

BioPharm Solutions

Enabling

Advanced **High Purity** Solutions

STANDARD AND CUSTOM MANUFACTURED PRODUCTS FOR THE BIOTECHNOLOGY AND PHARMACEUTICAL INDUSTRIES



Biopharmaceutical Processing



Sterile Vent Filter Housing Heaters —

Series 48 filter housing heaters are a cost-effective alternative to steam jackets for sterile vent filtration processes. MKS heaters for biopharmaceutical processes lower the total cost of ownership by eliminating the need to install steam lines and by reducing long maintenance times associated with steam jacketed housings. This makes MKS heaters ideal for small and large scale pilot plant applications, biotech and pharmaceutical manufacturing processes, mobile skids, manufacturing suites, and acceptance testing of skidded systems.

Single Round Filter Housings —

Series 26 modular filter housings offer a variety of options and flexible configurations. Available in T-line and In-line designs, along with a wide range of tube sizes, inlet/outlet and vent/drain connections, the user can quickly and easily select and configure the right housing for their process needs. Utilizing the same standard components to build all housings ensures consistent quality and performance at every geographic location.



Mass Flow Controllers for Fermentation and Bioreactor Control —

G-Series digital mass flow controllers (MFCs) from MKS offer a simple, economical solution for the precise control of bioreactor and fermentation processes. With accuracy of 1% of set point and fast settling times, the G-Series MFCs help to reduce time-to-manufacturing with precise, reliable delivery of critical process gases. DeviceNet™, Profibus® and RS485 interfaces allow continuous communication with process controllers and data management systems, supporting validation, GLP or GMP, scale-up and process improvement procedures.



Pressure Measurement, Process Monitoring and Calibration Instruments for Lyophilization and Sterilization —

MKS offers a wide variety of pressure measurement instruments for use in lyophilization and sterilization processes. Our Baratron® capacitance manometers offer the highest accuracy, long-term stability, insensitivity to gas composition, and excellent corrosion resistance to harsh process gases and operating environments. Available configurations include unheated sensors as well as sensors that are temperature controlled up to 200°C to effectively prevent condensation build-up and bacteria growth.

MKS also manufactures a variety of self-contained, portable vacuum/pressure gauge calibration systems that ensure quality and equipment performance guidelines are met during lyophilization processes. Calibration of gauges provides traceability of pressure measurements necessary for compliance with ISO 9000 and FDA requirements mandating that measurements be traceable to national standards, i.e. NIST (National Institute of Standards and Technology). With periodic calibration using a system such as the MKS PVS6 pressure calibrator, accurate pressure measurements are obtained, thus optimizing product reliability and production time for lyophilization processes.

The Vision 2000-P is an application-specific process monitoring system designed to monitor contamination levels within semiconductor and thin film PVD process tools. The Vision 2000-P monitors conditions that can negatively impact product yield and optimizes vacuum quality with contamination monitoring, including hydrocarbons, to sub-ppm levels during PVD process and residual gas monitoring, including air and water.



AX8600 Series LIQUOZON® Ultra for Ozone Cleaning and Sanitization —

Ozone is rapidly gaining acceptance as an alternative to traditional biopharmaceutical cleaning and sanitization methods such as chemical or steam, reducing overall chemical and wastewater disposal costs. Ozone also presents many additional benefits when injected and circulated into a facility's water system. Ozonated water disinfects more powerfully than other chemical disinfectants, can replace or reduce disinfection methods such as chlorine or hot water, reduce chemical sanitizing costs, improve uptime potential and reduce overall water consumption. MKS offers a complete line of ozone generators and stand-alone delivery systems that can be integrated into existing plants.

Process Monitoring Software for Fermentation Production — MKS Umetrics SIMCA-P+ and SIMCA-Batch On-Line (SBOL) software modules monitor fermentation processes in real-time to detect faults during production. Using multivariate techniques coupled with conventional SPC (Statistical Process Control), batches that are out of control (OOC) are caught before they become out-of-spec (OOS). Operators have the power to make automatic adjustments to batches as they happen, turning problem batches into acceptable ones. The result is improved yield and enhanced productivity.



