



European Desalination Society

Two-day Course

May 10–11, 2014

Water Treatment for Upstream Oil and Gas

Lecturer John Walsh

In conjunction with the conference on

Desalination and Water Treatment

May 11–14, 2014, Grand Resort Hotel, Limassol, Cyprus

Lecturer

John M. Walsh is Director of the Technical Water Team at Cetco Energy Services. He has roughly 30 years experience in industrial water treatment. Recently he retired from Shell where he was the global subject matter expert in the area of upstream water treatment. In his 21 years experience with Shell, he worked in the Shell technical centers for half of this time and in operating assets for the other half. He has designed water treatment systems, and provided troubleshooting support to assets all over the world. He has experience in nearly all areas of water treatment for the oil and gas industry including conventional produced water treatment systems, and water treatment for flood, polymer flood, steam flood, sour hydrocarbons and unconventional hydrocarbons.

Having earned a PhD in chemical engineering, together with extensive experience in operating units, he brings a unique combination of fundamental knowledge with first hand practical experience. He has presented more than 40 papers on the subject of produced water treatment at various conferences and workshops. He currently serves on the Board of Directors of SPE as the technical director for the Projects, Facilities and Construction discipline.

Aims

This course provides a fundamental understanding of the science and practical applications of water treatment. It presents the fundamental mechanisms behind various water treatment equipment and processes and gives practical experience from dozens of water treatment facilities from around the globe, including a segment on water treatment for unconventional hydraulic fracturing.

Throughout the course, field experiences, practical issues and field performance of equipment is analyzed and explained in terms of surface science, chemistry and engineering principles. The scientific aspects of water treatment are presented in a practical down to earth manner that can be understood with little prior study and can be immediately implemented in the field. The course is organized around the following topics:

- Characterization of oil/water/gas for water treatment
What is unique about produced water? How should we sample and analyze to get reliable results? What characteristics make one water more difficult to treat than another? How do we in-

interpret the analytical results? What do the analytical results tell us about design and troubleshooting?

- Equipment selection and performance
What equipment is available? How does it work? How well does it work? What are its limitations? Which equipment should be used for which type of produced water?
- Process engineering and process line-ups
What is the best process configuration? How to minimize reject recycle streams? What is the effect of valves and pumps?
- Chemical treatment
Many mechanical and process problems can be overcome by application of the right chemicals. How can this be done?
- Operations, monitoring and surveillance
To what extent do operating practices contribute to problems? How can problems be overcome by improved practices?
- Troubleshooting
There are many things that can go wrong, how can we figure out what is causing problems? How can we fix the system in the fastest and more cost effective way?

As indicated by these topics, the full project life cycle is covered from concept selection to front end engineering, detailed design, operation, and trouble shooting. Also indicated is a balanced approach toward chemical versus mechanical treatment. A rigorous approach toward troubleshooting is presented with several examples.

Lessons learned and best practices are presented from essentially all major hydrocarbon production regions of the world. Applications include both onshore and offshore systems as well as water treatment for the injection disposal, water flood, polymer make-up, polymer flooding, steam flooding, and hydraulic fracturing. Desalination of source water and produced water are also covered.

Why you should attend

Water treatment is becoming increasingly important for maintaining the license to operate as a component of DBOO project delivery and for developing IOR/EOR

Who should attend?

The course is intended for process, facilities, and chemical engineers involved in either design or troubleshooting water treatment systems. Both onshore and offshore facilities are presented.



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