

FEATURE REPORTS

Plate-and-Frame Heat Exchanger Design

This report will present guidelines for sizing, specifying, purchasing and installing plate-and-frame heat exchangers, allowing engineers to cross-check vendor designs and avoid under- or over-sizing equipment.

Related products and services: Plate-and-Frame heat exchangers, materials of construction, piping, gaskets, bolts, boilers, fireproofing systems, controls and instrumentation, maintenance equipment

Relevant industries: Heat exchangers are an integral part of processes across the CPI.

Leak Detection and Monitoring in the CPI

Some leaks in CPI facilities merely require simple repair when resources are available. In other cases, leaks can be violations of regulatory compliance, with statutory consequences, and of course risks to personnel safety and the possible loss of capital assets. This Feature Report will describe the mechanisms by which leaks can occur, how to prioritize checks of piping systems, and the regulatory compliance issues (under both the Clean Air Act and the Resource Conservation and Recovery Act. In addition to providing details regarding these regulations, the article will discuss the Leak Detection and Repair (LDAR) requirement within these regulations.s.

Related equipment and services: Pipes and piping components (flanges, gaskets and so on); leak detector systems, gas detectors, software for predicting and locating leaks, and so on.

Relevant industries: All sectors have equipment that can potentially leak. Petroleum refining and petrochemicals are especially prone to leaks due to the large sizes of the plants.

FRACTIONATION COLUMN

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

NEWSFRONT

Petroleum Refining

This news article will explore several of the current challenges faced by petroleum refiners, and will discuss new technologies available to help address them. The article will include developments from the annual meeting of the American Fuel and Petrochemical Manufacturers (AFPM) that takes place in Orlando in late March.

Related equipment and services: Distillation columns, pumps, valves, hydrocarbon processing equipment, catalysts

Relevant industries: Petroleum refining and petrochemical derivatives, mainly, but most other sectors have an interest

Wireless Technology

The number of applications for wireless technology in the CPI continues to grow dramatically, and vendors continue to introduce new products. This month's equipment Newsfront will present recently introduced products, as well as providing an update on the trends regarding standards, safety and security.

Related equipment and services: Instrumentation and control systems and components, devices and sensors (temperature, pressure level, flow and more) transmitters, and so on.

Relevant industries: All sectors of the CPI are using some form of wireless technology, from the laboratory to production plants.

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

FACTS AT YOUR FINGERTIPS

Pumps

This one-page reference will outline the impacts associated with operating pumps "off-BEP" – away from the best efficiency point

Related equipment and services: All types of process pumps, including centrifugal pumps, positive displacement pumps, air-operated double-diaphragm pumps, vacuum pumps and others, as well as pump diagnostic tools and software, and maintenance supplies, such as lubricants, spare parts and so on

Relevant industries: All sectors of the CPI use pumps.

Bonus Distribution:

PTXi Powder and Bulk Solids Conference & Exhibition, May 6-8, Chicago

AFPM Maintenance & Reliability, May 20-23, San Antonio

FOCUS

Granulation and Agglomeration

Granulation and agglomeration are unit operations for reducing or increasing the size of particles. This month's Focus department will present the latest products and services that have been introduced into the market.

Related products and services: Pelletizers, crystallizers, tableting machines, spray dryers, fluidized-bed dryers, mixers, and more.

Relevant industries: Widely used in the chemical, pharmaceutical and bulk-chemical sectors

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

ENGINEERING PRACTICE

Improving the Operation of Fired Heaters

Large petroleum-refining complexes typically have dozens of fired heaters, whose proper operation has direct implications for overall plant reliability, safety and energy efficiency. While all fuel-gas-fired heaters share common features, no two applications are exactly the same and best practices for optimal control of these systems has never emerged. This article offers useful tips that can serve as engineering guidance, addressing design strategies, discussion of the pros and cons of pressure control versus flow control, safety-improvement strategies and more.

Related equipment and services: Fired heaters and burners; Pressure monitors and regulators; Flow-monitoring systems; Flow controllers; flowmeters, turndown valves, regulators; and Safety instrumentation and analyzers

Relevant industries: Many industry sectors within the CPI used fired heaters

Managing Legacy Data

Existing plants have years, if not decades, of legacy engineering information, which often in a range of formats and is often siloed across multiple systems and locations. When operational teams cannot access the full array of available engineering data and information, essential control documents, such as P&IDs, equipment data sheets, and maintenance/inspection documents, often do not accurately reflect the as-built state of the asset.

This situation can cripple management's ability to make timely decisions and can hinder development efforts related to process hazard analyses, OSHA and SEMS audits, acquisition due diligence, unplanned maintenance shut-downs, catastrophic events, and insurance validation exercises, are exacerbated by inaccurate engineering information, scheduling delays, added labor costs, human error, potential fines and lost production. This article offers three practical recommendations to help engineering and operations stakeholders manage legacy engineering data in an existing facility.

WEB EXCLUSIVE ARTICLE

Process Scaleup

When converting a laboratory method into a large and economic industrial process, it is important to take a systematic approach to early technical development and intelligent piloting. But when the process undergoes further development into commercial-scale, technical decisions are not the only issue. Scaleup often involves compromises between engineering and business considerations. This article discusses key considerations for process scaleup.

Related equipment and services: Design software, engineering scaleup aids, all CPI equipment

Relevant industries: All sectors of the CPI would have to scale a process from laboratory scale to commercial

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