OLI Engine in METSIM®

The OLI Engine in METSIM® allows the full databank for OLI (AQ, MSE and MSE-SRK) models, to be accessed from within the METSIM® flowsheet simulation environment. This product is available through the joint efforts of OLI Systems and our Alliance Partner, Metsim International.

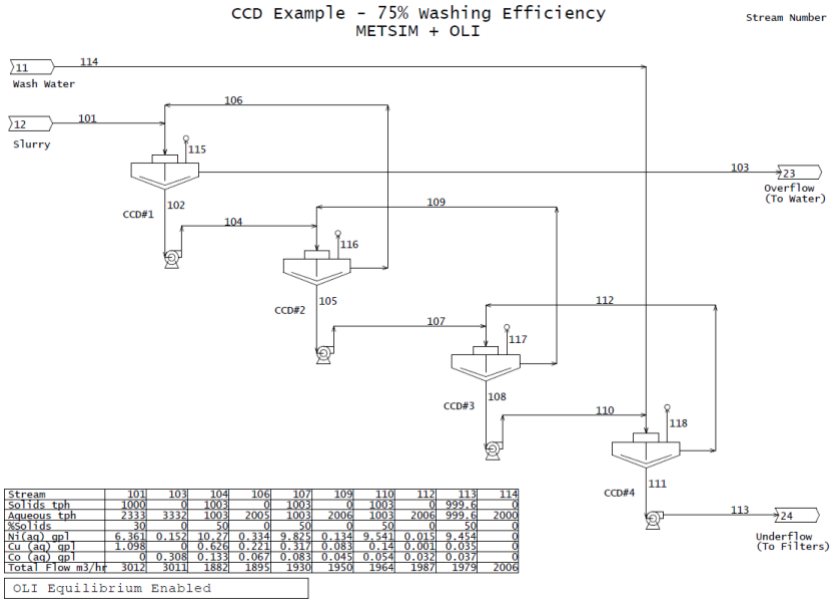
METSIM® is widely used in the mineral processing industry including for hydrometallurgical processes. The use of the OLI Engine in these flowsheets can easily lead to more accurate simulation of important processing steps involving electrolyte solutions.

In this software offering, the OLI Engine is called when required at significant points in the flowsheet, rather than called for every unit in the flowsheet. This allows us to combine fast execution of simple operations with the rigor of OLI calculations when needed.

Approach

For water or electrolyte streams in a process, the Electrolyte Simulation Powered by OLI Systems within METSIM® allows predictive electrolyte simulations in a more traditional flowsheet environment. The OLI Engine can be called from any unit operation in the METSIM® library, at any point in the flowsheet. The results are written into the unit operation discharge streams automatically and also stored as data matrices for reference.

By combining accurate chemistry with stream-handling considerations, such as washing efficiency in a CCD circuit, mass balances and plant design considerations are ensured to be precise. OLI chemistry calculations are also available within METSIM® dynamic simulations, adding true value to your project.



Stream	101	103	104	106	107	109	110	112	113	114
Solids tph	1000	0	1002	0	1003	0	1003	0	999.6	0
Aqueous tph	2333	3332	1003	2005	1003	2006	1003	2006	999.6	2000
%Solids	30	0	50	0	50	0	50	0	50	0
Ni(aq) gpl	6.361	0.152	10.27	0.334	9.825	0.134	9.541	0.015	9.454	0
Cu (aq) gpl	1.098	0	0.626	0.221	0.317	0.083	0.14	0.001	0.035	0
Co (aq) gpl	0	0.308	0.133	0.067	0.083	0.045	0.054	0.032	0.037	0
Total Flow m3/hr	3012	3011	1882	1895	1930	1950	1964	1987	1979	2006

Features

Electrolyte OLI Property Package	Built on OLI's thermodynamic framework and accessible via the METSIM® Equilibrium Module.
Electrolyte Component Database	The METSIM® Equilibrium Module allows mapping of any OLI component to an equivalent species in the METSIM® project.
Electrolyte Properties	Calculation and display of thermodynamic and transport properties specific to electrolyte systems such as pH, osmotic pressure, ionic strength and electrical conductivity (under development).
Unit Operations	All unit operations within METSIM® are able to call the OLI routines, seamlessly linking your flowsheet model to accurate chemical calculations.

Capabilities

Complete speciation	The OLI AQ model predicts and considers all of the true species in solution in the range of -50 to 300° C, 0 to 1500 bar, and 0 to 30 molal ionic strength, while the MSE model temperature limit is 90% of the critical temperature and there is no concentration limit.
Standard state framework	Based on the Helgeson equation of state, parameter regression and proprietary estimation techniques for the aqueous framework and on OLI technologies for the MSE framework.

Activity coefficients for complex and concentrated systems	The aqueous (AQ) model is based on the combined work of Bromley, Zemaitis, Pitzer, and OLI technologists. The mixed solvent activity coefficient model (MSE) is based on OLI's internal development now extensively published in peer-reviewed literature.
Comprehensive databanks	The complete OLI databank with 80 inorganic elements, associated solution species and complexes, and numerous organics. OLI provides a paid thermophysical modeling service for customized coverage of client chemistry in the form of private databanks and / or extensions to the OLI databank.
Thermophysical properties	OLI has developed unique chemical/physical models to compute thermodynamic (bulk and interfacial) and transport properties for complex electrolyte mixtures.

Applications

- Leaching of ores
- pH control
- Crystallization
- Trace metal removal
- Brine handling
- Scrubbers
- Precipitation
- Solubility
- Evaporation ponds
- Acid stream neutralization
- Wastewater treatment
- Regulatory and environmental limits

Related Products: OLI Studio Suite

Stream Analyzer	ScaleChem	Corrosion Analyzer
In-depth electrochemistry studies, equilibrium for single point, survey, mix, and separate calculations.	In-depth chemistry studies and prediction of scaling problems for oil and gas production.	Electrochemistry of aqueous corrosion; corrosion rate prediction, localized corrosion indicator