

FEATURE REPORTS

Predictive maintenance in pumps

Summary: Pumps are common in the CPI, and major consumers of energy, yet relatively little information is available on the application of predictive maintenance/condition monitoring to them. When deterioration in performance of a centrifugal pump causes a drop in plant production, overhaul is readily justified, as its cost is usually small in proportion. When the effect of deterioration is only to increase power consumption, the time to overhaul for minimum cost can be calculated from test results. This article describes some basic condition monitoring tests for pumps, and how to use these condition monitoring methods to estimate the increased power consumption caused by pump wear.

Related equipment and services: All pumps, products for minimizing pump wear, vibration monitoring instruments

Relevant industries: This article is relevant across the entire CPI, including the industries that are currently in an expansion boom due to increased supplies of unconventional natural gas

Thin-film drying

Summary: This article describes thin-film drying technology, which is characterized by the low consumption of utilities and consequently of operating costs. Compact construction enables a low space requirement, and a high specific-evaporation capacity.

These major features make TFDT economic and safe. Operational flexibility, feedstock adjustability and simple handling construe the TFDT reliability.

Related equipment and services: Dryers and solids-handling equipment in general

Relevant industries: Specialty chemical, polymers, food and pharmaceutical industries, plus anything involving salt solutions, polymer solutions, slurries, semisolids, press cakes and wet powders

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

NEWSFRONT

Valves

Summary: This month's Equipment Newsfront will focus on valves, and will present the latest in valve technology, such as diagnostics, noise control, new materials of construction and so on.

Related equipment and services: All types of valves, positioners, actuators, and so on.

Relevant industries: Valves are used in all segments of the CPI

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

Plant security

Summary: Securing the facilities of the chemical process industries (CPI) is a complex and essential task. This newsfront will give an update on standards, such as CFATS (Chemical Facility Anti-Terrorism Standards) and present products and services that are being offered to help facilities address security.

Related equipment and services: All types of equipment and services that help promote physical and cyber security in chemical facilities, such as: integrated solutions that monitor activity including motion detectors and personnel monitors; alarms; fences; and video monitoring to name a few; consultants and services that assist facilities in complying with CFATS and other regulations related to security

Relevant industries: This article is relevant across the entire CPI, and is particularly important for facilities handling hazardous chemicals

Send editorial material for consideration to Dorothy Lozowski, Managing Editor (dlozowski@che.com) with "September Plant Security Newsfront" in the subject line.

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ENGINEERING PRACTICE

Reciprocating compressors: Startup and capacity control methods

Summary: There are two main reasons why compressor capacity regulation is used. The most prevalent one is to adjust the suction flow to match the process demand. The second reason is to save energy. In this month's Engineering Practice article, methods for controlling the capacity in reciprocating compressors are presented in detail, along with the advantage and disadvantage of each method. In addition, auxiliary devices and packages used in transient conditions, such as startup, shutdown and maintenance, and during normal operation are described. Finally, a recommended procedure for starting up and stopping reciprocating compressors in single and parallel operation are presented.

Related equipment and services: Compressors and associated equipment, valves, variable-speed drives, lubrication systems, cooling-water systems, interlocks

Relevant industries: Compressors are used in all segments of the CPI, in particular petroleum refining, air separation, gasification, hydrogen and ammonia plants, and so on

Cooling towers: Evaluating the optimum outlet water temperature

Summary: Recirculating cooling-water systems are a common part of many chemical process industries (CPI) facilities. The temperature of the various water streams affects the volume of water that is required to flow through the system, and the size of the heat exchange equipment required. Tradeoffs are often required during system operation to balance the technical and economic needs of the systems. This article provides useful tips for selecting the best return temperature to the tower, in order to optimize the system performance.

Related equipment and services: Cooling towers, recirculating cooling-water systems, heat exchangers, pumps, temperature-measurement devices, piping

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

FACTS AT YOUR FINGERTIPS

Sparging in industrial applications

Summary: Many chemical and pharmaceutical processes require a gas-to-liquid transfer. Sparging is one of the most common methods of ensuring efficient gas-liquid mass transfer. This article will outline the major considerations for designing and selecting a sparging system.

Related equipment and services: Industrial gases, sparging equipment

Relevant industries: Chemicals, environmental chemistry, metallurgy, and possibly others where dissolved oxygen needs to be removed from a liquid

FOCUS

Flowmeters

Summary: This month's Focus will provide short descriptions of recently released flowmeter products of all variations.

Related equipment and services: All types of flowmeters, including Coriolis meters, thermal flowmeters, rotary vane, Venturi tubes and others

Relevant industries: Flowmeters are widely used across the CPI for monitoring and measuring fluid flow

Send editorial material for consideration to Associate Editor Scott Jenkins (sjenkins@che.com) with 'September Focus: flowmeters' in the subject line

LOOK FOR THESE ARTICLES COMING IN THE OCTOBER ISSUE:

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Continuous vs. Batch

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Equipment Newsfront

Steam Handling

Equipment Focus

Gas Detection

Facts at your Fingertips

Fans & Blowers

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