CHEMICAL ENGINEERING

UPCOMING FEATURES

MAY 2013 | AD CLOSE: APRIL 5, 2013

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

FEATURE REPORTS

Root Cause Analysis: Correcting Improper Performance of Direct-fired Heater Burners

Summary: This month's Feature Report presents trouble-shooting guidelines that can help operators find the root cause of improperly operating direct-fired burners. Logic diagrams are presented that are used for developing an algorithm for producing a computer "wizard".that can be applied for burner operation in petroleum refineries and petrochemical plants.

Related equipment and services: Software for root-cause analysis; burners, control systems.

Relevant industries: Burners are used in many sectors of the CPI, especially the petroleum and petrochemical industries.

Inline Viscosity Measurement

Summary: Inline measurements offer realtime readings during processing, and so can directly help in process and quality control. Viscosity control is important in many areas of the chemical process industries (CPI), for example in coating applications and in determining the endpoint of a reaction. This article addresses the ways in which viscosity can be measured.

Related equipment and services: Viscometers, such as rotational, vibrating element and falling object; quality and process control; analytical equipment.

Relevant industries: This article is relevant across the CPI where viscosity measurement is important, for example in coatings, hydraulic fracturing and fiber manufacture applications.

NEWSFRONT

Petroleum refining

Summary: A host of challenges faced by North American petroleum refiners were discussed at the annual meeting of the American Fuel and Petrochemical Manufacturer's Association in late March. This article will explore some of the upstream oil and gas trends affecting refiners and will present some of the process technology and catalyst advances being offered to help meet those challenges.

Related equipment and services: All petroleum refining, hydrocarbon processing and oil and gas production equipment would be relevant. This includes large process units, such as hydrocrackers, and distillation towers, as well as virtually all common CPI equipment, including that designed for service in the petroleum refining industry.

Relevant industries: Upstream oil and gas, crude oil transportation logistics (pipeline, rail and barge); petroleum refining, petrochemicals.

Dust Control

Summary: Dust can be a problem, both inside the production plant as well as the neighborhood around the plant. This month's Newsfront will present the latest technology for reducing dust emissions.

Related equipment and services: Filtration systems and media; bag houses; cyclones; centrifuges; electrostatic precipitators, and more.

Relevant industries: All sectors involving solids, including coal processing, minerals, plastics, and more.

Editorial submissions for considerations should be sent to contributing editor, Joy LePree (jlepree@che.com)

FACTS AT YOUR FINGERTIPS

Valves

Summary: This one-page reference will discuss factors affecting control valve performance and how to improve it.

Related equipment and services: Control valves, valve components, actuators, valve position sensors.

Relevant industries: All sectors of the CPI are likely to use control valves in their processes.

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.

Relevant industries: This column addresses segments across the entire CPI, and is relevant in the currently booming markets of downstream oil and gas processing.

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FOCUS

Mixing

Summary: Mixers are used throughout the CPI. This month's Focus will present recently launched mixing technology.

Related equipment and services: Mixers, blenders, baffles, homogenizers, static mixers; and so on.

Relevant industries: All CPI sectors use some type of mixer.

Editorial submissions for considerations should be sent to senior editor, Gerald Ondrey (gondrey@che.com).

ENGINEERING PRACTICE

Shell-and-Tube Heat Exchangers

Summary: Shell-and-tube (S&T) heat exchangers are workhorses of most CPI plants, especially oil refineries, commodity chemicals plants, and other areas where high pressures and temperatures are found. Rugged and reliable, they transfer heat from one liquid or gas stream to another, sometimes under specialist names including heaters, preheaters, coolers, intercoolers, condensers, and reboilers. Most S&T heat exchangers are designed by specialist contractors, but almost every engineer needs to know how to "reality check" proposals from vendors. "Specifying and Selecting Shell and Tube Heat Exchangers" explains the many rules of thumb that are important in designing practical units, for instance in handling fouling and corrosion.

Related equipment and services: Shell-and-tube heat exchangers; plate heat exchangers and other types (which have big advantages in many applications); specialist heat exchanger cleaning and maintenance services; general plant maintenance services.

Relevant industries: This article is relevant to many parts of the CPI, especially traditional heavy sectors such as commodity chemicals, bulk polymers, fertilizers, oil and gas.

Compressors: Tips for Purchasing, Performance Testing and Operations

Summary: This article reviews the latest methods and technology options that are available to obtain the lowest "total cost of ownership" for compressors that are widely used throughout the chemical process industries. It covers such important topics as mechanical design considerations, shop testing protocols to demonstrate performance and ensure reliability, advance bid-evaluation strategies and more.

Related equipment and services: Single-stage and multi-stage compressors, motors, seals, bearings, maintenance-management tools and software, temperature-related diagnostic tools, pressure-related diagnostic tools.

Relevant industries: Compressors are ubiquitous throughout the CPI.

TECHNOLOGY PROFILE

Polypropylene production via the gas phase

Summary: This one-page capsule will describe the process for producing polypropylene using a gas-phase approach.

Related equipment and services: Most hydrocarbon processing equipment would be related.

Relevant industries: Polyolefins manufacturing.

SHOW PREVIEW

AchemAsia

Summary: Held every three years in Beijing, China, AchemAsia is a major trade show for the CPI in Asia. The Preview will present products and services that will be exhibited during the show.

Related equipment and services: The full range of equipment used in the CPI will be represented (mixers, heat exchangers, reactors, process control and instrumentation, and so on).

Editorial submissions for considerations should be sent to senior editor, Gerald Ondrey (gondrey@che.com).

LOOK FOR THESE ARTICLES COMING IN THE JUNE ISSUE:

MODERN TIPS FOR MEASURING VOLUME

FEEDING AND CONVEYING

THE LATEST IN EXPLOSION PROTECTION