



**Expertly designed and rapidly engineered
solutions tailored to your applications**

Fluid Control & Pneumatics for Analytical & Medical Devices

Proven solutions and local expertise to help you overcome your toughest challenges.





In an increasingly competitive landscape, relationships with reliable expert partners become critical for your success.

There is no room for error when working with human health

When working in medical or analytical applications, the highest levels of accuracy, reliability and purity are demanded. Every action influences human health and therefore must be supported by the industry's highest standards and leading innovations. This is not only critical for healthcare professionals, but also for devices supporting their daily work. Each decision made on individual medical components has long-term effects on system efficiencies, useful analyses and patient care. It is clear that better technologies, deeper expertise and a stronger commitment to value-creating solutions guarantees a market advantage.

Need for more advanced technologies. Your peers and customers are considering what's next – 2,400 patent applications in 2016 in Europe were related to medical technology industry – representing more than any other sector in Europe and showing the innovative and high-tech spirit.



Need for expert partners. Medical technology engineering costs ~\$120/hour on average, and design iterations can become expensive. Experienced development partners and reliable suppliers can help you reduce costs.



Need for more than products – you need forward thinking solutions. Your role requires thoughtful decision making around the right products to purchase, but you need access to services and experiences that make your job easier.



Turn to Emerson for highly technical expertise and widely adaptable offerings

Emerson's fluid control & pneumatics portfolio is uniquely designed to address the speed, specificity and exceptional quality necessary for leaders in the analytical and medical world. Working with our brands ASCO™, AVENTICS™, TESCOM™ and TopWorx™ means you can expect intentionally designed products adaptable to your specifications and a team of experts who understand specific application needs and your tight timelines to market.



Ready-to-deploy technologies in made-to-order products for every application

- Find unique components & total solutions—always available in our extensive offering
- Invest in application specific customizations designed collaboratively with you
- Take advantage of analytical & medical technologies designed for precision

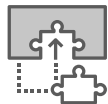
"Their technology is the best. If we find ourselves buying a commoditized product we are doomed to failure. My company cannot survive without the right tech."
– Ventilator Customer



Technical industry experts partnering across design & development

- Work with experts backed by ~100 years of experience in fluid control and pneumatics
- Reduce product development time because our experts know the specific requirements in your world area
- Access live and online experts to ensure quick service and maintenance

"I was pleasantly surprised when product development engineers requested to visit our R&D facility to discuss our new instrument design and capability requirements."
– Oxygen Concentrator Customer



Broad portfolio of valuable services and solutions

- Accelerate design prototypes with our Rapid Engineered Solutions program
- Leverage solutions incorporating gas, liquid, or proportional products
- Benefit from state-of-the-art ISO Class 8 equivalent cleanroom manufacturing

"Continuous improvement is a big KPI for us. They always look for different ways to help us continuously improve and be competitive."
– Surgical Instruments Customer

High-quality engineering is our offering – applied industry expertise is our promise



Clinical Diagnostics & Bioinstrumentation

Custom fluidic systems and one of the broadest offerings of miniature fluidic products paired with deep technical knowledge to get systems fully-engineered and production-ready.



Dental

Customizable, expandable manifold solutions for dental chair applications including proportional, general service, and liquid isolation valves.



Ventilators

Proportional and general service valves ideal for gas-mixers in order to control and change the gas-mix and deliver consistently on patients' needs.



Industrial Analyzers & Chromatography

Miniature solenoid valves for liquid and gas analyzers featuring easy integration, short response times and advanced flat-spring technologies to avoid contamination.



Oxygen Therapy

Customized valve solutions and regulators designed for minimal leakage or sound and maximum portability for oxygen therapy and concentrator applications.



Clinical Diagnostics and Bioinstrumentation

For the handling and dosing of samples and analytical liquids, you require maximum accuracy and a minimal external influence on the specimen.

[Learn more. ► p6](#)

Ventilation and Oxygen Therapy

Reliable and accurate gas handling during ventilation of patients or lightweight solutions required for homecare and hospital therapy.

[Learn more. ► p8](#)

Dental Supplies

Small footprint manifolds supporting a variety of functions such as air, water supply and suction, enable you to save space and time during assembly.

