ENVIRONMENTAL

Oilfield Treatment Train Enables Water Reuse

This company's mobile water-treatment services use electro-coagulation technology to remove suspended solids and heavy metals from produced and flowback water obtained during oilfield operations. The treated water is suitable for reuse onsite for drilling or hydraulic fracturing, conserving freshwater use, reducing transportation and disposal costs, and enabling regulatory compliance. The mobile treatment train can be customized based on analysis of the unique characteristics of each well or other water source.
Baker Hughes
www.bakerhughes.com

Portable Kit Performs Water Analysis in the Field

The Hydraulic Fracturing Water Analysis Kit provides onsite results of key water analyses during oil-and-gas and enhanced-oil-recovery operations. It is useful for evaluating the quality of source water, fracturing fluid, flowback water, produced water, and drilling fluids. The kit comes in an easy-to-use, rugged, portable case, and includes a DR/890 colorimeter, HQ40d digital meter, a digital titrator, and reagents for such parameters as alkalinity, bacteria, barium, chloride, conductivity, hardness, iron, pH, and sulfate; additional parameters can be added as needed. Step-by-step procedures are given, enabling users to perform each test either in the field or in the lab.
Hach Co.
www.hach.com

System Reduces Energy Use During Wastewater Aeration

Aeration basins are an excellent way to reduce the nutrient load during water and wastewater treatment, but the energy costs of such systems can be high. The Instrumentation for Aeration Control Package provides all of the sensors and transmitters that water- and wastewater-treatment engineers need to gain better control over the efficiency and economics of the aeration basin in a single package. The instrumentation measures dissolved oxygen, suspended solids, temperature, air flowrates, air pressure, water level, ammonium, pH, nitrates, and thermal mass in the aeration basin. Measurement of these parameters can help to reduce the energy costs associated with aeration. The sensors connect to any programmable logic controller (PLC) or supervisory control and data acquisition (SCADA) system via 4–20-mA with HART, Profibus or other digital interfaces.

Endress+Hauser
www.us.endress.com

BIOPROCESSING

Roller Bottles Improve Cell Culture Production

Nunc roller bottles for adherent cell culture applications are now available in glycol-modified polyethylene terphthalate (PETG) and polystyrene (PS). InVitro PETG roller bottles withstand freezing and thawing and come with either a smooth or pleated internal surface. TufRol PS roller bottles feature vertical pleats for easy emptying, and are indented to allow single-handed manipulation. The TufRol bottles can be used with polystyrene Nunc T-flasks and cell factory systems to create an integrated bioprocess. Nunc roller bottles can be further specified to include vented closures to facilitate gas exchange or poly-d-lysine for temperamental cells. All the bottles are manufactured in facilities that comply with current Good Manufacturing Practices (cGMP), ISO 9001:2008, and ISO 13485:2003 quality standards, of polymers that are certified USP Class VI. They are packaged and shipped under sterile conditions and printed with a lot number to ensure traceability.
Thermo Fisher Scientific, Inc.
www.thermoscientific.com

Assembly Enables Aseptic Transfer of Small Volumes

The FlexFill assembly enables single-use biocontainer transfer. It provides a convenient way to aseptically transfer small bottled volumes of cell culture media, sera, reagents, supplements, buffers, and microcarriers to a bioreactor. It is delivered sterile, and is available in volumes from 500 mL to 6 L. Assemblies can be customized to support aseptic connectivity with a host of fitting and tubing options to allow for a seamless integration with the process.
Meissner Filtration Products
www.meissner.com

Single-Use Mixer is Designed for Biopharmaceutical Processes

The Allegro 200L single-use mixer handles a wide range of liquid-liquid and solid-liquid mixing applications in biopharmaceutical processing, including compounding, formulation, buffer and media preparation, and pH/conductivity adjustment. With an impeller designed for low-shear, general-purpose mixing, it is well suited for difficult mixing tasks that involve dense powders or high-viscosity materials, or that require fast, repeatable performance. Clockwise and counter-clockwise rotation enables up-flow and down-flow mixing. The mixer handles volumes from 50 to 200 L, and has a flush drain valve to facilitate cleaning.
Pall Corp.
www.pall.com

