Barriers to improved oil recovery make for animated discussion at Dresden symposium

Ann Muggeridge (Imperial College London) presents this assessment of the 18th EAGE Improved Oil Recovery (IOR) Symposium held from 14-16 April in Dresden, Germany.

Over 160 oil industry professionals, academics and researchers from all over the world attended the biennial symposium, the leading event in Europe on improved oil recovery (IOR). The event is held in alternate years to the SPE organised IOR Symposium and each conference always hosts a session devoted to the best papers from its sister symposium. Unlike the SPE conference, each EAGE IOR meeting is held in a different city in Europe, North Africa or the Middle East. By changing the location, we hope that more people (whether they work in oil companies, service companies, universities or research institutes) from different regions will get a chance to attend the meeting and be briefed on the latest developments.

This year the conference theme was ‘Overcoming the Barriers’, reflecting the fact that whilst IOR and EOR have been practised for more than 50 years they are still not widely applied. This is despite an increasing demand for oil that is projected to continue for several decades to come, exploration for new fields becoming increasingly difficult and an average recovery factor from fields worldwide of between 30% and 40%.

So what are the barriers? The conference started with keynote speeches from Prof Dr. H. Kuempel (president of the Federal Institute for GeoSciences and Natural Resources, Germany), Prof K. Sorbie (Heriot-Watt University, Scotland) and S. Taylor (Nalco, USA) providing perspectives on this, followed by an audience debate. It was agreed that public perception and understanding was becoming an increasingly important consideration due to increasing public concern about climate change and fracking during shale gas extraction.

As an industry, we need to be open about the issues and learn how to explain the science behind our business to the non-specialist women and men in the street. The time between discovery of a new EOR process, pilot studies and then deployment (typically 20 years) was felt to be another major barrier. The solution was felt to be a closer collaboration between the researchers and industry combined with a real focus by company managers to overcome perceived risks and move projects forward. Of course the current low oil price was also identified as a challenge to be addressed.

The role that governments could play in overcoming the barriers was discussed by Jonathan Thomas (UK Department of Energy and Climate Change) in a keynote address later on the first day. Thomas described the outcomes of a review of EOR opportunities in all the fields in the UK sector of the North Sea, initiated by the UK government, touching also on the possibilities of using CO2 captured from power stations to improve oil recovery in the future. The review suggested that there are still significant opportunities to increase oil recovery in the North Sea, especially using chemical flooding. It was felt that many of these are still economically viable with current oil prices. The window of opportunity is closing, though, as fields become more mature and platforms age.

There then followed presentations of more than 70 technical papers and posters investigating all aspects of enhanced oil recovery (the improvement of oil recovery by the injection of different fluids into the reservoir) from the fundamentals to field experiences. A significant number of papers investigated the fundamental mechanisms behind the low salinity waterflooding process.
Most focused on the causes of wettability alteration, but a paper presented by Kristian Sandengen on ‘Osmosis as a Mechanism for Low Salinity EOR’ provoked the most discussion in the conference.

Another major theme of the conference was the investigation of chemical flooding techniques (polymer flooding, ASP and foams), suggesting that oil companies and researchers (as well as the UK Government review) value these methods. In these papers the focus was very much on characterizing and improving the behaviour of chemicals in terms of their rheology, degradation and adsorption. Indeed, the best paper of the conference (‘Visualization of ASP Coreflood Experiments using X-ray CT Imaging’ presented by Steffen Berg), the runner up best paper ‘Polymer Flooding for EOR in the Schiehallion Field – Porous Flow Rheological Studies of High Molecular Weight Polymers’ presented by Emma Chapman and the Best Young Presenter (Stephane Jouenne presenting ‘Polymer Stability Following Successive Mechanical Degradation Events’) were all in the area of chemical flooding.

As well as listening to a range of very high-quality papers, conference participants enjoyed the opportunity to discuss and network informally during the breaks on the hotel lawns on the banks of the River Elbe. Some also participated in the two excellent workshops (‘A Tutorial on Wetting’ by Prof S Herminghaus of the Max Planck Institute for Dynamics and Self-Organization, Germany and ‘Advances in Polymer Flooding Technology’ by Prof A Skauge from the Centre for Integrated Petroleum Research, Norway) just before the main conference. The social highlight was an excellent dinner held in the beautiful Museum of Meissen Art, preceded by a tour demonstrating the art of porcelain manufacture and decoration.

Overall this was a very informative, interesting and enjoyable conference. There are still barriers to overcome before EOR is widely deployed but clearly industry, academia and researchers are breaking them down piece by piece. We would like to thank the organizing committee (Diederik Boersma, Torsten Clemens, Helber Cubilos Gutierrez, Ovind Fevang, Andy Haas, Sunil Kokal, Istvan Lakatos, Fanco Masserano, Danielle Morel, John Peak, Yannick Peysson, Bill Rossen, David Smith and Leonid Surguchev) and the local advisory committee (Mohammed Amro, Stephan Herminghaus and Alexander Weber) for all their efforts in making this conference a success. Particular mention should be made of Foppe Visser who co-chaired the organising committee and chaired the local advisory committee and is now retiring from the committee after nine years. He will be hard to replace.

G-862 RBS
The Complete High-Performance Cesium Base-Station Magnetometer System

- GPS 1PPS time synched
- 10 Hz sample rate
- Low voltage requirements (12V)
- Remote display & logging via Bluetooth and Android Application
- Low noise floor, 0.004 nT/√Hz

Great for mobile survey applications as well as applications that require stationary monitoring of the total magnetic field.

Call: 408-954-0522

www.geometrics.com

mgsales@geometrics.com