

**Optimize reliability, meet stringent industrial standards and achieve faster time-to-market**



## **Industrial Analyzers**

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





Optimizing analyzer performance to meet evolving industrial standards places high demands on the fluid path specification.

## Under pressure to meet development timelines, but lack in-house fluid control experience to maximize analyzer performance?

As a design engineer, you endeavor to develop industrial analyzers that offer the highest possible measurement accuracy, reliability and lowest maintenance. Launching new designs ahead of the competition is essential to company profitability, but delays in the design of the fluid control system can make it difficult to meet aggressive time-to-market goals. A lack of in-house knowledge can also make it hard to improve the fluid control design and understand what is possible. Compliance with industry standards requires that all products used provide the necessary performance, reliability, durability and energy efficiency in challenging applications.

“Development of a new analytical instrument can take typically six to 24 months to complete, the challenge comes in deciding what is needed and how quickly.”  
– Ian Shuttler, Business Manager, PerkinElmer, 2005



“Analytical instrument manufacturers are in a constant race to match customer’s expectations, pushing a constant need for technology innovation and unique modularity in instrument design.”  
– Dr. Daniela Cavagnino, Thermo Fisher Scientific, 2020



“A laboratory needs sophisticated analytical instruments to meet increased sample workloads and the requirements set by national and international regulatory bodies and to reduce operational costs.”  
– Lab Training.com, 2014



# Fluid control performance and expert support for enhanced analyzer designs

The fluid control design and products used will have a significant impact on the performance, reliability and lifecycle cost of industrial analyzers. Emerson understands this and our local sales and engineering resources can work closely with your team to define your requirements, select the right products from our broad range of valves, develop customized solutions and manifolds to produce the precise performance you need, and expedite rapid delivery to keep your development timeline on schedule.



## Shorten your development timeline and launch products to market much quicker

- Commission turnkey fluid control solutions from application experts
- Obtain fast prototypes and customized valve solutions
- Access a wide product portfolio and global expert engineering support

A customized solenoid valve manufactured in Emerson's Class 8 equivalent cleanroom environment helped a leading manufacturer eliminate valve-related rejections and time-consuming cleaning processes, significantly improving lead times for a new material characterization instrument.



## Optimize the fluid path to create a more efficient analyzer design

- Implement customized fluid control solutions optimized for your unique designs
- Reduce pipework complexity that creates potential for leakages
- Enable installation within smaller internal spaces and help reduce overall instrument footprint

For a new continuous chromatography analyzer Emerson rapidly designed a custom manifold assembly, integrating multiple fluid control products and Ethernet connectivity. This enabled control of several columns in a single instrument, optimized performance and prevented a complete redesign.



## Meet or exceed stringent industrial standards, enabling use in a variety of applications

- Prevent sample contamination and ensure accuracy of measurements
- Minimize leakage and ensure lower maintenance and peace of mind
- Meet high chemical compatibility demands in challenging and harsh application environments

By providing a customized ASCO™ Preciflow Series 202 proportional valve offering increased accuracy and response speed, Emerson enabled a leading mass flow controller manufacturer to expand the range of suitable laboratory and industrial applications.

# With Emerson, you can overcome your industrial analyzer development challenges

## Sample delivery control

Robust flow control valves provide reliable and consistent control in challenging applications such as waste water or air emission. The compact valves are easy to install, offer maximum chemical resistance, low leakage and prevent contamination between the samples and the valve. ▶ p7 and p11

## Waste drainage control

High flow isolation valves and pinch valves offer high throughput for waste drainage. The range of orifice and valve sizes offer maximum versatility while improving machine manufacturability. ▶ p7

## Reagent sorting control

Reliable flow control isolation valves eliminate any cross-contamination and prevent heat transfer to the fluid. Easy-to-flush and low-volume internal cavities help to reduce reagent consumption during analytical testing. ▶ p7

## Proportional gas dosing control

Compact proportional valves with high precision and accuracy meet the highest quality specifications every time. Lower power consumption and compact architecture ensure greater installation flexibility and machine efficiency. ▶ p9 and p11



