

DUBAI: 5 - 9 Nov. 2018 &amp; 15 –19 April. 2019

**COURSE OVERVIEW**

Hydro cyclone technology is widely used for solid-liquid separation in mineral processing industry. With the technological demands for treating production fluids from crude oil processing more efficient separation systems are required to treat produced water and slop oil generated from the recovery processes. Hydro cyclone separation offers most efficient and cost affection option for meeting the demand of oil production operators. Recognizing the potential of hydro cyclone technology to handle a wide range of separation problems including separation of 3-phases production fluids maximizing recovery of oil, producing clean water and solids for disposal or reuse. CanmetENERGY Centre Devon

Prof. Martin Thew of University of Southampton/Bradford, U.K., who pioneered the original hydro cyclone designs that are now in widespread use in offshore oil production. CanmetENERGY continued advancing the hydro cyclone design and application and had developed patented design for meeting oil industry needs.

This workshop/short course is developed to bridges the gap between theoretical understanding and hands-on experience providing know-how and in-depth understanding of “how separation occurs” and effects of operating variables. The course/workshop is designed for interactive discussions covering hydro cyclone fundamentals, performance evaluation criteria, technical advances, optimization techniques, calculation of g-forces developed, sizing, and integration of hydro cyclone systems in heavy oil treatment schemes. Case studies are discussed include treatment of refinery desalter effluent, production fluids, slop oil, produced water, and tank bottoms. On-site training can be arranged that enable participants to optimize their hydro cyclone performance for their specific uses.

**COURSE FORMAT**

The workshop/course will consist of lectures and interactive discussion sessions. The course text and presentation slides will be compiled in a binder. Course delegates will receive a copy of the course binder.

**WHO SHOULD ATTEND**

The course is designed as a basic to intermediate level course Design and Process Engineers and Technologists, Plant Operators, Water Handling staff, Procurement staff, Operational Maintenance, Production Supervisor and Managers, Health, Safety and

Environment advisers and representatives of Government Agencies and Regulatory Authorities.

**COURSE CONTENT****1. Introduction****2. Basics**

- How a hydrocyclone works
- Types of liquid-liquid hydrocyclones
- Advantages and limitations
- Factors affecting performance
- Controlling parameters

### 3. Hydrocyclone Separation Fundamentals

- Assessing the problem
- Stokes' Law
- Calculation of g-forces
- Retention time
- Droplet coalescence
- Viscosity reduction

### 4. Performance evaluation criteria

- Efficiency
- Oil recovery

### 5. Optimization techniques

- Impact of operating parameters
- Developing the best setting of the variables

### 6. Advances

- CANMET hydrocyclone
- Two-stage hydrocyclone system
- Dehydration hydrocyclone

### 7. Sizing

- Example using CANMET hydrocyclones

### 8. Integration of hydrocyclone technology in a heavy oil treating scheme

- Conventional scheme
- Integrated scheme
- Alternative treating scheme

### 9. Case studies

- Refinery desalter effluent
- Production fluids
- Slop oil
- Produced water
- Tank bottoms

### THE LECTURER



**Eng. Khalid A. Hashmi**

Khalid A. Hashmi is a professional engineer graduated with Chemical Engineering from the University of Alberta, Edmonton, and Southern Alberta Institute Technology Calgary, Alberta. He is Senior Research Engineer at the federal government R&D Center, Canmet ENERGY- Devon of Natural Resources Canada. He has over 35 years of experience with private oil sector and government; he is principle inventor of the CANMET hydrocyclone which is used for treating produced water including production fluids produced from production processes.

Over the years, he is providing training workshops to oil field staff in the Middle East, Malaysia, Mexico, Russia, and Canada. These workshops organized by IQPC, Praxis Global, and presented R&D Institutes (Saudi Armco, KISR, QP and Bader Al-Mullah Kuwait).

He is guest lecturer at the NED University, Karachi, Departments of Mechanical, Chemical and Polymer Engineering. He also teaches short courses organized by the NED faculty of Continue Education on Energy Audit, Alternative Fuels with focus on how to reduce petroleum demand for Pakistan with focus on reducing energy demand and efficient use of the power sources in Pakistan.