Advanced Distillation Technologies. Design, Control and Applications

Description: Distillation has historically been the main method for separating mixtures in the chemical process industry. However, despite the flexibility and widespread use of distillation processes, they still remain extremely energy inefficient. Increased optimization and novel distillation concepts can deliver substantial benefits, not just in terms of significantly lower energy use, but also in reducing capital investment and improving eco-efficiency. While likely to remain the separation technology of choice for the next few decades, there is no doubt that distillation technologies need to make radical changes in order to meet the demands of the energy-conscious society.

Advanced Distillation Technologies: Design, Control and Applications gives a deep and broad insight into integrated separations using non-conventional arrangements, including both current and upcoming process intensification technologies.

It includes:

- Key concepts in distillation technology
- Principles of design, control, sizing and economics of distillation
- Dividing-wall column (DWC) – design, configurations, optimal operation and energy efficient and advanced control
- DWC applications in ternary separations, azeotropic, extractive and reactive distillation
- Heat integrated distillation column (HiDiC) – design, equipment and configurations
- Heat-pump assisted applications (MVR, TVR, AHP, CHRP, TAHP and others)
- Cyclic distillation technology – concepts, modeling approach, design and control issues
- Reactive distillation – fundamentals, equipment, applications, feasibility scheme
- Results of rigorous simulations in Mathworks Matlab & Simulink, Aspen Plus, Dynamics and Custom Modeler

Containing abundant examples and industrial case studies, this is a unique resource that tackles the most advanced distillation technologies – all the way from the conceptual design to practical implementation.

The author of Advanced Distillation Technologies, Dr. Ir. Anton A. Kiss, has been awarded the Hoogewerff Jongerenprijs 2013.

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