## Water quality analyzers

Reliable, repeatable and precise fluid control maximizes analytical equipment performance, prevents fluid contamination, and reduces wasted expensive reagents and machine maintenance. Learn more. ► [p6](#)

## Continuous emission monitoring systems (CEMS) gas analyzers

Enhanced valve solutions provide greater gas flow control flexibility and reliability, with compact designs and modular configurations reducing fluid path complexity and potential for leakage. Learn more. ► [p8](#)

## Chromatography instruments

Fluid control with high accuracy and repeatability is pivotal to chromatography performance. Isolation valves ensure high fluid purity for controlling eluent dosing, while proportional valves maximize overall analysis precision, essential within gas dosing applications. Learn more. ► [p10](#)

## Material characterization analyzers

Robust valve designs, offering repeatability and reliability, prevent leakage and minimize cross-contamination, ensuring the accuracy of the material characterization analysis process. Learn more. ► [p12](#)

## Water quality analyzers

Customizable valves are used to control the sample inlet and route different chemical reagents for reaction and detection needs. With outstanding performance and reliability, ASCO miniature solenoid-operated isolation and pinch valves are the preferred choice of original equipment manufacturers (OEMs). Offering robust corrosion resistance, small internal volume and minimum leakage, they are especially suitable for liquid control in harsh conditions. Flexible multi-station manifolds create compact optimized solutions. Design engineers can specify unique construction configurations to meet their water analyzer requirements. Emerson's extensive product portfolio and customized assemblies enable OEMs to maximize process efficiencies and optimize applications.



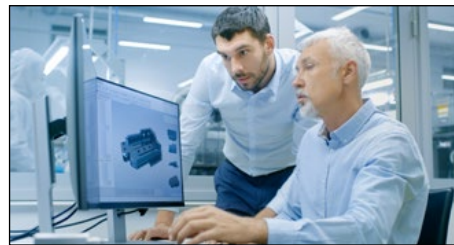
### What's your opportunity?

- Obtain repeatable and very precise fluid control performance for your analytical equipment by selecting ASCO isolation valves and reduce system complexity by adopting modular manifold solutions
- Prevent or eliminate build-up and clogging by using isolation valves designed using computational fluid dynamics to avoid sharp corners and pockets



### Get customized fluid control solutions that meet your specific requirements. Connect with a local Emerson expert.

Using our engineering capability and industry experience we can help to improve the fluid control design of your water analyzer, providing customized products that meet your specific application requirements, including complete, prequalified manifold assemblies, with valves, terminations, pins and housings – saving you time, cost and effort.



### Services offered...

- Local sales and engineering resources available to help define your requirements
- Customized product development, design, build and factory-testing

## Featured solutions for water analyzers

### ASCO Series 067 Rocker Isolation Valves



Rocker solenoid fluid isolation valves with excellent self-draining capability and easy-to-flush, low-volume internal cavity are ideal for applications where cross-contamination must be minimized.

- A special rocker mechanism, combined with a separating diaphragm, prevents heat transfer to the fluid and eliminates the sticking effect of the valve seat
- Hermetic separation of control mechanism prevents particulate contamination, assuring maximum purity of liquid samples

### ASCO Series 068 Flapper Isolation Valves



Excellent self-draining capability and easy-to-flush low-volume internal cavity make this valve ideal for applications where cross-contamination must be minimized.

- Designed for use with neutral or aggressive liquids in analytical systems
- Special flapper mechanism results in no pumping or sticking effect of the valve seat

### ASCO Series 082 Diaphragm Isolation Valves



Miniature solenoid valves designed for use with neutral or highly aggressive liquids in analytical systems, ideal for sorting and controlling corrosive chemical reagents and samples.

- Robust construction material ensures maximum chemical resistance
- Low power rating reduces heat transfer to samples and reagents
- Capable of withstanding high temperatures and harsh conditions

### ASCO Series 284 Pinch Valves



These solenoid pinch valves hermetically separate the control mechanism and the fluid within the tubing, preventing particulate contamination and assuring maximum purity of liquids.

