

FEATURE REPORTS

A Holistic Approach to Vessel Sizing and Level-Instrument Installation

Summary: Level measurement and control in process vessels can be one of the most challenging applications in which to obtain consistently safe and reliable results. Part of this difficulty may be due to the fact that the sizing of the vessel and selection of the technologies and installation methods of the level instruments frequently are performed by different people at different times, rather than evaluated holistically as a system. This article presents best practices in vessel sizing and level-instrument selection and installation. Practical examples demonstrate the holistic approach discussed.

Related equipment and services: All types of level instrumentation and control used in the chemical process industries, engineering services that support vessel sizing and level-instrument installation

Effective Thermal Design of Cooling Towers

Summary: Various misconceptions arise when it comes to the thermal design of a cooling tower. Sometimes related parameters like range, approach, effectiveness, L/G ratio, wet bulb temperature, cooling water temperature, relative humidity, NTU (number of transfer units) and so on, create a mess for the designer in effectively sizing, selecting and evaluating a particular cooling tower. This leads to inadequate design. This month's Feature presents a stepwise approach to understanding the calculation of the NTU for cooling tower design, and thus to understand the basis of thermal design of counter-flow cooling tower for optimizing cost and performance.

Related equipment and services: Cooling towers, water-treatment chemicals, blowers and fans

NEWSFRONT

Hydraulic Fracturing

Summary: Economical extraction of natural gas from shale rock depends on horizontal drilling and hydraulic fracturing. Environmental and health concerns have provided incentive to develop improved drilling and fracturing techniques and new formulations of chemical additives used in fracking fluid. The Newsfront will explore developments in new hydraulic fracturing technology designed to be less environmentally disruptive, and their impact on the debate over the environmental and economic impact of the practice.

Related equipment and services: Well-drilling equipment, chemical additives, ceramic proppants, high-pressure pumps and other fracturing equipment

Membranes

Summary: Membranes are used for a broad range of applications, from separating sludge in sewage treatment plants, to purifying hydrogen gas for fuel cells. This month's newsfront will present an overview of the latest developments in membrane technology.

Related equipment and services: Membranes

Send editorial material to contributing editor Joy Lepree, jlepree@che.com

FRACTIONATION COLUMN

Summary: This monthly column in *CE* is written by the technical director at Fractionation Research Inc., a consortium of end-users, engineering companies and distillation equipment providers that pool budgets on distillation research.

Related equipment and services: Distillation towers, trays and packings, tower-scanning equipment and services

FACTS AT YOUR FINGERTIPS

pH measurement

Summary: This one-page reference guide will discuss how high temperatures affect the operation of pH measurement devices, and how to match a device to specific process needs.

Related equipment and services: pH meters, control devices and related equipment

ENGINEERING PRACTICE

Oil-Injected Screw Compressors for CPI Applications

Summary: Screw compressors have inherent advantages over other compressor types (such as reciprocating and centrifugal compressors), especially for applications with relatively low to medium flowrates. This article provides practical guidance on how to improve the design, performance and reliability of these widely used components.

Related equipment and services: Compressors of all types (screw compressors, reciprocating compressors, centrifugal compressors), oil lubrication systems, petroleum-based and synthetic lubrication oils, compressor auxiliaries (such as slide valves), temperature gages and thermocouples

SOLIDS PROCESSING

Online Particle Size Analysis

Summary: The maturation of online particle-sizing technology has shifted the focus from how to engineer an optimal solution for measurement to how best to use the resulting data to optimise process control. This article very much reflects that change and is designed to suggest control strategies of varying complexity suitable for the exploitation of online measurement by the much broader user base that can now access it.

Related equipment and services: Particle-size analysis equipment/instruments, solids processing equipment in general

FOCUS

Spill Response

Summary: The spill containment industry is now host to numerous products, such as melt-blown polymer, recycled cotton and high-tech super-absorbent polymer products. While each material has its own set of characteristics and price range, almost all have advantages over clay-based products. This month's Focus will present a brief overview of the latest products for spill control.

Related equipment and services: Absorbents, blankets, pads, containment barriers, and so on

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Bonus Distribution:

ARC Annual Forum, February 6–9, Orlando, FL

Informex, February 14–17, New Orleans, LA

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