[Learn more. ► p10](#)

Industrial Analyzers and Chromatography

Management of aggressive media is a central part of industrial analysis and chromatography. Tailored solutions will allow you to minimize external influences and implement robust components. [Learn more. ► p12](#)

Rapid Engineered Solutions Program

Unique service that provides standard, engineered and custom valves and assemblies for your specific application, designed and delivered in a matter of days.

[Learn more. ► p14](#)

Clinical Diagnostics and Bioinstrumentation

Clinical diagnostic OEMs are facing intense pressure to develop new products based on evolving diagnostic detection technologies. Expert analyses, reduced prototype development time and smaller components can make a big impact. Emerson's extensive offering meets these priorities, while our product designs emphasize chemical compatibility, low power consumption and minimal heat transfer.



What's your opportunity?

- Explore a comprehensive portfolio across valves, fittings, manifolds, pressure regulators and tubing
- Reduce system complexity and improve manufacturability with full fluidic systems that arrive fully-engineered and production-ready
- Avoid development delays with our highly responsive sales team and engineering expertise in the stringent technical requirements of the clinical diagnostic field



Challenge

A customer in India developing a new hematology analyzer required isolation valves to control the flow of reagent and waste. High purity is demanded and there is a need for low power consumption to reduce potential heat transfer into the fluid. A very tight project deadline created the need for fast delivery of suitable solutions.

Results

Assisting the customer with its development, Emerson's Rapid Engineered Solution program met the request for isolation valve samples within two days. Fifteen ASCO Series 110 isolation valves, which met the customer's requirements, are used to control the flow of reagent in the analyzer. In addition, the very compact ASCO Series 055 isolation valve manages waste from the washing section.

Benefits

- Fast response helped to maintain the project schedule
- Valves met customer's challenging specifications

Featured clinical diagnostics and bioinstrumentation solutions

Series 068 & 068 Proportional Flapper valves



- Low heat transfer
- Fast response time
- Low power consumption
- No pumping or sticking effects due to flapper technology

Series 045 Pinch valves



- Silent operation
- Isolates fluid from coil to reduce heating
- Space saving design
- Ability to handle different tubing hardness and sizes
- Removable and rotatable solenoids for easy installation

Series 067 Rocker valves



- Rocker mechanism, combined with a separating diaphragm, prevents heat transfer to the fluid and eliminates the sticking effect of the valve seat
- Excellent self-draining capability and easy-to-flush low-volume internal cavity

Related products

Series 283 Lever valves



- Designed for use with aggressive and corrosive liquids and gases
- Large orifice sizes for high flow-rate and high pressure applications
- Ideal for quickly flushing systems and routing aggressive reagents to chemical reaction vessels and waste containers

Series RB General service valves



- Small footprint and compact design
- Great for manifold setup
- Lightweight for portable medical devices
- Many material combinations for customization

Series 055 Diaphragm valves



- Compact design for easy installation
- Low power consumption
- PTFE Isolation design for aggressive fluids
- Excellent self draining capability



For more information, visit [Emerson.com/ASCO](https://www.emerson.com/ASCO)

Ventilation and Oxygen Therapy

The rapid advancement of oxygen controlling devices results in a positive impact on patient care. Emerson uniquely brings together the extensive portfolio of AVENTICS pneumatic solutions with leading ASCO fluid control technologies to deliver safe and sophisticated solutions in ventilation and oxygen therapy.



What's your opportunity?

- Rest assured you are investing in trusted gas mixers and general service valves designed to prioritize biological compatibility
- Collaborate with experts fluent in oxygen therapies
- Quickly access standard components or create custom oxygen therapy solutions faster than competitors



Challenge

A startup company was developing a low-cost ventilator for continuous respiratory support with a user-friendly design targeted at developing countries. The ventilator incorporated valves that controlled the containment, mixing and distribution of air to the patient. The company needed technical support and education on the functionality of the fluidics, a turnkey product solution, plus manufacturing support on a global basis.

Results

Emerson supported the customer's project team with technical assistance and responded to changing requirements as the ventilator was designed. The final design used an Emerson fluid control solution consisting of standard Series 411 miniature solenoid valves and four custom solenoid valves modified to deliver the required performance. Emerson's global footprint enabled local support at the customer's design center in California and at its manufacturing centers in India and Singapore. The customer chose Emerson because it was the only supplier that could provide a high level of global application expertise, plus a comprehensive fluid control package.

