



2023 March Upcomings

FEATURE REPORTS

Topic: Distillation

Summary: Distillation processes at any scale share many theoretical and practical concepts, but the scale of the equipment has a major influence on its design, construction and operation. Pilot- and laboratory-scale distillation columns have inherent aspects, requirements and concerns that differ from commercial-scale columns. This article focuses on the scale-related differences of distillation columns.

Related equipment and services: Distillation columns and related equipment, column trays and packing, pilot-scale equipment and processes.

Relevant industries: Chemicals, petroleum refining, petrochemicals, pharmaceuticals and others

Topic: Boiler Essentials

Summary: In power-generation boilers, the high temperatures and pressures require high-purity makeup water, with contaminants limited to low part-per-billion (ppb) concentrations. However, lower-pressure industrial drum units can tolerate some impurities, as the milder temperatures reduce the potential for scaling and corrosion. Even in low-pressure steam generators, impurity ingress control is important. For decades, a popular method of makeup water hardness removal has been sodium softening by ion exchange. However, it is not uncommon to find hardness excursions caused by inadequate softener operation and maintenance. Even more alarming are cases where operators were directed to bypass the system and feed raw water directly to the boilers when the softener malfunctioned. Such problems and how to prevent them are discussed in Part 1 this month's Feature Report on boilers. Part 2 looks at the ways that boiler systems can benefit from the installation of precoat filter demineralizers, including capital and operating expense savings, water reuse, reduced energy consumption, faster startup and more.

Related equipment and services: All sectors of the CPI that use a lot of steam, such as power generation, petroleum refining, fertilizers and more

Relevant industries: Water-treatment equipment, such as ion-exchange systems and resins, and water-treatment chemicals

NEWSFRONT

Topic: Wearable Devices

Summary: Apace with innovations in all "smart" technologies, wearable devices for industrial personnel are rapidly evolving to incorporate enhanced connectivity and communications, artificial intelligence, augmented reality and

more. This article looks at some recent developments in wearable devices, and the ways that these devices are promoting a safer and more productive working environment.

Related equipment and services: All types of wearable devices, including safety monitors and gas detectors, "smart" headsets and goggles, exoskeletons and much more

Relevant industries: Employees in all sectors of the CPI could benefit from the use of advanced wearable devices

FACTS AT YOUR FINGERTIPS

Topic: Crystallization

Summary: Fractional crystallization is a stage-wise separation technique that relies upon liquid-solid phase change and enables multi-component mixtures to be purified. The solid phase exhibits different chemical composition than the remaining residual liquid, and the separation efficiency depends on careful control of temperature and time, as well as the mass ratio of solid and liquid. This one-page reference briefly describes the principles behind fractional melt crystallization and outlines three different technologies and equipment types that can be used for fractional solvent-free melt crystallization.

Related equipment and services: All crystallization equipment, including falling-film crystallizers, static crystallizers and suspension crystallizers, as well as other purification technologies, like distillation.

Relevant industries: Chemicals, pharmaceuticals, biopharmaceuticals, food, pigments and others

FOCUS

Topic: Process Chemicals and Performance Materials

Summary: Besides the necessary feedstocks used in a chemical process, there are often other materials that are added to the reactor before, during and after the reaction. These process aids include catalysts, emulsifiers, additives and many more. Performance materials, too, are often used to prevent corrosion, improve surface characteristics and more. This month's Focus presents the latest products entering the market.

Related equipment and services: Plastics additives, catalysts, coatings, neutralizers, viscosity reducers, antifoaming agents, lubricants and more

Relevant industries: All sectors of the CPI

Editorial material for consideration should be sent to Gerald Ondrey, senior editor(gondrey@chemengonline.com) **before February 5.**

ENGINEERING PRACTICE

Topic: Implementing Predictive Maintenance Properly

Summary: This article presents an overview of the benefits of predictive maintenance, along with five common mistakes that are made during implementation. How to avoid such mistakes is also discussed.

Related equipment and services: Predictive maintenance software, hardware, consulting services

Relevant industries: All sectors of the CPI require routine maintenance, and can benefit from implementing predictive-maintenance systems and programs