



MIDWEST OIL & GAS ENGINEERING

Introduction to Separation Processes in the Oil, Gas & Chemical Industry



IChemE

Approved Course



Abu Dhabi
10 – 14 February 2008

Introduction

Separation processes within the process industry are by no means limited to distillation, but encompass a broad and sometimes confusing range of technologies. A common theme in these separations, which include solid-liquid separation and drying, liquid-liquid (solvent) extraction and gas cleaning and crystallization, is the presence of particles. The properties and behaviour of this divided phase dictate plant performance.

The course explains the principles of these multiphase systems and how they can be used to design, select and specify separation plants. The course begins with the properties and formation of particulate systems by crystallization or precipitation, and goes on to consider chemical separations by transient particles (ie. liquid-liquid extraction). This is followed by a discussion of separating both liquid-liquid and solid-liquid mixtures in settlers, filters, centrifuges and hydrocyclones. In order to completely separate solids and liquid, 'drying' (whether of water or another solvent) must be used. Dryer size and performance can be assessed by simple equilibrium and kinetic tests, and these with dryer selection are described. Gas cleaning (or gas-solid separation) is a vital adjunct to all 'dry' process plants, and the principles and means of doing so are described.

At all times, participants are free to raise their own separations challenges for informal discussion.

Objectives & Key Benefits

- ◆ Learn the purpose and design of different process separation technologies
- ◆ Understand how the properties of multiphase systems dictate separation process selection and design
- ◆ Understand concepts of particle creation, handling and separation
- ◆ Be able to discuss intelligently with vendors the merits of process plant in crystallization, extraction, solid-liquid separation, drying and gas cleaning
- ◆ Prepare for practical problems and real-life projects

Who Should Attend?

- ◆ Engineers with training needs in separation processes
- ◆ Practitioners with a wish to improve skills in design projects and communicate efficiently with vendors and suppliers of separation technology

Approach

The course will be built around workshops and case studies drawn from the energy industry, including oil, gas, chemical and petrochemical. It will be of full candidate participation throughout. Candidates will be assessed on regular basis through exercises and question/answer sessions to fine tune to program as it progresses.

Emphasis will be put on all common processes found in those type of industries. It will make use of modern teaching techniques and aids making it very interactive.

Course Outline

Day One:

Introduction - properties and formation of solid and liquid particles

- ◆ Characterising solid and liquid two-phase systems
- ◆ Overview of separation
- ◆ Particle formation, breakage and agglomeration
- ◆ Crystallization -controlling particle size and habit

Day Two:

Liquid-liquid extraction

- ◆ Introduction to extraction
- ◆ Data gathering and process design
- ◆ Equipment, principles, design and selection
- ◆ Example, oil dearomatization

Day Three:

Physical separations

- ◆ Liquid-liquid separations
- ◆ Solid-liquid separation options
- ◆ Solid-liquid equipment selection
- ◆ Analysis and sizing of filters and hydrocyclones

Day Four:

Solids drying

- ◆ Introduction to solids drying
- ◆ Drying principles - equilibria and kinetics
- ◆ Drying equipment - review and selection
- ◆ Examples of dryer sizing and selection

Day Five:

Gas cleaning

- ◆ Gas cleaning introduction - principal types of equipment
- ◆ Filters and cyclones
- ◆ Wet scrubbing and electrostatic precipitation
- ◆ Open forum - delegate questions

Certification

On course completion, attendees will be issued with a certificate testifying their understanding and assimilation of the training.

However, MidWest Oil & Gas Engineering reserves the rights not to issue certificates to candidates with poor attendance rate and those judged to have not understood the training. This is done through regular questionnaires and group exercises.

This IChemE Approved Course can be tailored and delivered In-house. It can also be tailored for a specific plant or process

Introduction to Separation Processes

Course Faculty

Dr Peter D Martin BSc(Eng) PhD CEng FIChemE

Dr Martin is a Consultant with MidWest Oil & Gas Engineering specialising in process engineering, separations and wastewater treatment.

Dr Martin was for many years a senior consultant with the UK R&D company Atomic Energy Authority Technology and its subsidiaries. He specialised in separations technology, and was concurrently Principal Consultant in solvent extraction and Deputy Manager of the Effluent Processing Club (EPC), a technology transfer consortium of UK companies promoting best practice in wastewater treatment. He later became Manager of the Atomic Energy Authority's SPS Consultants, which deployed expertise in column processes, solid-liquid separation, crystallization, gas cleaning and drying.

Dr Martin has a broad portfolio of work in process engineering, design and logistics. He continues to consult for Hyprotech UK Ltd (formerly a division of AEA Technology, now part of Aspen Technology inc.) the premier supplier of oil and gas process simulation software.

Companies that Dr Martin done work for include Accordis, Bechtel, BP, DSM, The European Space Agency, GE Nuclear, Glaxo-SmithKline, Exxon-Mobil, Monsanto, Rohm & Haas, SABIC, Shell, Solutia, TNT Logistics and UKAEA.

Dr Martin is a graduate of University College London and obtained his PhD from the University of Cambridge, UK. He is a Fellow of the Institution of Chemical Engineers (London) and a Chartered Engineer.

What Previous Delegates have Said

“The course was very well paced”

David Seed –Process Engineer

“The course gave me a good insight into modern separation techniques”

Brian Healy –Project Engineer

“I was very impressed by Dr Martin's easy approach to very challenging problems”

James Hendrick –Plant Supervisor

Visit www.midwestoilngas.com for other similar courses

REGISTRATION FORM

Please use a separate form for each attendee

Introduction to Separation Processes
in the Oil, Gas & Chemical Industry

Register Now

**Limited Number of Seats
Available per session**

Registration Closing Date: 31st Jan. 2008

**Dedicated Registration
FAX LINE**

**Get 10% discount for second and subsequent
attendees from same company**

00 44 (0)7075707602

Course fee : USD 2950

Paid on registration

**P.O. Box 365, LS6 2WP
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Tel: 00 44
(0)7879027212**

Name:.....Position:.....

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Payment Details

I enclose a check for USD.....payable to MidWest Gas & Oil
Consultancy

Please invoice my company
Contact person:.....Position:.....

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Cancellations

For written cancellations received at least 2 weeks before class start a credit for future courses will be offered, less USD 240 processing fee. Substitutions are welcomed. Full fee is charged for cancellations less than two weeks before the starting date.

Accommodation is not included in the course fee, but MWO&G Engineering negotiate a discounted rate for a limited number of rooms. If you require this service, please check the box

Schedule

Course registration will be at 08:00 on first day with course start at 08:30 prompt. Refreshment breaks will be at appropriate times with lunch served after day conclusion at 15:30

Course fees will cover for faculties, tuition, complete course materials, practice exercises & workshops, evening consultations and daily refreshments & lunches.

MWO&G reserve the rights the change faculty or/and venue