- 2-way valves shut off media without producing turbulent flows or dead spaces
- Under the same conditions, provides higher flow rate than other solenoid valves with same internal diameter

### Customized Multi-station Manifolds



Multi-station valve manifolds can be customized to meet specific application requirements, with an optimized design that can significantly reduce fluid path complexity.

- All valves have a 2-way normally closed function and diaphragm isolation mechanism
- Compact and customized to meet customer specific fluid path requirement



For more information, visit [Emerson.com/ASCO](http://Emerson.com/ASCO)

# Continuous emission monitoring systems (CEMS) gas analyzers

Enhanced valve solutions increase the flexibility and reliability of gas flow control. The compact designs and modular configurations of Emerson's ASCO valves help to reduce fluid path complexity, which helps to avoid complex tubing connections and greater potential for leakage. The robust performance and consistently low leakage provided by Emerson's standard valves and engineered solutions ensure efficient control and low maintenance, increasing the overall reliability of the gas analysis system, even in complex industrial applications.



## What's your opportunity?

- Optimize your analyzer design by reducing fluid path complexity using compact and modular valve configurations
- Consistent low leakage valve designs ensure reliability and accuracy of analysis results



## Ensure you meet evolving industrial standards. Partner with Emerson.

Adopting the appropriate high-performance products that minimize fluid control component leaks and meet the demands of harsh applications environments, will help your gas analyzers meet the most demanding industrial standards and provide repeatable accurate measurements over an extended lifecycle. Emerson can advise on the right solutions.



## Services offered...

- Rapid Engineered Solutions program creates miniature valves and fluid control assemblies customized to your exact needs, and delivers them at unprecedented speeds
- Fully functional valve prototypes tailored to the exact specifications of your device



## Featured solutions for CEMS gas analyzers

### ASCO Series 088 Miniature Solenoid Valves



These general service valves are designed for use with air and inert gases, and their low power consumption and compact size makes them ideal for portable devices.

- Pad mount with different electrical connections to maximize versatility
- Compact design ideal for manifold setup

### ASCO Series 202 Posiflow Proportional Valves



These solenoid valves are designed to proportionally control the flow of air and inert gases. Large orifice sizes make them extremely versatile for different gas analyzers.

- Low hysteresis, excellent repeatability and high sensitivity make them ideal for high-precision flow control
- Valves do not require a minimum operating pressure and are well suited for vacuum operation

### AVENTICS™ Series 614 SentronicPLUS Proportional Valves



3-way digitally operated pressure regulator valve that accurately adjusts pressure, flow, force, speed and linear or angular positions to control air and inert gases.

- Intelligent digital communications, such as IO-Link, enables simple operation
- Integrated visual display enables easy monitoring of valve status
- Wide pressure range and control at extremely low hysteresis

### ASCO Series 202 Preciflow Proportional Valves



These solenoid valves are designed to proportionally control the flow of air and inert gases with high levels of precision.

- Compact design and low power consumption meets the most stringent analytical instrumentation requirements
- Low hysteresis, excellent repeatability, and high sensitivity
- Well suited for vacuum operation with no minimum operating pressure

### ASCO Series S Miniature Solenoid Valves



These compact, lightweight general service solenoid valves are designed for use with air and inert gases, and have low power consumption.