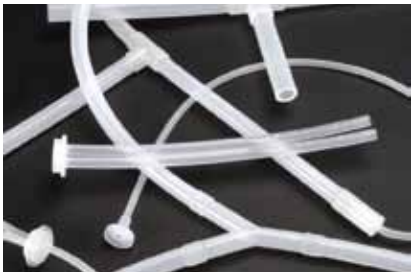
Cartridge Filters Handle Ultrapure Applications

These expanded polytetrafluoroethylene (ePTFE) membranes housed in high-density polyethylene (HDPE) cartridge filters are available in three versions with retention ratings of 0.1 µm, 30 nm and 20 nm, and they can be used as drop-in replacements for existing filters. They are said to provide superior retention and be capable of achieving a 150–400% improvement in flow capability over the best filter technology currently available (with the same retention rating and flow performance). All non-PTFE components are made of HDPE to ensure low organic and metal ion extractables. The filters are appropriate for high-turnover recirculation filter systems or as the final filter in high-throughput chemical filling and packaging stations, and are suitable for use during the manufacture of high-purity chemicals used in semiconductor and electronics fabrication processes.
W. L. Gore & Associates
www.gore.com

Peptide Synthesizer Reduces the Use of Costly Reagents

The Biotage Initator+ SP Wave enables researchers to synthesize peptides, peptidomimetics, and small molecules in quantities as low as 5 µmol using single- or multi-step procedures. It can function as a standalone peptide synthesizer, or it can easily be converted to a high-specification microwave-assisted organic synthesis (MAOS) system. It is semi-automated to reduce the consumption and waste of expensive reagents (which can occur in systems that require priming or that have large dead volumes). The programmable synthesis system includes a 10-in. touch screen, intuitive software, pre- or self-defined methods, inert gas capability, and vortex and magnetic stirring.
Biotage
www.biotage.com/peptides

Biopharmaceutical-Grade Tubing Now Includes Molded Components



AdvantaFlex biopharmaceutical-grade thermoplastic elastomer (TPE), previously available only as tubing, is now used to make molded Tri-Clamp fittings, BioClosure container sealing systems, and connections such as Ys, Ts, crosses, and reducers. This allows molded manifold assemblies to be manufactured from TPE, as an alternative to silicone, and allows an entire assembly to be manufactured from a single resin, which reduces the potential for installation errors. The use of molded connections eliminates the need for barbed fittings (and their potential for leakage and contamination). All styles range in size from 0.125-in. i.d. to 0.750-in. o.d., and other sizes are in development.
AdvantaPure
www.advantapure.com

SOLIDS AND FLUIDS HANDLING

Sonic Horn Improves Efficiency of Solids-Handling Equipment

During the handling of powders and bulk solids, sonic or acoustic cleaners help to remove dry particulate buildup, which increases system efficiency, reduces downtime and maintenance costs, and helps to avoid structural fatigue and damage. This sonic horn produces a low-frequency, high-pressure sound wave using compressed air to cause a titanium diaphragm to flex. The sound wave is then magnified as it is emitted through the cleaner's bell. The pressure created by the sound wave causes dry particulate deposits to resonate and become fluidized, allowing them to be removed by gas flow or gravity. These sonic horns are well suited for use in boilers, heat exchangers, economizers, baghouses, selective catalytic reduction (SCR) processes, induced-draft (ID) fans, electrostatic precipitators (ESPs), silos, hoppers, cyclones, and more.
Martin Engineering
www.martin-eng.com

