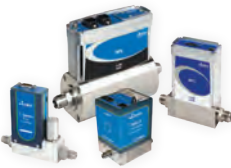


Vacuum Solutions Division



AUTOMATION & CONTROL SOLUTIONS

MKS provides advanced automation solutions including controllers and I/O devices, software and analytics for Industry 4.0 and smart factory automation, and custom control systems. The MKS automation portfolio enables advanced process control by providing EtherCAT® connectivity, programmable safety, multizone temperature control, edge analytics, and IoT/cloud connectivity.



FLOW SOLUTIONS

MKS provides gas flow and delivery products including mass flow controllers and in-situ mass flow verifiers to precisely measure and control gas flow. Upstream pressure controllers with integrated mass flow meters provide pressure measurement and control while monitoring mass flow rates for critical process applications. MKS flow ratio controllers accurately and repeatedly divide gas flows into precise flow streams.



GAS ANALYSIS

MKS provides gas analysis solutions for real-time vacuum quality control, contamination detection, process monitoring, and compositional analysis. Products offered include residual gas analyzers (RGAs), process RGA systems, atmospheric pressure mass spectrometers, and optical gas analyzers. MKS also offers flexible and scalable software platforms to leverage sensor data and enable powerful process optimization and monitoring capabilities for advanced manufacturing environments.



PLASMA & REACTIVE GAS SOLUTIONS

MKS provides remote plasma systems (RPS) and ozone generators that create reactive species. Our RPS systems deliver fluorine, oxygen and hydrogen radicals. Our ozone generators produce ultra-pure, high concentration ozone gas and dissolved gas delivery systems supply ozonated water, dissolved CO₂ and dissolved NH₃. In addition, Microwave Plasma Delivery Subsystems are available in 1.8 or 3 kW and provide safe delivery of atomic species to the wafer.



POWER SOLUTIONS

MKS provides high reliability radio frequency (RF) and microwave power delivery systems, providing energy to various etching, stripping, and deposition processes. Our RF generators deliver solid state power from low to very high frequencies (VHF) and combined with our Impedance Matching Network provide a complete RF delivery system. Our industrial microwave generators and systems generate power levels from 1 to 75kW and are adaptable to a wide range of applications.



PRESSURE & VACUUM CONTROL SOLUTIONS

MKS Baratron® capacitance manometers provide highly accurate and repeatable direct pressure measurement and are insensitive to gas composition. In addition, MKS has a wide range of indirect pressure sensors, transducers and modules that use hot and cold cathode, Piezo and Pirani gauge technologies. These products measure pressure in corrosive and noncorrosive environments over 14 decades of range from above atmospheric to ultra-high vacuum.



VALVES & INTEGRATED PROCESS SOLUTIONS

MKS provides a variety of vacuum valves including butterfly valves for pressure control, isolation valves and gate valves. Heated and unheated configurations are available as well as specialty valves for high cycle count and highly corrosive environments. In addition, MKS provides integrated vacuum solutions including complete turn-key solutions for foreline plasma clean, effluent management with heater jackets and controllers, process traps, virtual walls, and integrated vacuum measurement and control assemblies.

Photonics Solutions Division



INSTRUMENTS, MOTION, COMPONENTS & VIBRATION CONTROL

MKS provides a wide range of high precision motion control products including linear and rotation stages, hexapods, controllers, Piezos and industrial OEM sub-assemblies. Our vibration isolation solutions, specialized light sources, laser power measurement and beam characterization instruments, optical to electrical converters, solar simulators and laser diode control are used in photonics applications. Products used to mount, position, or support optical components and systems are also part of the MKS offering.



LASERS

MKS develops and manufactures advanced pulsed and continuous wave diode-pumped solid-state, fiber and hybrid fiber lasers for precision applications. Pulse widths span nanosecond, picosecond, and femtosecond, and wavelengths range from infrared and visible to the ultraviolet.



OPTICAL COMPONENTS, IR ASSEMBLIES & INTEGRATED SOLUTIONS

MKS provides precision optical components and complex lens assemblies across the infrared, visible and ultraviolet spectrum. In addition to custom subsystem solutions, products include optical filters, thin film coatings, high performance gratings, replicated mirrors, windows, spherical, aspherical and cylindrical lenses, laser optics, refractive, reflective, catadioptric optical assemblies on a build-to-print or build-to-spec basis, and off-the-shelf high-performance IR thermal imaging lenses and continuous zoom lenses.



FIBER-OPTIC SENSING SOLUTIONS

MKS provides fiber-optic sensing solutions for high-precision measurement of temperature and position in extreme environments with high RF power, high temperature, vacuum, plasma and reactive gases.



LASER-BASED PCB MANUFACTURING SYSTEMS

MKS provides laser-based systems for PCB manufacturing which include flexible interconnect PCB processing systems and high-density interconnect solutions for rigid PCB and substrate processing. Our ESB solutions also include high-volume, multi-layer ceramic capacitor (MLCC) test systems for ultra-small form factor MLCCs used mainly in smartphones and other electronics manufacturing and large chip MLCCs used mainly in automotive and communications infrastructure applications.

Materials Solutions Division



CHEMICAL PROCESSES & EQUIPMENT FOR PCB MANUFACTURING

MKS provides chemical processes and production equipment for PCB manufacturing which include flexible, rigid-flexible, multilayer, high-density interconnect PCB processing, package substrate and wafer level packaging used in consumer electronics, communications infrastructure, automotive electronics, medical and industrial industries.



DECORATIVE, FUNCTIONAL & PAINT PROCESSES

MKS provides chemical processes and equipment for decorative and functional surface finishing including decorative corrosion-protective, and wear-resistant coatings for automotive, construction, energy, household appliance and heavy machinery industries. We also provide chemical processes for paint applications including pretreatment, stripping and overspray treatment for automotive and household appliance industries.