

### FEATURE REPORTS

#### Part 1. Thermal Fluid Systems: Avoiding Pitfalls in Design and Operation

**Summary:** Thermal fluid systems that both heat and cool the process are often utilized in batch processes. Consideration has to be given to how the heater and cooler are designed and operated to avoid thermal shock and wasted energy. Further consideration has to be given to the pumps that see wide temperature swings, so that they maintain their mechanical alignment and effectively seal the fluid being pumped. This article discusses pitfalls to avoid in the design and operation of single-fluid systems.

#### PART 2. Heat-Transfer Fluid Analysis

**Summary:** Heat-transfer fluid problems will eventually affect equipment performance. Since these systems are relatively trouble-free, operating personnel may not have any experience troubleshooting problems. The article reviews several of the common fluid "problems" and how to correct them.

**Related equipment and services:** Heat exchangers, pumps, heat-transfer fluids

#### Streamlining Turnarounds with Wireless Systems

**Summary:** This article will tell readers how to decide if a wireless system could substantially improve their turnarounds, and if so, what steps they need to take (and expect) in actually implementing the system.

**Related equipment and services:** Wireless instrumentation and systems, turnaround services

### NEWSFRONT

#### Materials for Energy Storage

**Summary:** This article will explore some of the current developments in advanced energy-storage systems, focusing on the processing approaches required for producing the materials used in such systems.

**Related equipment and services:** Batteries, fuel cells, hydrogen storage, thermal-energy storage systems and mechanical-energy storage systems

### Process Simulation

**Summary:** Process simulation software is quickly becoming an important, multi-use tool for the chemical process industries. The technology continues to improve, include integration with other software tools and the ability to perform advanced calculations. For example, today's simulation software has the ability to integrate with other software tools, and also feature enhancements to include new data for physical proprietary data, and thermodynamic packages. Models are even tackling much more complex phenomena, such as crystallization and gas-particle flow dynamics in fluidized-bed processes. This month's Newsfront will present the latest developments in this field.

**Related equipment and services:** Simulation software, mathematical modeling software, simulators, physical, chemical and thermodynamic property databases and so on

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

#### Pressure Relief

**Summary:** This one-page reference will outline considerations surrounding the appropriate use of rupture disks in combination with safety relief valves.

**Related equipment and services:** Rupture disks, pressure safety relief valves, pressure gages, overpressurization management systems, other pressure monitoring and control systems

### SOLIDS PROCESSING

#### Guidelines to Specify a Bulk Bag Filler

**Summary:** Exponential growth in the use of bulk bags has spawned an entire manufacturing segment dedicated to producing specialized equipment that not only fills and discharges bulk bags, but offers various degrees of automation and integrates filling and unloading operations with upstream and downstream equipment. As the number of equipment options increases, so should the ability of the specifier to evaluate standalone equipment and integrated systems against current and anticipated needs. This article addresses the "filler" half of the bulk-bag handling equation, offering the six most important parameters to consider when satisfying any individual bulk-bag-filling requirement with top efficiency and cost effectiveness.

**Related equipment and services:** Packaging machines, filling machines, industrial bags, bag-lifting machines and fork lifts, conveyors, dust-containment equipment, pallets and so on

### YOU AND YOUR JOB

#### Patent Reform

**Summary:** For years, the U.S. has used a "first to invent" standard for allocating patent rights, compared with other nations that use a system granting a patent to those deemed "first to file." Now that has changed, as President Obama signed into law (in September) changes to the nation's patent process that major chemical firms say are important steps in streamlining the U.S. system and promoting innovation. The statute, the America Invents Act, also will remove financial roadblocks that have slowed the patent approval process in the U.S. and stifled competition by making the U.S. system more cumbersome than systems used overseas, industry representatives say. This month's YYJ will discuss the implications of the patent reform and provide readers with advice on receiving recognition for patents.

**Related equipment and services:** Patent databases, patent law and legal services, consulting

### FOCUS

#### Temperature Measurement

**Summary:** This section will include a group of short descriptions of recently introduced products and services related to temperature measurement for chemical process industry applications.

**Related equipment and services:** Temperature instrumentation and controls

To be considered for coverage in this section, please send a news release and high-res photo (>300 dpi) to Rebekkah Marshall (rmarshall@che.com) with "December Focus on Temperature Measurement" in the subject line.

### *2012 Media Kit Now Available!*

Get a head start for 2012 by contacting your *Chemical Engineering* representative today.

### LOOK FOR THESE ARTICLES COMING IN THE JANUARY ISSUE:

#### Feature Reports

Heat Transfer Special Report

Total Cost Analysis

#### Equipment Focus

Process Instrumentation & Control

#### Equipment Newsfront

Centrifuges

#### Facts at your Fingertips

Pressure Relief