OLI Systems Letter

The New OLI Platform v9.6.3

May 10th, 2019

Dear Shell Global Team Members:

We are delighted to inform you that OLI Systems, Inc. has just completed the latest version of our software platform – v9.6.3. This new version will be released on Monday May 13th, 2019. This is the first time in the history of OLI that an entire platform release has been dedicated to meet the needs of a single client, Shell, in this case and marks a truly special moment in our long-standing partnership.

OLI recognizes Shell as one of our most valuable clients and we decided to make several investments including changes to our product development roadmap to meet the unique needs of Shell. We know that the vast majority of Shell's OLI software users are highly sophisticated experts in water and electrolyte chemistry applications. We appreciate the fact that these users are constantly pushing the limits of process modeling science and often encountering unique application requirements and use cases that are at the leading edge of our industry.

In v9.6.3 we have made several changes to our platform to increase process modeling accuracy in high pressure environments with OLI's unique and differentiated MSE-SRK model. These platform enhancements include:

- Increased accuracy and consistency of the calculation of <u>pseudo component solubility in brines</u>. The OLI platform is uniquely accurate for such calculations. These predictions will help flow assurance engineers and asset integrity teams reliably estimate hydrocarbon flows in the reservoir and mitigate operational risk more effectively.
- <u>Vapor-liquid phase prediction of pseudo components</u> has been enhanced by accurately handling pseudo component phase partitioning in the vapor phase at high pressure. This will allow flow assurance and asset integrity teams to accurately predict amount of liquid formation to enhance operational efficiency and reliability. This brings more accurate predictions uniquely tailored to meet the needs of high-pressure environments as well as high salinity brines with the MSE-SRK model.
- <u>Organic liquid phase calculations</u> with the MSE-SRK model in the presence of brines at high temperate are now more reliable. This will allow flow assurance engineers to accurately simulate the reservoir conditions more rapidly with fewer calculations. This capability uniquely enhances the ability to handle high pressure and high temperature environments with high salinity brines.
- <u>Interaction calculations across scales, waters and pseudo components</u> have been enhanced for high temperatures. Scaling solids are now consistently predicted as a function of pressure without unexpected changes in solubility. This allows flow assurance engineers to accurately estimate the edge effects of scale formation as a function of pressure to enhance operational efficiency and reliability. This is particularly significant because OLI is truly unique in its ability to accurately simulate scaling solids in multicomponent systems.

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OLI has invested approximately 35-person days of effort across our engineering, database, software and technical support teams to develop, test and validate these new capabilities in v9.6.3. In addition, we shifted out several committed features in our v10 and v11 product roadmap by over 90 days in order to accommodate this new release. We also re-prioritized our technical support and services resources to support the development and testing of this release which significantly reduced our technical engagement with other clients. We estimate the total cost to OLI for this release in terms of tangible investment and soft costs is approx. $150,000.

All of us at OLI are excited that we were able to bring this new release to market quickly and be responsive to the needs of the Shell team. We truly value your collaboration and insights as a lead user client. We hope this release continues to inspire confidence in you that OLI is a strategic partner of Shell that is dedicated to the success of all your process modeling and simulation activities. We are hopeful that you share our excitement and recognize the contributions of our OLI engineering, development and support teams who have worked very hard to make this release a success.

Looking forward to taking our collaboration to even greater heights in the coming years!
Sincerely,

Pat McKenzie
VP Global Sales, and

Vineeth Ram
Chief Revenue Officer