CHEMICAL ENGINEERING

UPCOMING FEATURES

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

FEATURE REPORTS

Mixed-Suspension, Mixed-Product-Removal (MSMPR) Recrystallizers

Summary: This article will describe the various types of MSMPR crystallizers, as well as their operating principles, to help engineers in the chemical process industries (CPI) get the most out of their recrystallization equipment.

Related equipment and services: All types of recrystallization equipment, including forced-circulation recrystallizers, draft-tube and draft-tube-baffle recrystallizers; recrystallizer other types of purification alternatives

Heat Exchangers for Hot Acids: Material Selection

Summary: In the CPI, many kinds of acids are utilized, such as sulfuric, hydrochloric, nitric, phosphoric and acetic acids, as reactants and key ingredients to create the chemical building blocks of chemicals and perform the needed chemical reactions. In many cases, these acids are heated in heat exchangers to increase their reactivity, improve yields and drive more efficient processes. While productivity gains are realized by increasing the acids' temperatures, their associated corrosivity also increases in an exponential manner. As a result, heat exchangers are subject to some of the most severe corrosive environments. This article will outline the options to consider for minimizing corrosion and maximizing heat exchanger life.

Related equipment and services: Heat exchangers, corrosion monitors, equipment linings and corrosion-resistant equipment in general

FOCUS

Valves and Actuators

Summary: A collection of short descriptions of various products and equipment related to valves and actuators in the chemical process industries.

Related equipment and services: All types of industrial valves and valve actuators for various applications

Signet Study Issue!

All 1/2 page or larger advertisers will have their ad studied and will receive a custom report with verbatim comments from the CPI.

NEWSFRONT

Hazardous Wastes

Summary: This Newsfront will present the latest in spill control and absorbents used for handling hazardous materials.

Related equipment and services: Absorbents, barriers and containment systems

Please send submissions of editorial material to Contributing Editor Joy LePree (jlepree@che.com).

Hydrometallurgy

Summary: As the demand for basic metals, such as iron, copper and nickel, continues to grow, efforts are underway to improve process technology for extracting the metals from ores. This month's Newsfront will present the latest in hydrometallurgy technology being developed and commercialized.

Related equipment and services: Engineering and Construction firms; process technology for licensing, equipment for milling, leaching, electrowinning, calcinations; solid-liquid and liquid-liquid extraction equipment; analyzers for metals; specialized pumps, valves and other process equipment for slurry handling

Please send submissions of editorial material to Contributing Editor Paul Grad (pgrad@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

ENGINEERING PRACTICE

Fractionation Towers: Inspection from the Process Point of View

Summary: Distillation is an important unit operation in the CPI, used for separating components in many different applications.

Occasionally, it is necessary to physically inspect the interior of a distillation (or fractionation) column. While this inspection can be a tedious, and often dirty task, it is also a great opportunity to identify and avert potential problems. This article demonstrates what an inspection can reveal through actual examples in a petroleum refinery.

Related equipment and services: Distillation columns and internal components, such as trays and packing; pumps; nozzles; piping; engineering services and software that help design fractionation columns or perform internal equipment inspections

Demystifying Performance Ratings for Liquid-Gas Coalescers

Summary: This Engineering Practice article provides a comparison of the different test methods commonly used to rate liquid-gas coalescers, including the DOP, sodium chloride, ANSI/CAGI and the Liquid Aerosol Separation Efficiency (LASE) test. A review of how vertical liquid-gas coalescers operate is presented, including key model features of media velocity and annular velocity as they pertain to test conditions. Both the DOP and sodium chloride methods provide information only on the media's capture efficiency and do not take into account many of the factors associated with how a liquid-gas coalescer operates. The ANSI/CAGI test is a marked improvement over other tests, operating under oil-saturated conditions, with a polydisperse inlet particle size distribution. The LASE test takes the evaluation further by increasing the challenge load to >1,000 ppm, and also taking into account the annular velocity and using a full flow sampler to eliminate any side stream bias.

So for evaluating a coalescer efficiency rating, it is important to have the test procedure specified and consider the different options, as they will affect the rating. Furthermore, it is demonstrated that the same coalescer can give different performance ratings depending on the test method used.

Related equipment and services: Coalescers, coalescer media and internals, surface treatment, pipes valves and drainage, gas-liquid contactors

FACTS AT YOUR FINGERTIPS

Gas-liquid mixing

Summary: This one-page reference sheet will cover key considerations for agitators and impellers in large gas-liquid reactor systems.

Related equipment and services: Mixing equipment, including agitators and impellers; gas-liquid reactors, equipment for hydrogenation and oxidation reactions

PRISTINE PROCESSING

Piping for High-Purity Process Systems

Summary: Throughout the CPI, many industry sectors — including food-and-beverage, pharmaceutical, bioprocessing and semiconductor applications — carry out high-purity processes that must meet exacting standards for maintaining hygienic purity. Piping systems are a common source of contamination, as a result of inadequate design, insufficient cleaning regimen or cross-contamination of different product streams. This article discusses a variety of voluntary standards that are available in each of the affected industries, to ensure proper design and operation of piping systems for high-purity processes, and stresses the need for standardization among these standards.

Related equipment and services: Piping and piping accessories, piping connectors, clean-in-place (CIP) and steam-in-place (SIP) systems, E&C firms specializing in piping design, fabrication and installation, high-purity vessels, bioprocessing equipment, cleanrooms, E&C firms specializing in clean room design

YOU AND YOUR JOB

Tips for writing easy-to-follow calculations

Summary: Writing calculations is a common way to develop and share quantitative thinking. This article provides recommendations for using straightforward, consistent formats to streamline the writing of calculations, to ensure that they are clearly stated and easily understood by others.

Related equipment and services: Math calculation software, spreadsheet programs and workbooks

LOOK FOR THESE ARTICLES COMING IN THE AUGUST ISSUE

Feature Reports

Capital Cost Estimation
Process Control

Equipment Focuses

Rupture Disks & Pressure Relief

Facts at your Fingertips

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Adsorption