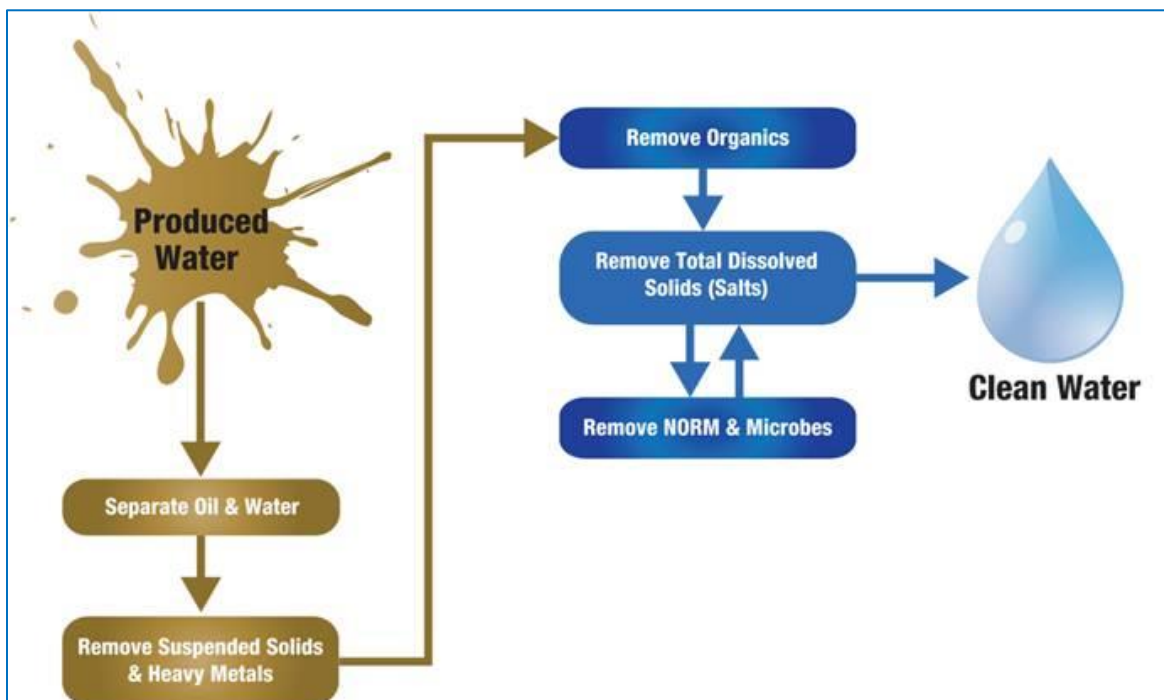




WE101: Technologies in Water Treatment in Oilfield

Training Description:

When oil companies drill a well, approximately 130,000 gallons of water are required. This quantity is dwarfed when during well stimulation, water usage increases to 2.5 million gallons. During production, water injection or flooding increases the well pressure and enhances oil recovery from 30% of the oil in place to as much as 50%. The water used during these operations is required to be of a certain quality, however the importance of proper water treatment is often underestimated. This is due to the tremendous variation in the water sources used i.e. seawater, borehole and river water. Poor water quality, may lead to clogging of the reservoir and loss of oil production particularly during well stimulation and water injection.

For every barrel of crude produced 7-10 barrels of water are produced, reusing it is vital for reducing the quantity of water used during the reservoir's lifetime. Produced water contains some oil and its treatment to an environmentally acceptable level is mandatory before disposal. Good oil and water separation is therefore necessary and the physics as well as the mechanics of proper oil and water separation need to be well understood not only for water reuse but also to meet these strict environmental discharge regulations. The methods most commonly employed for oil water separations, include gravity settling and gas flotation. Flotation depends on the surface characteristics of the oil and on its interaction with the gas bubbles. The method used depends on many factors including the type and physical and chemical characteristics of the crude oil ultimately however the governing principle of these separations is dictated by Stokes law.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Learn the details of the impact of effective oilfield water chemistry
- ✓ Comprehend how to assess the oilfield production liquid separation principles
- ✓ Understand the importance of proper water treatment technology in oilfield
- ✓ Appreciate the importance of reusing produced water
- ✓ Develop skills necessary to evaluate the technologies used in oil and water separation

Training Designed for:

This course is intended for Engineering and technical managers and supervisors, Maintenance coordinators, Operations and manufacturing managers and supervisors, Foremen and team leaders, Plant and field engineers, New engineers and those interested in obtaining a general understanding of the industry.

Training Requirement:

"Hand's on practical sessions, equipment and software will be applied during the course if required and as per the client's request."

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- ❖ PRE-TEST
- ❖ Introduction
- ❖ **Oilfield Water Chemistry**
 - Water Chemistry Fundamentals
 - Environmental Regulations and Water Specifications
 - Water Sampling and Analysis
 - Water Scaling, Corrosion Control and Microbiology of Water
 - Produced Water Generation and Production and Management Practices
 - Environmental Impacts Caused by Produced Water
 - Treatment and Disposal of Produced Water
 - De-oiling / Soluble organics removal
 - Desalination / Disinfection

DAY TWO:

- ❖ **Oilfield Production Liquid Separation Principles**
 - The Nature, Chemistry and Composition of Hydrocarbons
 - Test Methods for Oil and Grease
 - Emulsions / Stabilization, Destabilization
 - Principles of Flotation
 - Key Design Parameters of Flotation
 - Henrys & Stokes Laws
 - Nucleus & Rate of Rise Theory
 - Air-To-Solids Ratio

DAY THREE:

- ❖ **Separation and Treatment (I)**
 - Mechanical filters & Filtration Technologies
 - Gravity Separation Systems
 - Separators - 2 and 3 Phase
 - Skim Tanks
 - API Separators
 - Plate Coalescers
 - Skim Piles
 - Evaporative processes

DAY FOUR:

- ❖ **Separation and Treatment (II)**
 - Ion exchange
 - Membrane processes
 - Electrodeionization
 - Desalination
 - Gas flotation systems
 - Dissolved Air
 - Induced Gas
 - Dispersed Gas

DAY FIVE:

- ❖ Crude Oil Desalting
 - Desalting Technologies
 - Desalting Equipment
 - Zero Liquid Discharge (ZLD)
 - Wastewater recycle / reuse
 - Case Study
- ❖ Course Conclusion
- ❖ POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session

For training registrations or in-house enquiries, please contact:

Aisha Relative - Training & Career Development Manager

aisha@cmc-me.com / training@cmc-me.com

Tel.: +971 2 665 3945 or +971 2 643 6653 | Mob.: +971 52 2954615