INDUSTRIAL FLUID MIXING

Engineering Theory and Practice

After attending the course, you will be able to:

Identify mixing problems and techniques to address them

Select appropriate impellers to effectively achieve the desired “process result”

Perform calculations for sizing agitators (power, speed, etc.)

Discuss process requirements with vendors and assess their proposals

Identify problems where advanced modelling techniques can be reliably applied and when lab-scale, physical testing should be performed.

Classroom

University level lectures lead by PMSL Director of Mixing Technology, Richard K. Grenville PhD.

Lab

Complement lectures with physical demonstrations of phenomena that have been discussed.

Overview

Mixing is an important, sometimes critical operation for the process industries but it is rarely taught in the traditional chemical engineering curriculum. Most engineers are taught the contents of a stirred tank are uniformly mixed and that this happens instantaneously. In some cases, this assumption is valid and in others, when it is not, it can lead to severe problems in the operation of a plant.

PMSL is offering a three-day course in which the science of mixing will be demystified, providing practical knowledge that can be immediately put into use.

Sessions will be limited to 10 attendees so that mixing phenomena can be effectively demonstrated in PMSL’s world-class lab and test facilities in Palmyra, PA. Visit philamixers.com for next session dates.

Due to the academic nature of the course its contents will contain theory at a level found in BS level engineering degrees. Process and mechanical engineers will be most familiar with the content; all others with an appetite for interpretive equations are welcome!

Register at philamixers.com

Want More Info?

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1221 E. Main St.
Palmyra, PA 17078
INDUSTRIAL FLUID MIXING
Engineering Theory and Practice

Course Content
1. Introduction to mixing
   Defining mixing. Characterizing the performance of impellers.
2. Blending of low / medium viscosity fluids
   Review of common agitator design rules. Estimation of blend times.
3. Blending of high viscosity / non-Newtonian fluids
4. Mixing and chemical reactions
   How mixing affects the yield / selectivity of fast, competitive reactions. Lab testing and scale-up. Precipitation.
5. Solid-liquid mixing
6. Gas-liquid mixing
7. Heat transfer
8. Mechanical considerations
9. Computational fluid dynamics
   What is CFD? The underlying mathematics. Time-averaged versus time-dependent. Validation of code predictions. Examples of “real world” applications.

Course Fee
The course fee includes:
• Course Materials
• Lunch on all three days and dinner on two days

Instructors
Richard K. Grenville PhD is PMSL’s Director of Mixing Technology and has over 30 years’ experience working in the field of mixing. He is an adjunct professor at Rowan University and the University of Delaware where he co-teaches courses on mixing, a Chartered Engineer and Fellow of the Institution of Chemical Engineers and president of the North American Mixing Forum (2016 – 2018).

Jason J. Giacomelli is PMSL’s Process Development Engineer and runs lab programs and CFD modeling for impeller development and customer testing. He is currently studying for his PhD with the University of Limerick in Ireland.

David Geesaman is PMSL’s Engineering Manager. He manages the Order Engineering department that designs custom mechanical mixing components. David has 20 years of experience in rotating equipments and mechanical design, with 12 at PMSL.

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