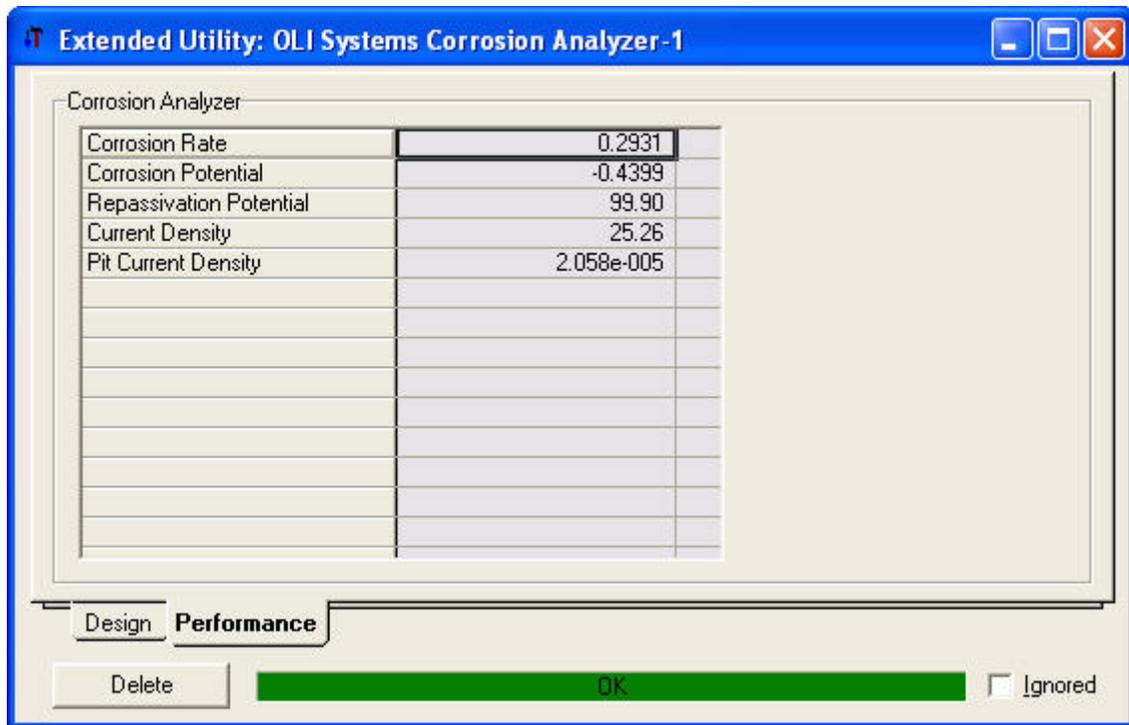
The OLI Corrosion Analyzer will launch in a separate window.



The preceding figure is the result of the corrosion calculation. You may click on the Reports tab to see the actual information as well as all of the OLI thermodynamic values. This is full featured OLI Analyzer program and you may perform any standard OLI calculation.

When the OLI Analyzer has finished you can re-focus on Unisim Design by clicking the process window.

Now click the *Performance* tab for the *Extended Utility* dialog.



The same corrosion calculation values calculated in the Corrosion Analyzer are now returned to Unisim Design. You may now include them in the report or use them in spreadsheets and controllers.

This concludes the introduction to the Corrosion Analyzer in Unisim Design.