Weigh Belt Feeder is Suitable for Sanitary Operations

The MWF-SGSP-OS ultra-sanitary open-construction weigh belt feeder has an all-stainless-steel construction, so it is well suited for processing foods and other materials where cleanability is essential. The feeder can provide closed-loop gravimetric control of the material feed rate, or it can be used in an open-loop configuration for precise conveying-rate output and totalization of an uncontrolled or intermittent material supply. Its easy-access, low-maintenance design (no tools are required for disassembly), coupled with its cantilevered frame (which allows for fast belt removal) simplifies maintenance. Belt velocity is measured from the tail pulley rather than the drive motor, providing a direct measurement of belt speed and better control over material delivery.
Thayer Scale
www.thayerscale.com

LABORATORY EQUIPMENT

Unit Runs Four Titrations Concurrently

The COM-1700 potentiometric titrator allows users to carry out up to four different types of titrations — including potentiometric, photometric, polarization, and conductometric titrations — in parallel. Its buret design allows for the quick, automatic exchange of reagents. The standard buret size is 20 mL, and optional buret sizes of 1, 5, 10, and 50 mL are available. Each titration station can control up to 10 burets. The new sample changer accommodates a wide selection of test tubes, beakers, and conical flasks. A color touch-screen panel allows for easy monitoring of any station and provides for real-time pH calibration and stability. Data can be printed from the unit or exported to laptops or PCs in several file formats.
JM Science
www.jmscience.com

Mobile, Ductless Fume Hoods Provide Filtration and Contamination Control

The Mobile EDU ductless fume hood can be moved from one location to another for industrial training and classroom demonstrations. The self-contained unit is mounted on heavy-duty wheels for easy transport. At 77.5 in. high, it can pass through a standard doorway. Independent tests demonstrated that the multilayered EDU filter provides 99.9% filtration efficiency for the chemicals found in a typical chemistry curriculum. The unit exceeds OSHA, ANSI, BSI, and AFNOR safety standards.
Air Science USA
www.airscience.com

Multipurpose Mixer Provides Versatility in the Lab

The Model HSM-100SK-1 multipurpose laboratory mixer is a bench-top unit that comes with interchangeable mixing attachments, including batch and inline rotor/stator sets, and disperser blades and propellers of various sizes. Depending on the attachment, the mixer can handle formulations with viscosities as high as 50,000 cP. It features a variable-frequency drive that provides speed control from 500 to 10,000 rpm with ±1% accuracy. With 16 in. of clearance under the mixing attachment and 12 in. of distance between the feet at the base, the mixer can be used with vessels of various sizes. The power lift mechanism is activated with push-button control. The mixer is designed for a variety of mixing tasks, such as powder dispersion, deagglomeration, polymer disintegration, solubilization, emulsification, and homogenization.
Charles Ross & Son Co.
www.mixers.com

Compact Bench-Top Reactors Fit Under the Fume Hood

The HPR Series lab-scale reactors are said to be ideal for studying catalytic, polymerization, hydrogenation, oxidation, isomerization, and dehydrogenation reactions, in applications ranging from high-pressure chemical syntheses to process development. The stirred reactors have a magnetically coupled impeller for optimal mixing. They range in size from 50 mL to 4 L, and may be operated at conditions up to 10,000 psi and 350°C. All sizes are supplied as ready-to-use instruments requiring only utility connections prior to operation. Three integrated RxTrol processors perform all control functions.
Supercritical Fluid Technologies
www.supercriticalfluids.com

OPERATIONS AND MAINTENANCE

Nozzles Clean Small Tanks and Vessels

A recent redesign has made the Spinner series of jet-spray nozzles more hygienic and more effective at cleaning tanks, drums, barrels, kegs, and ductwork. They are designed for cleaning small to mid-sized tanks, and easily fit into the narrow port holes of such vessels. The two standard models are the Micro-Spinner (for tanks up to 4 ft in dia., with a 1-in.-dia. orifice) and the Mini-Spinner (for tanks that are 4–9 ft in dia., with a 2-in.-dia. orifice). Each Spinner features a free-spinning head made of Type 316L stainless steel with a double row of Type 304 stainless steel ball bearings. These materials comply with U.S. Food and Drug Administration (FDA) regulations, making the spinners suitable for use by the food-and-beverage and pharmaceutical industries. The slot orifices provide flowrates ranging from 10 to 21 gpm at 40 psi, depending on the model.
Lechler, Inc.
www.lechlerusa.com

