CHEMICAL ENGINEERING

UPCOMING FEATURES

JANUARY 2011 | AD CLOSE: DECEMBER 6, 2010

THE BEST READ AND ONLY GLOBAL PUBLICATION IN THE CHEMICAL PROCESS INDUSTRIES

FEATURE REPORT

Reboiler Circuits for Trayed Columns

Summary: In a distillation process, the reboiler generally supplies most of the energy required to effect component separation. If too much heat is supplied, the tower may flood; conversely, if too little heat is available, separation performance may decrease via poor reflux ratio (pinching), excessive weeping or poor tray action. Proper design of reboiling systems involves coordinating aspects both outside and inside the tower. This month's Feature Report focuses on both of these aspects to ensure proper operation of the overall reboiler system. Important literature discussing these topics is also cited.

Many factors come into play in designing a successful reboiler and tower bottom arrangement. The available literature does not address the subject in depth, and, especially with regard to multipass trayed towers. This Feature Report aims to clarify the design process and extend coverage to multipass tray towers.

Related equipment and services: Distillation, including columns trays, baffles and other internals; boilers, heaters, kettles, piping, heat exchangers, simulation software.

Vibration Data: Listen and Learn

Summary: Vibration signals for any type of machinery can provide enormous insight into the health and operating condition of the asset. This in-depth tutorial presents detailed discussion of the sources of vibration and the types of useful vibration-related data that can and should be gathered for diagnostic purposes. It also provides guidance on how to interpret vibration-signature data and make use of the new-found insight in the most strategic way to address mechanical issues which, if left unattended, could lead to unnecessary maintenance, potential shutdown and even catastrophic failure.

Related equipment and services:
All types of vibration-monitoring devices and systems, including vibration probes, monitors, accelerometers.
All types of rotating equipment, including pumps, motors, compressors, bearings, rotors and related equipment and auxiliaries.

SOLIDS PROCESSING

Improving the flowability of powders by wet agglomeration

Summary: Fine powders often exhibit flow problems in a hopper, bin, or silo such as flow stoppages, erratic flow, flooding, and limited discharge rates. In order to overcome these problems in hoppers, bins, and silos a mass-flow profile is often recommended. But because of a high cohesive strength, high wall friction, and low permeability, fine powders frequently require steep walls and large outlets in order to achieve mass flow. In many cases, particle size enlargement allows mass flow vessels to be built with smaller outlets (allowing less expensive feeders to be used), walls that are less steep (which is advantageous if there are height restrictions), and less expensive wall materials.

Related equipment and services: Agglomeration and briquetting equipment; bins, hoppers and silos; feeders, conveyors and flow aids; solids processing equipment in general.

FOCUS

Level Measurement

Summary: Level measurement and control is important for preventing overflow of tanks and reactors, maintaining inventories and other aspects of plant operations. This month's Focus will present the latest products in level measurement and control.

Related equipment and services: All types of level-monitoring instruments, including: liquid- and solid-level gages, liquid- and solid-level indicators, level transmitters, level recorders, and so on.

For consideration in this Focus, please send editorial contributions to managing editor, Dorothy Lozowski at dlozowski@che.com with the words "Focus on Level Measurement" in the subject line.

NEWSFRONT

Combating SO_2

Summary: Earlier this year, the U.S. Environmental Protection Agency (EPA) issued a final, new health standard for sulfur dioxide (SO_2). EPA is also changing the monitoring requirements for SO_2. The new requirements assure that monitors will be placed where SO_2 emissions impact populated areas. Any new monitors required by this rule must begin operating no later than Jan. 1, 2013. The estimated cost in 2020 to fully implement this standard is approximately $1.5 billion.

This month's Newsfront will present the latest in SO_2 scrubbing and monitoring, while discussing how CPI companies plan to cope with the new regulations.

Related equipment and services: Scrubbers, absorbers, mist eliminators, sorbents and solvents, additives, materials of construction (stainless steel, polymers, composites, liners), SO_2 sensors, analyzers and continuous-emissions monitors (CEMs).

Send editorial information to contributing editor, Joy LePree (jlepree@che.com).

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2011 Kirkpatrick Award Call For Nominations

Summary: Nominations are open for this magazine's 2011 Kirkpatrick Chemical Engineering Achievement Award. This biennial award aims to honor the most-noteworthy chemical engineering technology commercialized anywhere in the world during 2009 or 2010. This article will help you identify if a particular technology qualifies for consideration and if so how to nominate it.

Related equipment and services: All chemical process equipment.

Fermentation

Summary: This news story will examine some of the latest advances in equipment technology and processing methodology for fermentation-based processes in industrial biotechnology.

Related equipment and services: Fermenters, bioreactors, engineered microbes, industrial enzymes, aseptic processing equipment.

FACTS AT YOUR FINGERTIPS

Solvent selection

Summary: This one-page reference will outline the key physical and chemical properties requiring consideration as solvents are selected for an industrial process.

Related equipment and services: Commercial solvents, liquid-liquid extraction apparatus.

ENVIRONMENTAL MANAGER

Effectively Managing Plant Safety

Summary: This article suggests that there are three critical periods when accidents are most likely to happen in a plant: during transition when a facility undergoes a change in management; while restructuring due to slow economic conditions; and when plant operations become routine and are reviewed less vigilantly for safety. The author offers seven elements thought to be critical for effective safety management.

Related equipment and services: All safety-related products and services; control systems and software that offer safety interlocks and shutdowns; corrosion control systems; services that include safety training for engineers and operators; services and software that help with implementation of regulatory standards, such as for EPA and OSHA.

ENGINEERING PRACTICE

SIS: Using a control valve as the final control element

Summary: A safety instrumented system (SIS) contains one or more safety instrumented functions (SIF), — such logic solvers, sensors, and final control elements — that act independently and separately from the underlying basic process control system. Specific SIFs are designed to address particular process hazards or events. Data have shown that the final control element accounts for up to 50% of all SIS failures. This article provides guidance on how to proven, robust control valves as the final control element constituent in SIS configurations, and describes several illustrative SIS scenarios.

Related equipment and services: Valves, actuators, positioners, solenoids, sensors, and logic solvers.

YOU AND YOUR JOB

Owner/contractor arrangements: Exploring the proper incentives

Summary: This article shares some handy rules for identifying the best incentives to be used during each project stage in a typical owner/contractor relationship, and discusses the advantages and disadvantages of each parameter. According to the author, when properly selected and transparently are shared, the right incentives and key performance indicators (KPIs) can proactively influence the team work environment and help all parties to achieve their business goals.

Related equipment and services: Consulting services related to owner/contractor business relationships.

LOOK FOR THESE ARTICLES COMING IN THE FEBRUARY ISSUE:

Feature Reports
Piping
Pressure Testing

Equipment News Roundups
Solid-Liquid Separation

Equipment Focuses
Analyzers

Facts at your Fingertips
Valves

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