Benefits

- Provided technical support and fluidics education
- Designed comprehensive fluid control solution
- Customized valves to perform to customer's specifications
- Supported customer's global manufacturing centers

Featured ventilation and oxygen therapy solutions

Series 202 Preciflow Proportional valves



- Proportionally control the flow of air and inert gases by varying the electrical input signal to the coil
- Low hysteresis (<3%), excellent repeatability (<1%), and high sensitivity (<0.1%)
- Well suited for vacuum operation with no minimum operating pressure
- IPC (Inlet Pressure Compensated version) reduces spring wear and tear and creates more precise control

Series RB General service valves



- Small footprint and compact design
- Great for manifold setup
- Lightweight for portable medical devices
- Many material combinations for customization

MSV12 Micro Solenoid Valve



- Ideal for high density control applications such as medical devices and analytical instruments
- High flow – capable of over 300 L/min
- Optimized for Feed-Waste function on portable oxygen concentrators
- Very long life as solenoid is isolated from contaminated waste air

Related products

Series 624 Pressure regulator



- Lightweight and compact manifold mount interface
- Tamper-resistant manifold design
- Excellent for oxygen therapy and ventilation applications
- 342 Special version for water in dental applications

Series 096 General service valves



- Exceptionally long service lifetime ensures maximum reliability
- Low pressure, high flow capabilities
- Integrated spike and hold circuitry reduces power consumption
- Designed for manifold setup

Series 065 Flat spring valves



- Long life time and high reliability
- Small footprint and compact design
- Material allows usage with a broad range of gases
- Short response times, precise adjustment and low switching noise



For more information, visit [Emerson.com/ASCO](https://www.emerson.com/ASCO)

Dental supplies

Dental chairs must be comfortable for the patient, easily adjusted precisely by the dentist and deliver air, water and suction for the dental equipment used during odontotherapy. The delivery of these supplies through the chair provides optimal access and vision within the examination area. Customized solutions from Emerson allow manifolds to be installed which control all these functions, saving time and space during the assembly process.



What's your opportunity?

- Because the manifolds combine all requested valve functions into one, it's compact size allows for greater design flexibility and easier installation and assembly



Challenge

The valve supplies water to cool the dentist's drill and to wash away any blood and dental matter. The water and waste can build up in the mouth, which requires suction to extract it. There is a legal and industry requirement to totally separate the water inlet from the waste material. This normally requires two valves, one to supply the water and one to control the suction. The dental chair manufacturer was looking for a means of combining the two functions into one to save space.

Results

Our designers worked with the customer to develop an engineered solution that combined the water supply and back suction control valves onto one manifold. The special manifold unit incorporates both functions, while ensuring total separation to prevent the returning water from mixing with the clean water. The back-suction part of the valve was designed to cope with the drilling waste, which could block any small orifices and collect in any cavities.

Benefits

- Because the supplied manifold combines two valve functions into one, it is compact in size and makes installation and assembly easier.

Series 252 Modular dental manifold



- Flexible solution
- Isolation valves for controlling water
- Compliance with the new alimentary/sanitary norms

Related products

Series 202 Posiflow Proportional Valves



- Low hysteresis (<3%), excellent repeatability (<1%), and high sensitivity (<0.1%)
- Can control the speed of a connected instrument
- Excellent candidate for applications requiring high flow
- No minimum operating pressure differential
- Well suited for vacuum applications

Series 652 Filter



- High flow with a wide range of adjustable output pressure ranges
- Optional low profile integrated gauge, round gauge, digital gauge or digital pressure switch
- Threaded ports allow for individual or modular mounting
- Innovative two position plastic drain with manual and semi-automatic functions.

