EDITORIAL PREVIEW

4/19

CHEMIE TECHNIK in April:

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- Operating technology, Maintenance
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EDITORIAL PREVIEW APRIL 2019

OPERATING TECHNOLOGY, MAINTENANCE

Assessing the reliability of mechanical safety devices

The functional safety of mechanical safety devices, in which systematic failures are the decisive criterion, is more difficult to assess than that of electronic components which are more susceptible to statistical failure. Usually the SIL equivalent is used, but there are also other approaches.

1: Digitisation of cracked gas coolers allows for forecasts

Cracked gas coolers are at the heart of the production of ethylene from natural gas or crude oil. Failures can cause enormous costs. With a system consisting of sensors and artificial intelligence, all necessary maintenance work can be better planned.

CHEMISTRY PARKS

Energy-efficient flue gas purification at Bitterfeld Chemistry Park

Numerous fans are used for exhaust gas purification of the thermal residual waste treatment at Bitterfeld Wolfen Chemistry Park. These are controlled by frequency converters to optimise their energy consumption.

CONTAINMENT

Containment in chemical and pharmaceutical processes – hands-on solutions

Hermetically sealed production is becoming increasingly important – not least because of the increased requirements imposed by the REACH regulation. We report on new approaches, solutions and equipment for production under containment conditions.

HEATING, COOLING, DRYING

Combined heat and power generation with compressed air cogeneration plants

One of the reasons that compressed air is expensive energy is that its efficiency, from the primary energy source to the electricity and compressed air, is rather poor. An alternative is compressed air cogeneration plants, which are operated directly with gas engines instead of electricity. These permit significant cost savings if the heat is also used in the process.

PUMPS

Pumps in Industry 4.0

For pumps to become part of the Internet of Things, numerous automation and communication requirements must first be met. And here, too, it is becoming apparent that OPC UA will become the lingua franca.

Seal-less magnetic drive fluoropolymer gear pump

When aggressive fluids need to be pumped at high pressure, good advice is often expensive. A new seal-less gear pump with hermetic magnetic drive does just that.

Vacuum pumps in material characterisation

The properties of raw materials, products and materials play an important role in the production process. It is therefore

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Image: Arvos

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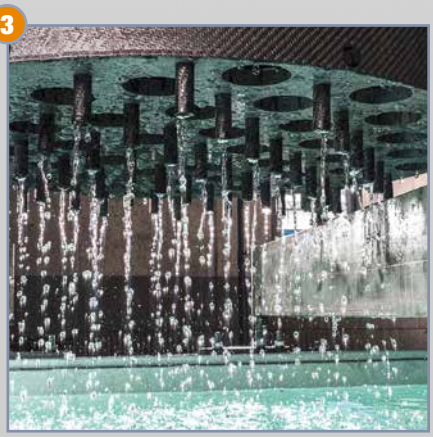

Image: Sulzer

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important to determine these properties precisely using measurement technology. And often the work has to be carried out under a vacuum. Micromeritics generates the fine vacuum required for physiosorption measurements with rotary vane pumps.

Energy-efficient pumps – status quo and outlook

As large-scale consumers of electrical energy in process engineering processes, pumps are the focus of attention in the search for energy-saving possibilities. In our trend report, we present the current status, take a look into the future and describe current pump developments with regard to energy efficiency.

Dosing pumps for chemistry – novelties and solutions

The exact dosing of liquid chemicals is one of the core tasks in chemical processes. With increasing specialisation, the demands placed on dosing pumps used in these processes are increasing. In our review we present up-to-date solutions.

SEALS

2: Current solutions for sealing problems in the chemical industry

Chemical processes place special demands on the seals used. We provide an overview of currently available solutions.

VALVES, PIPES – SPECIAL VALVES

Redundant shut-off of pipes

In practice, two shut-off valves with one connecting piece are often installed for redundant shut-off in pipes. The double block and bleed valve enables this function to be realised in one valve and has an integrated intermediate relief.

SIL actuator solution for shut-off valves

Special requirements are placed on valves for safety devices. This article describes what must be observed when installing a shut-off valve with safety actuator.

Diagnosis of control valves in accordance with the SIDAP data model

The evaluation of historical data for the analysis of control valves is currently a hot topic. With the SIDAP data model it is now possible to structure diagnostic data in a sensible way for further use.

Current developments and problems in valve testing

Fibre-reinforced ceramic reinforcements for pipeline construction

Fibre-reinforced ceramic reinforcements can counteract creep deformations of metallic line pipes. They thus enable the operating time of the pipes to be significantly extended and the line pressure and media temperature in the process to be further increased.

MATERIALS, SURFACE TECHNOLOGY

3: Carbon fibre composite material for distillation columns

Carbon-based products are used whenever other materials such as steel, aluminium, copper or plastic reach their limits in terms of their material properties such as temperature and corrosion resistance. Installations for separation columns made of carbon fibre composite permit the construction of plants with a higher capacity that can be operated at lower costs.

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