



### FEATURE REPORTS

#### Powder & Slurry Sampling

**Summary:** This article takes an in-depth look at both wet and dry powder sampling, including online and offline varieties. It explains how to decide what type of sampler is right for the job, how to take a sample and the do's and don'ts of sampling. It also includes installation guidelines and other best practices.

**Related equipment and services:** Powder sampling systems, analyzers, and solids processing instrumentation and equipment such as particle size analyzers, feeders, conveyors, storage vessels, grinders and screeners

#### Revamping Your Process Plant

**Summary:** Once a plant has been built, there are pieces of equipment that have additional design margins. For example, columns and pumps are specified with 10% margin. Control valves are specified with approximately 20% margin. Heat exchangers are also designed with about 10% margin on the surface area.

In addition, there are sometimes differences between what is specified and what is finally procured. A 5–10% design margin on area is a standard practice for heat exchangers, for example. However, depending on standard tube diameters available, standard shell diameters as per project standards and standard tube lengths as per client standards, we might end up designing exchangers with even high design margins. The point is, there are margins available in various equipment beyond what is required to run the plant at 100% load.

It is these margins that are utilized when a client decides to revamp his plant for capacity augmentation. It is here that we study what are the margins available and where are the bottlenecks. To illustrate these points, this month's Feature Report presents the example of a typical distillation column in a process complex.

**Related equipment and services:** Distillation components (column, packing, valves design software); heat exchangers, pumps, valves, control systems

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### 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

### NEWSFRONT

#### Petroleum Refining

**Summary:** This month's Newsfront will present the latest process technology that petroleum refiners are developing and implementing to meet regulations while improving margins.

**Related equipment and services:** Engineering and construction, process technology, catalysts, reaction engineering

Send editorial material for consideration to contributing editor, Gerald Parkinson (gparkinson@che.com)

#### Wireless Technology

**Summary:** This month's second Newsfront will present the latest in wireless technology and bring readers up to date with the relevant standards.

**Related equipment and services:** Instrumentation and control equipment, wireless devices and technology

Send editorial material for consideration to contributing editor, Joy LePree (jlepree@che.com)

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### FACTS AT YOUR FINGERTIPS

#### Pneumatic Conveying

**Summary:** This one-page reference sheet will outline some considerations surrounding solids flow through pipe bends in dilute-phase pneumatic conveying.

**Related equipment and services:** Pneumatic conveying transfer lines and other equipment required for vacuum and pressure conveying, including blowers, fans, air filters, feed hoppers

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### ENVIRONMENTAL MANAGER

#### Using Simulation to Create Safer and More Economical Plants

**Summary:** This article points out some of the benefits that simulation can bring to the design and operation of chemical processing plants.

**Related equipment and services:** Simulation software



### ENGINEERING PRACTICE

#### Chemical Process Simplification

**Summary:** Using a comprehensive knowledge of science-based principles, including how physical properties interrelate, can help engineers design more elegant and efficient chemical processes. Relative uniqueness among chemicals relative to physical properties allows engineers the opportunity to manipulate and exploit the properties to create an optimal process.

**Related equipment and services:** Almost all process technology could be relevant; any engineering services, design aids, and other equipment that helps reaction engineering, process design

#### Thermal Integration of Reboilers

**Summary:** This article examines the integration of both vertical and horizontal thermosiphon reboilers, and covers the following topics: incorporating the heat-load-temperature characteristics into a "pinch analysis"; matching the hot stream with the reboiler duty; minimum and maximum temperature differences for the reboiler; effects of distillation column control on the integration; and employment of indirect integration.

**Related equipment and services:** Reboilers, heat exchangers, distillation columns and associated equipment

#### New Measurement Practices for Cold Climates

**Summary:** Many of the measurement and monitoring techniques used by chemical process operators may be compromised in the face of extremely cold ambient temperatures. This article proposes several new best practices to ensure optimal accuracy and reliability. It also discusses improved practices for installation and heat tracing of sensors and transmitters, to ensure optimal performance.

**Related equipment and services:** Flowmeters, pressure sensors, temperature sensors and loggers, liquid level monitors, transmitters, heat tracing systems, insulation, heated enclosures

### FOCUS

#### Motors and Drives

**Summary:** A showcase of recently launched motors, drives and related equipment.

**Related equipment and services:** Motors, drives and associated equipment

Submit editorial content for consideration to senior editor, Gerald Ondrey (gondrey@che.com)

### SHOW PREVIEW

#### PTXi / Powder and Bulk Solids 2012 Exhibition and Conference

**Summary:** This preview will provide an overview of the PTXi/Powder and Bulk Solids event taking place in Rosemont, Ill. in early May. It will include short descriptions of some of the products and services that are scheduled to be exhibited on the show floor.

All tradeshow exhibitors at this event are encouraged to send press releases with product information related to the show to Chemical Engineering associate editor Scott Jenkins (sjenkins@che.com).

**Related equipment and services:** Solids handling technologies, bulk solids conveying and processing equipment, powder processing technologies and equipment

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