

ABB Consulting Events

PEL Physical Properties Masterclass



A one day course



Power and productivity
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PEL Physical Properties Masterclass

Physical properties are at the heart of most process engineering calculations and a good understanding of them is vital in predicting their behaviour and being able to model systems accurately.

This course is intended as a practical introduction to understanding the thermodynamics of fluid systems (gases and liquids). No prior knowledge of the subject is assumed. To that end the mathematical content has been kept to a minimum and emphasis placed on the delegate understanding the mechanisms employed to obtain thermo physical property data and to gain a broader understanding of fluid behaviour in general. The first session sets up the necessary framework of definitions and subsequent sessions build on these progressing from pure components (session 2) through to mixtures (sessions 3 and 4) and finally exploring some more complex behaviours in (session 5) with an additional session on pseudo-components.

Duration: 1 day

Benefits

The course will provide you with a clear understanding of the importance of physical properties and help you select the best models for your particular processes.

Speakers

Dermot McGinnis is the business leader for ABB PEL Software.

Dr Andy Johns initially worked on the measurement of transport properties of gas mixtures before becoming involved with the development of commercial software tools for the calculation of thermodynamic data and phase equilibria. He was responsible for the Physical Property Data Service (PPDS) software development team working out of TUV NEL's East Kilbride facility. He has published a number of papers on the thermophysical properties of fluids and served on the editorial board of the Journal of Chemical Engineering Data.



Agenda	
08:30	Registration, coffee and bacon rolls
09:00	Introduction
09:05	Session 1 - Basics <ul style="list-style-type: none"> - Nomenclature - Basic thermodynamics - Phases, properties of a phase - The phase rule
10:00	Session 2 - Pure components <ul style="list-style-type: none"> - Critical points - Single phase and saturation-line properties - Extrapolating properties - Thermodynamic consistency - Special models
11:00	Coffee, tea and networking
11:15	Session 3 - Mixtures part 1 <ul style="list-style-type: none"> - The ideal mixture concept - Mixing Rules - Real systems treated as deviations from ideality - Fundamental P,T flash calculation - Fugacities
12:15	Lunch and networking
13:15	Session 4 - Mixtures part 2 <ul style="list-style-type: none"> - Phase equilibria model selection - Equation of state methods - Activity coefficient methods - Dilute solutions - Importance of BIPs (Binary Interaction Parameters) - Dew and bubble points - Cooling curves - Advanced flash calculations
14:45	Coffee, tea and networking
15:00	Session 5 - Phase behaviour <ul style="list-style-type: none"> - Phase Stability - Is the system vapour / liquid or liquid / liquid? - Azeotropes - Phase envelope tracing - Retrograde behaviour
16:00	Summary and Q & A
16:15	Close

For more information

Email: dermot.mcginis@gb.abb.com

Telephone: Call Dermot McGinnis on +44 (0)7720 342414