

July 2020 – CSUR’s Technical Webinar

Gas EOR in Tight Unconventionals – Present and Future



July 2020’s Technical Webinar Series featured Mathias Carlsen from Whitson, a global company that specializes in PVT, gas-based EOR and gas-condensate reservoir projects and pilots. The presentation was titled “Gas EOR in Tight Unconventionals – Present and Future”. Although enhanced hydrocarbon recovery for unconventional reservoirs is generally considered to be in its infancy still, the speaker, who was presenting for CSUR from all the way in Norway, highlighted several existing and potential new projects & operators that see this as the future.

Enhancing a well’s performance or the recovery from a given reservoir requires an appreciation of all aspects of the entire system. From physics to engineering to fluid interaction to chemistry to geology to completion practices, Mathias stressed the importance of understanding the basics and to honor the known engineering principles and existing geological model prior to considering this type of an endeavor. Together with the technical jargon and thermodynamic / engineering principles typically associated with enhanced recovery projects, he also provided analogies in order to illustrate the mechanics of this process.

In focusing on the most prevalent scheme of Gas EOR today, commonly referred to as the Huff n’ Puff Method, the speaker delved into his organization’s typical approach when assessing a project. As with any project, economics have to be favorable in order to proceed. The key performance indicator (KPI) for this type of a project, which presumably has already undergone some level of primary depletion, is the EOR Efficiency or “Uplift per Cost”. Mr. Carlsen also urged for critical laboratory measured data and listed a screening criteria that can be utilized in consideration of an implementation decision.

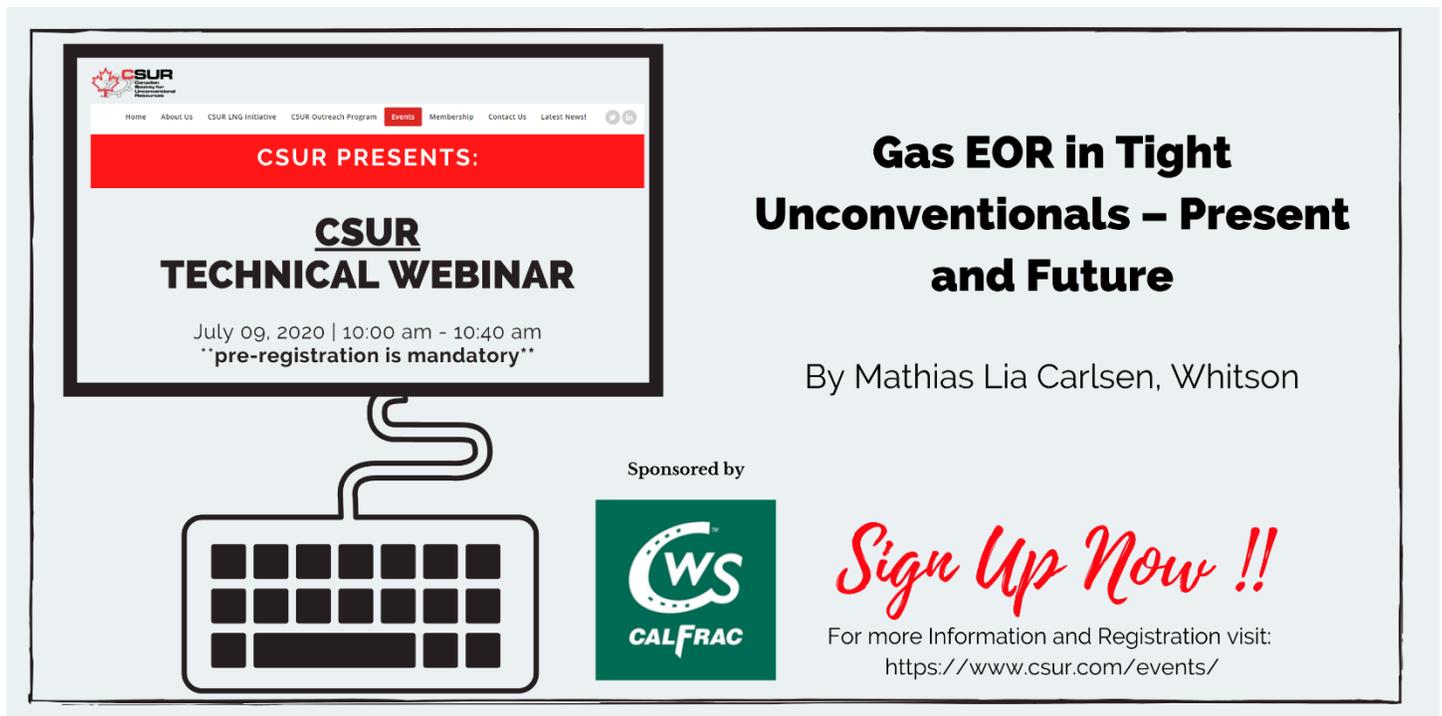
Finally, in addition to the economics, Mathias spoke of assessing the technical merits of a given project by showcasing 3 field examples and their respective success or lack thereof. Based on the results to date, it would appear that targeting low gas-oil ratio (GOR) areas and injecting large gas volumes are key to achieving success, both technically & economically. However, he reiterated that each play or each project needs to go through a proper and thorough screening protocol.

ABSTRACT: EOR has made its debut in shale oil fields, however it's still in its infancy. With a little more experience and new technology on the horizon, more consistent positive returns are just around the corner. It's not a question of if, but when it will become ubiquitous. This session will focus on gas EOR – what's important and why, and share some injection-driven stories.

PRESENTER: Mathias Lia Carlsen, Whitson

Mathias Lia Carlsen is GM Americas at whitson – a global company that has specialized in PVT, gas-based EOR and gas condensate reservoirs since 1988. Over the last four years, Carlsen has consulted on and supervised a wide range of projects related to PVT and gas EOR in tight unconventional. Currently, Carlsen is working on gas EOR (Huff-n-Puff) pilots and field-wide implementation projects in the Eagle Ford, Permian, Bakken, Montney and Duvernay.

In addition to the consultancy, Carlsen researches and teaches industry courses on advanced PVT and phase behavior, EOS model development and gas based EOR. Carlsen holds a MSc degree in Petroleum Engineering from the Norwegian University of Science and Technology (NTNU) and was a Fulbright Scholar at Stanford University.



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**Gas EOR in Tight
Unconventionals – Present
and Future**

By Mathias Lia Carlsen, Whitson

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