Series 651 Regulator



- Wide pressure regulation ranges: 0,3-0,5 to 3-6 bar
- Reliability and durability, low hysteresis, rolling diaphragm, no friction
- Non-self-relieving regulator



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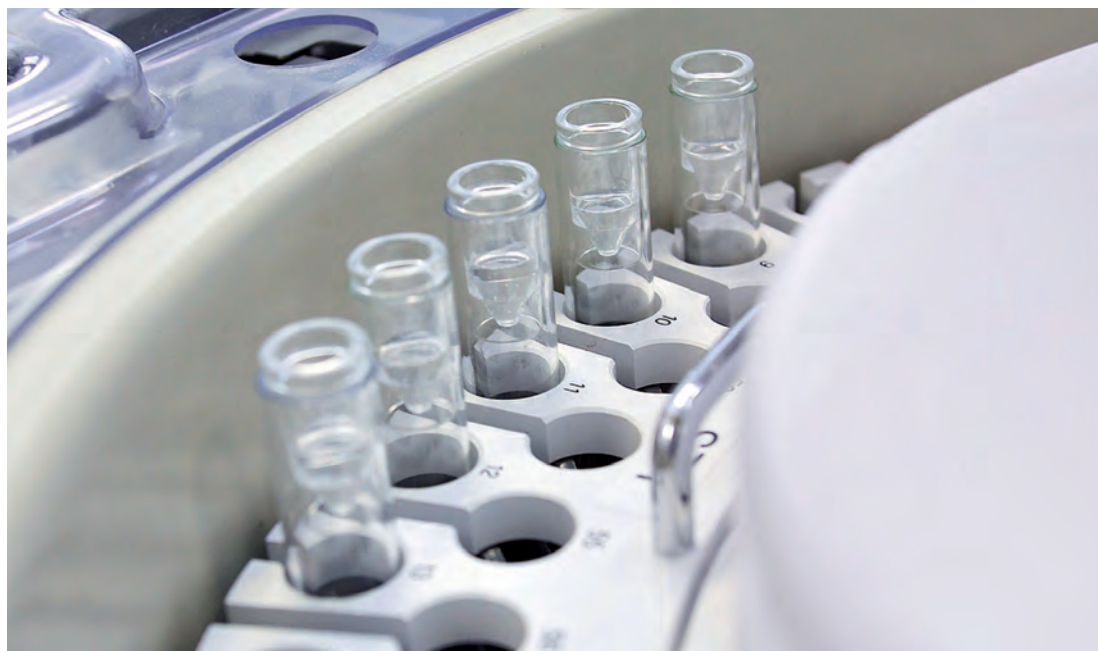
Industrial Analyzers and Chromatography

Industrial analysis and chromatography include applications such as mass flow control, high pressure liquid chromatography (HPLC) for chemical analysis and identification of components within a mixture, and water or air emission analyzers for environmental examinations such as leakage detection. Emerson has extensive experience with these applications and has a broad range of ASCO and AVENTICS valves designed to cope with pressurized and aggressive materials and prevent external factors from influencing samples.



What's your opportunity?

- Proven components made for pressurized and/or aggressive media
- Minimize external factors with media-isolated valves
- Leverage our extensive portfolio and know-how for industry-proven customized solutions



Challenge

An analytical instrument manufacturer was designing a continuous chromatography machine for process development and single-use manufacturing. The machine incorporated a pneumatic valve to apply pressure to a proprietary diaphragm valve. The customer required a pneumatic valve that could operate with high pressure (300 psig) and low flow (<0.025 Cv), plus offer Ethernet connectivity to a control system.

Results

The customer turned to Emerson to design a turnkey fluid control solution. Emerson was the only supplier that could meet the application's high-pressure, low-flow, and Ethernet connectivity requirements in one package. The custom manifold assembly combined the Series 411 miniature valves with a G3 Ethernet manifold. Emerson's capability to meet the application's demanding requirements meant the customer did not have to redesign the instrument to operate at lower pressure and higher flow.

