

SPE WORKSHOP

ENHANCED OIL RECOVERY

***Registration open till February, 5
Topic submission open till January, 26***

**FEBRUARY 20—21, 2018
MOSCOW, RUSSIA**

**HOLIDAY INN SOKOLNIKI
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Era of easy oil extraction is coming to the end. Most producing fields face declining production. We can achieve production growth in two ways: find new reserves and enhance oil recovery for existing assets. However, reserves quality continues to degrade: according to the Russian Ministry of Energy, 80% of proved reserves are located at producing fields and share of hard-to-recover reserves increased to 65%. As a result, the second way becomes crucial – development and wider application of EOR methods in the fields. This marks international oil industry trend: 3% of worldwide production made through EOR methods and the rate keeps on growing.

Low productivity reservoirs, high water-cut oilfields, high-viscosity oil, and fractured reservoirs show us importance of EOR methods application both as promising technologies and technology challenge to improve oil and gas development efficiency in current situation with low oil price.

Participants will have an opportunity to share their own experience, discuss existing methods and results of oil recovery enhancement. Workshop will review the basic methods of EOR, including thermal, gas, chemical and combined methods of formation stimulation, case studies and perspectives of their application as well as implementation of new technologies.

This year programme committee suggests to review enhanced oil recovery methods under the following sessions:

- Physical and chemical methods
- Gas methods
- Thermal methods
- Innovative methods

PROGRAMME COMMITTEE

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SESSION 1. Physical and chemical methods

Physical and chemical oil recovery methods help to improve oil recovery efficiency for all types of fields, including high water-cut brownfields. These methods help to reduce water-oil surface tension (with surfactant), optimize water-oil mobility ratio and improve reservoir coverage (with polymers). Primary technologies for the method include polymer flooding, surfactant polymer flooding and ASP (anionic surfactants – soda – polymer).

In early 2000s thermal and gas methods exceeded physical and chemical methods in number of completed projects. However, number of pilot and full-scale projects (using physical and chemical methods) increased significantly since 2010, as well as expanding of its' application as a result of technological achievements and rise in the efficiency. Polymer and surfactant polymer flooding technologies are the most popular in China, Canada and India. It's also in use in Oman, Argentina, Great Britain, some countries use it offshore. Number of such projects in Russia and Kazakhstan is increasing, 2017 was a benchmark as two companies announced successful completion of polymer flooding and ASP pilots in Russia.

Pilot programme is critical for future successful project with physical and chemical oil recovery methods. It allows to select optimum surfactant, polymer and alkali for the exact formation. Throughout the project monitoring and efficiency evaluation step forward. After fall in oil price, operating companies start to pay special attention to cutting capital and operating costs and try to keep major effects for formation.

In fractured carbonates and high temperature reservoir these technologies are still applied as pilots only. Research centers and oil and gas companies are looking for new decisions, new polymers and surfactants for such conditions.

We suggest discussing the following topics:

- Latest achievements and projects: lessons learned
- Water treatment for physical and chemical methods: pros and cons
- Physicochemical methods for heavy oil
- Solutions for fractured reservoir

SESSION 2. Gas methods

Gas, associated gas or air injection to maintain reservoir pressure and enhance oil recovery spreaded long before full-scale water injection. Major part of completed gas and water-alternated-gas projects were done in US using miscible displacement. Technology and economic limits prevent the wider use (such as risks of gas breakthrough, areal sweeping efficiency decrease and infrastructure high cost). At the same time requirement strengthening for associated gas use may induce search of gas injection implementation ways. Modern technologies allow to minimize risks at early stages of gas and WAG methods design, which application, which leads a rising tide of interest to the technology in different parts of the world, including Russia.

This session will cover the following:

- Technologies pros and cons (gas, water-alternated-gas, different agents, in - situ combustion)
- How to set the stage for a large-scale project to minimize risks and maximize effects (lab investigation, nuances of modeling, requirements to pilot testing)
- Injection monitoring and control
- Case studies and implementation plans for projects in Russia
- Gas methods for unconventional reservoirs (fractured low-permeable carbonates, source rocks, extra low permeable reservoirs)



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SESSION 3. Thermal methods

Thermal methods are considered to be the most prepared technologically and technically out of all the EOR methods. These methods can be used in the most difficult physical and geological conditions and allow to produce oil with a viscosity of tens and hundreds of thousands mPas. Moreover, final oil recovery increases from 6-20% up to 30-50%, the numbers can be achieved by thermal methods only.

Modern theory of thermal oil reservoir stimulation by heat carrier injection or fire flooding are based on multiphase multicomponent filtration theory, which also considers phase transition and chemical in-situ reactions (mainly oxidative). The main advantage of thermal methods vs other EOR technologies is simultaneous hydrodynamic and thermodynamic effects. Heat influences all the components of reservoir (solid, liquid, gaseous) and changes the context and filtration conditions radically. As a result, oil viscosity decreases which increases oil mobility, structural-mechanical properties weaken, boundary layers reduce in thickness, capillary imbibition improves, oil fractions gasify, wettability of displacing agent improve, and hence displacement efficiency and ultimate recovery increase

So far, thermal methods have no alternative for high-viscous and super-viscous oil field development. Bringing the oil recovery up to 50% and above aligns with doubling of these fields economic reserves.

Thermal methods appear to be one of the most important technologies to develop heavy oil fields, both as the only method and combined with other technologies. This trend will persist in the future.

Themes for presentations and discussions:

- Case studies and projects implementation plans in Russia
- Thermal front monitoring and injection control
- Thermal methods: recent trends in development
- Thermal methods for unconventional reservoirs (shallow oil-saturated thickness, gas cap super-viscous oil deposit, fractured low-permeable heavy oil carbonates, source rocks)

SESSION 4. Innovative methods

This session completes the full picture of enhanced oil recovery methods. We invite you to speak and discuss biological methods and all the newest technologies which were not considered in the first three sessions. Programme committee may transform this session into round table format.

POSTER SESSION

In addition to the main Technical Sessions the Program Committee is interested in organizing of Poster Session. Posters will give the participants additional opportunities to share their ideas and technologies. To get more information and to participate in Poster Session you can contact Antonina Kozmina at akozmina@spe.org



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INFORMATION FOR PRESENTERS

If you are interested to be a speaker at the workshop, please send your presentation abstract (2-3 paragraphs with description of nature and scope of work, possible applications and summary of results or technical contributions) to Antonina Kozmina at akozmina@spe.org before January 19th. Your abstract will be reviewed by the Program Committee to consider its acceptance for the Workshop Program.

The following information is required for each abstract:

- Participant's name, Company name;
- Contact details- phone number, address, e-mail address;
- Session's title;
- Title of your presentation

COMMERCIALISM

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REGISTRATION AND PARTICIPATION

REGISTRATION DEADLINE: February 5th
Topic submission deadline: January 19th

According to SPE Policy the costs are the same for speakers, attendees and Programme Committee members

TERMS	COST, NO VAT	VAT	COST, VAT
SPE MEMBERS NON-RESIDENTIAL	38,000.00	6,840.00	44,840.00
NON SPE MEMBERS NON RESIDENTIAL	41,000.00	7,380.00	48,380.00

REGISTRATION AND PARTICIPATION

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