



Product Digest

this month's topic **Laboratory Equipment**

Oil Analysis System Evaluates Equipment Condition



Corrosion and wear are the root causes of most mechanically induced equipment downtime. To prevent equipment failure, the MiniLab 53 onsite oil-analysis system allows operators to evaluate the condition of their machinery. It includes tests to monitor lubricant chemistry, contamination, and machinery wear, and provides machine wear data and trend analyses that enable users to make immediate, condition-based determinations about equipment status. To analyze fluid chemistry, the FluidScan IR technology measures total acid number (TAN), total base number (TBN), soot, oxidation, nitration, and sulfation. To analyze fluid contamination, the LaserNet Fines (LNF) particle counter determines particle count and size distribution, as well as counts of nonmetallic particles; it is also able to identify types of wear debris, wear modes, and potential sources of particles. A removable viscometer and handheld infrared (IR) spectrometer enable portable oil-condition monitoring. MiniLab 53 integrates seamlessly with Emerson's AMS Machinery Health Manager OilView software. **Spectro Scientific**
www.spectrosci.com

Reaction Monitors Sample under Batch and Continuous Conditions

The ReactIR Series includes five robust *in situ* sampling technologies that are appropriate for monitoring batch and continuous reactions with

difficult chemistry, including corrosive, acidic, caustic, and abrasive slurries. Users can sample and study different phases of chemical reactions under high and low temperatures, as well as at high pressure and vacuum. The DST Fiber Conduit enables liquid-based reaction monitoring of high-temperature and high-pressure chemistry, and provides flexibility for interfacing with lab reactors and process flow cells without the need for alignment. The DST Series AgX Fiber Conduit is also suitable for liquid-based reaction monitoring, but offers a wider range of analytical performance. The manufacturer recommends the low-cost K4 Conduit to Sentinel as the best option for liquid-based reaction monitoring at high temperatures and pressures. The DS Micro Flow Cell is suitable for continuous flow chemistry monitoring. For gas-phase reactions and headspace monitoring, the DST Fiber to Gas Cell is suitable.

Mettler Toledo

www.mt.com

Calorimeters Offer Automated Operation Options



Two new isothermal titration calorimeters (ITCs) support researchers studying a variety of biomolecular interactions. ITCs directly measure the heat that is released or absorbed during a biomolecular-binding event to simultaneously determine and quantify all the binding parameters in a single experiment. The manual MicroCal PEAQ-ITC and the fully automated MicroCal PEAQ-ITC deliver precise

and high-quality data at high speeds. The associated software is intuitive to operate. Optional automation enables quicker screening and improves laboratory efficiency, and automated data analysis allows even non-experts to evaluate data with confidence.

Malvern Instruments

www.malvern.com

High-Speed Disperser Mixes Small Batches



High-speed dispersers are useful for wetting solids and creating a uniform, air-free suspension or solution under vacuum. The HSM-100LH-3 vacuum high-speed disperser is designed for laboratory- and pilot-scale mixing of batches up to 5 gal. It can be supplied with a vacuum-rated mixing vessel, a heating/cooling jacket, and a mixer cover with sight/charge ports. Interchangeable sawtooth disperser blades with diameters of 2 in. to 4 in. are available. The disperser is suitable for variable-speed operation up to 4,800 rpm, and can achieve rapid turnover and vigorous flow patterns over a wide range of fluid viscosities. The mixing head is raised by an air/oil hydraulic lift with pushbutton controls. Safety limit switches prevent mixer

operation when the head is raised or when a mixing vessel is not in place. All of the wetted parts are made of Type 316 stainless steel.

Charles Ross & Son Co.

www.mixers.com

Flashpoint Tester Boasts Ease of Use



The Herzog OptiFlash employs the Pensky-Martens closed-cup test method to determine the flashpoint of petroleum products, biodiesels, solvents, fluxed bitumen, foods, and beverages. This new model is said to be easier to use, easier to clean, and safer to operate than previous flashpoint offerings from the manufacturer. It can measure flashpoints up to 400°C, and it complies with leading global standards. An intuitive user interface and built-in automation eliminate the need for manual tasks such as installing the flashpoint and temperature sensors and installing the test cup for each test. Users can disassemble the cup cover without any tools, which allows for easy cleaning; this also improves reliability, because users can perform a quick cleaning before processing a new sample.

PAC

www.paclp.com

COD Analyzer Eliminates the Need for Hazardous Reagents



PeCOD is a chemical oxygen demand (COD) analyzer that overcomes many of the limitations of other COD analysis methods, such as the commonly used dichromate technique. The PeCOD rapidly processes samples and provides accurate results in 15 minutes, versus several hours for other methods. This system is also safer, because it does not require sample pretreatment with boiling sulfuric acid containing dichromate, mercury, and silver salts. At the core of the unit is a nanotechnology-based sensor, which consists of a UV-activated nanoparticle titanium dioxide photocatalyst. The high electrochemical potential of the titanium dioxide surpasses the modest chemical potential of the dichromate method.

ManTech, Inc.

www.mantech-inc.com

Mass Spectrometer Identifies Small Molecules

The 6545 Q-TOF mass spectrometry system is suitable for trace-level analysis of small-molecule compounds in applications such as food safety, environmental testing, and pharmaceuticals manufacturing. This midrange unit includes advances in hardware and software that make it both more reliable and easier to use than previous models. Hardware updates include ion shaping optics, high-voltage power supplies, and

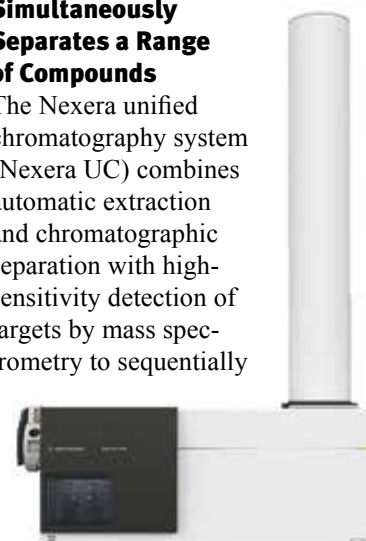
longer-life parts to increase robustness. The device's software leverages particle swarm technology to quickly optimize the instrument and increase its sensitivity by up to five times, allowing it to identify small-molecule and low-intensity compounds.

Agilent Technologies

www.agilent.com

Chromatography System Simultaneously Separates a Range of Compounds

The Nexera unified chromatography system (Nexera UC) combines automatic extraction and chromatographic separation with high-sensitivity detection of targets by mass spectrometry to sequentially



analyze up to 48 samples. With a wide range of separation modes, this unit can separate a diverse range of compounds — a capability that single systems based on gas or liquid chromatography alone are not able to achieve. It eliminates the need for complicated sample pretreatment and enables highly reliable and stable analysis of delicate samples that are susceptible to oxidation or dissociation when exposed to air. Because it is fully automated, the risk of human error is reduced or eliminated. Nexera UC is suitable for a variety of applications in the food, polymers, specialty chemical, and pharmaceuticals industries, as well as in research laboratories.

Shimadzu Scientific Instruments

www.ssi.shimadzu.com