Benefits

- Created single-source custom valve assembly
- Achieved customer's specific high pressure, low-flow and Ethernet connectivity requirements
- Optimized instrument's performance

Featured industrial analyzers and chromatography solutions

Series 411 General service valves



- Small footprint and compact design
- Great for manifold setup
- Cycle life in the hundreds of millions
- Low power consumption for portable devices

Series 202 Preciflow Proportional valves



- Proportionally control the flow of air and inert gases by varying the electrical input signal to the coil
- Low hysteresis (<3%), excellent repeatability (<1%), and high sensitivity (<0.1%)
- Excellent solution for applications requiring high flow
- Well suited for vacuum applications with no minimum operating pressure

Series 283 Lever valves



- Designed for use with aggressive and corrosive liquids and gases
- Large orifice sizes for high flow-rate and high pressure applications
- Ideal for quickly flushing systems and routing aggressive reagents to chemical reaction vessels and waste containers

Related products

Sentronic Proportional valves



- High precision and accuracy making it an ideal candidate for analytical applications
- Can be used as pilot for other valves
- Software for calibration of parameters included

Series 055 Diaphragm valves



- Compact design for easy installation
- Low power consumption
- PTFE isolation design for aggressive fluids
- Excellent self draining capability



For more information, visit [Emerson.com/ASCO](https://www.emerson.com/ASCO)

Rapid Engineered Solutions Program

Instrumentation development times are being reduced across analytical and medical industries, however instrumentation complexity is increasing – often requiring the customization of standard medical and analytical products. Emerson's Rapid Engineered Solutions program is geared toward providing these custom solutions to OEMs faster than anyone else in the market.



What's your opportunity?

- Maximize efficiencies and reduce costs with turbocharged timelines – tailored solutions in a matter of days
- Fit test your fluidic path designs with our in-house 3D printing of SLA models
- Receive fully functional prototypes for beta testing



Work directly with expert Emerson product development engineers.

Emerson's experts are capable of delivering valve samples and customized assemblies for OEMs as fast as possible. This means streamlined supply chains, simplified system designs, faster times to market, lower maintenance costs – and better patient care.



Services offered...

- In 2 Days: sample valves hand-delivered by an Emerson expert
- In 5 Days: engineered valve samples to suit your application with custom modifications
- In 10 Days: fully engineered solutions, custom manifold assemblies and modules – allowing full functional testing

Custom Solutions Designed for Your Business

2 DAYS

Sample valves & manifolds from our standard catalog offerings.



5 DAYS

Engineered valve samples with custom modifications, from seal materials, to flow and pressure ranges, to electrical connections.



10 DAYS

Custom manifold assemblies and modules tailored to your unique application.



Comprehensive Applications

- Clinical diagnostic instruments
- DNA sequencing and bioinstrumentation
- Hospital beds and therapeutic support surfaces
- Dental chairs and delivery systems
- Chromatographic analyzers
- Industrial liquid and gas monitoring instruments
- Patient monitoring devices
- Surgical fluid management instrumentation
- Sterilization equipment
- Oxygen therapy, respiratory and ventilation devices

Components and Accessories

- Pinch valves
- Isolation valves
- Proportional valves
- General service valves
- Manifolds
- Fittings
- Wire harness assemblies
- Filtration and regulator elements
- Sensors

Custom Modifications

- Seal materials
- Flow & pressure ranges
- Power requirements
- Electrical connections
- Mounting configurations

Custom Rapid Engineered Solution Examples

Oxygen Therapy



General service valves mounted on a proprietary manifold to deliver purified oxygen for the patient.

Chemical Sterilizer



Liquid isolation valves mounted on acrylic manifold and custom harness with pneumatic cylinder.

Ventilator



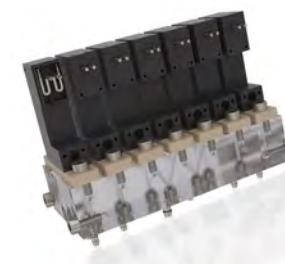
General service valves with pressure relief valves, thermal sensors and custom fittings, to control air flow to the patient.

Reverse Osmosis



Bellows isolation valves mounted to a customized injection-molded manifold to control ultra-pure laboratory water systems.

Cytology-Cell Counting



7-station manifold to handle carrier liquids in the cell counting process and prevent samples from being contaminated.



Visit [Emerson.com](https://www.emerson.com) to learn more about our ASCO Rapid Engineered Solutions program.

Get started



Emerson delivers time-tested and innovative solutions designed to help you improve your device's overall accuracy and reliability. Contact us now for world-class technologies and services that can maximize your medical or analytical application. Getting started is easy.

Visit [Emerson.com/ASCO](https://www.emerson.com/ASCO)

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