Membrane Contactor Provides Modular Degassing

The 14-by-40 Liqui-Cel Membrane Contactor extends the capacity of the Liqui-Cel family of deaeration products from 400 gpm to 550 gpm (125 m^3). It consists of a polyvinyl chloride (PVC) housing containing polypropylene hollow-fiber membranes knitted into an array that is wound around a distribution tube with a central baffle. During operation, the liquid flows over the outside of the hollow fibers, and the baffle directs the liquid radially across the array. A stripping gas or vacuum, either separately or in combination, is applied inside the hollow fibers. The module contains 4,015 ft^2 (373 m^2) of membrane area, has a pressure rating of 4.1 bar (60 psig), and is NSF/ANSI 61 compliant. Membrane-based degassing systems offer an alternative to forced-draft deaerators and vacuum towers.

Membrana-Charlotte
www.membrana.com

HEAT TRANSFER

Blower Heater Produces Vertical or Horizontal Airflow

The Model HVH blower heater line is now available in 20-kW and 50-kW models with either horizontal or vertical discharge of heated air. It features epoxy-sealed elements to reduce false trips on ground-fault equipment, and internal components that can easily be accessed through a large door at the bottom and a removable case front. A pilot light that indicates normal operation, an outlet screen that prevents objects from coming in contact with the fan, and factory- or field-installed thermostats, fan controls, and disconnect kits are available. The heater can be used in pump houses, shipping and receiving areas, generating stations, factories, and more.
Chromalox
www.Chromalox.com

Fluoropolymer Heat Exchangers Withstand Harsh Chemicals

The Wet Bench heat exchangers are designed for semiconductor and solar processes that heat or cool highly corrosive, high-purity acids, including wet etching, high-purity cleaning, and photovoltaic wet processing. They are made of fluoropolymer materials, such as ultrahigh-purity perfluoroalkoxy (PFA), that are inert to nearly all chemicals used in these applications, less brittle than glass or graphite, and more-corrosion-resistant than most metals. The compact heat exchangers feature braided tubing bundles and unique fused honeycomb ends, which provide significantly better heat transfer in a much smaller footprint compared to similarly sized heat exchangers. A variety of standard and custom welded or threaded connections are available.
Ametek Fluoropolymer Products
www.ametekfpp.com

New Standards Facilitate Selection of Air-Cooled Condensers

The Heat Exchange Institute (HEI) has released the first edition of "Standards for Air Cooled Condensers," which reflects the combined expertise of the members of HEI's Air Cooled Condenser Section. It includes typical purchaser requirements and outlines key design criteria for air-cooled condensers. It also provides practical information on nomenclature, dimensions, testing and performance.
The Heat Exchange Institute
www.heatexchange.org

Blown-Film Air Coolers Now Come in Bigger Sizes

The BFC Series of blown-film air coolers has recently been expanded to include units with capacities of 600–9,000 cfm and improvements such as increased energy efficiency and reduced space requirements. The compact design's air inlet diffuser creates uniform air flow across the cooling coil and decreases the temperature approach. The exit air chamber is insulated to provide the coldest air possible to the air ring while reducing condensation. The BFC Series coolers also feature: noncorrosive wetted surfaces; 16- or 35-in. static pressure blower packages; permanent cleanable filters; dial thermometers on the chilled water inlet and outlet and on the air exit; and piping for optional two- or three-way chilled water valves. Stackable designs are available for higher throughput.
Mokon
www.mokon.com