



## Water Management in Heavy Oil Resource Operations - HOWM

### COURSE

#### About the Course

This course will review basics of heavy oil extraction, characteristics, quantities, and typical ratios of waters in heavy oil extraction. It will review alternative discharge limitations, offshore discharge, and treatment for well injection. Suspended and oil/crude separation, with traditional and new equipment, will be covered. The course will review the scientific basis and principles of softening, lime softening (hot, warm, including sludge disposal), strong acid exchange (SAC), weak acid exchange (WAC), ion exchange, boiler feed water chemistry (including once through steam generator), and cooling tower cases. Technologies for produced water recovery will be discussed.

#### Target Audience

Central processing facility operators and process designers dealing with heavy oil produced water separation, recovery, and treatment for reuse or disposal. Personnel involved in establishing, improving, optimizing, or supervising the implementation of technology improvements. This course will be useful to managers in completion, production, and optimization of operations. The course is a great reference parameter for water technologies in mining and heavy industry, with some examples of cases and treatment for discharge and spills.

#### You Will Learn

Participants will learn how to:

- Understand and analyze technology options, advantages, and limitations
- Choose the most advantageous technology given the site conditions
- Design or specify the equipment capable of fulfilling the operations intended
- Optimize design conditions and operating efficiency
- Choose suppliers when comparing basic principles and design
- Synthesize and define the applicability conditions of technologies
- Troubleshoot field situations, learned from field cases, discussions, and debates in class
- Understand water mass and ionic/solids balance
- Estimate and calculate equipment requirements, predesign and specify equipment
- Predict efficiencies or performance of equipment, anticipate remediation of spills

#### Course Content

- Heavy oil review and basic definitions, heavy oil around the globe, similarities, and differences
- Thermo-extraction produced water, the process (steam assisted gravity drainage and cyclic steam stimulation) ratios; secondary extraction
- De-oiling technologies, traditional, deviations, and future; centrifugal and membrane technologies
- Alkalinity and hardness concepts; softening and silica removal; hot and warm lime softening; chemistry calculations and simulator introduction (OLI)
- Ion exchange softening technology, SACs and WACs technologies, the in and out of vessel regeneration; backwash and handling of spent regeneration wastes
- Boiler feed water final treatment, standard requirements and chemical conditioning; cooling tower waters, specs, and treatments
- Evaporator alternatives and zero liquid discharge technology
- Mining bitumen extraction, tailings pond, process affected waters, their treatment and reuse
- Cooling tower requirements, water conditioning, and treatments
- Deep well injection of waste water: requirements and treatment

## Product Details

Categories: [Upstream](#)

Disciplines: [Production and Completions Engineering](#)

Levels: [Intermediate](#)

Product Type: [Course](#)

Formats Available: [In-Classroom](#)

Instructors: [PetroSkills Specialist](#) [Rafael Gay-de-Montella](#)