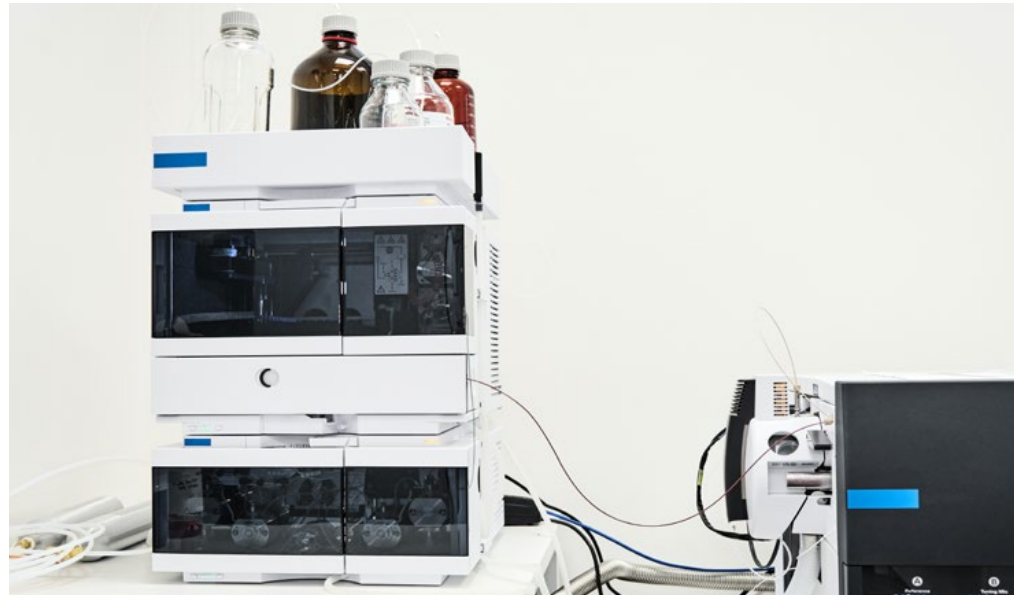
- Larger orifice sizes and vacuum capability provides versatility across multiple applications
- Stainless-steel construction provides corrosion protection, IP65 rated
- Available in a variety of different porting configurations for manifold and in-line mounting



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

# Chromatography instruments

Valves control the fluid (liquid or gas) during sample preparation or inlet/outlet in chromatography analyzers. ASCO isolation valves are widely used by OEMs for sample injection control in liquid chromatography analysis due to their ability to hermetically separate the control component from the media, ensuring high fluid purity. Emerson's proportional valves are ideally suited for gas dosing control during gas chromatography, with their high precision and repeatability resulting in consistent and accurate measurements.



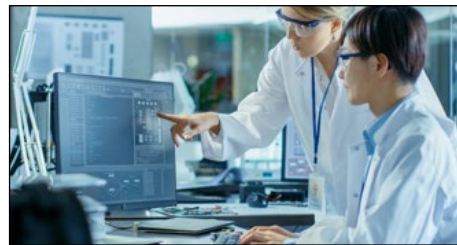
## What's your opportunity?

- Ensure high fluid purity with repeatable sample injection control by using isolation valves with a small internal volume
- Enhance accuracy of gas dosing control using proportional valves that provide exceptional precision and repeatability



## Work directly with Emerson engineers to develop a tailored fluid control solution for your unique design.

Creating an innovative analyzer design may require a tailored fluid control solution. Simplifying the fluid path can create both operational and manufacturing efficiencies. Our global team of engineers have the deep technical application expertise to advise on the appropriate fluid control solution, and can leverage an extensive portfolio and offer customized solutions.



## Services offered...

- Global team of product development and application engineers with expertise in chromatography requirements
- Design and development of customized solutions to provide optimized solutions
- Engineered solutions manufactured in Class 8 equivalent cleanroom environment to minimize contamination

## Featured solutions for chromatography instruments

### ASCO Series 067 Rocker Isolation Valves



Rocker solenoid fluid isolation valves with excellent self-draining capability and easy-to-flush, low-volume internal cavity are ideal for applications where cross-contamination must be minimized.

- A special rocker mechanism, combined with a separating diaphragm, prevents heat transfer to the fluid and eliminates the sticking effect of the valve seat
- Hermetic separation of control mechanism prevents particulate contamination, assuring maximum purity of liquid samples

### ASCO Series 058 Miniature Isolation Valves



Direct acting solenoid valves for use with neutral or aggressive liquids, with special media separating soft-seal PTFE diaphragm preventing any potential leakage of critical reagents within the instruments compartment.

- Low power consumption of only 2.8 W helps reduce heat transfer to thermally sensitive reagents and samples
- Media separating soft-seal PTFE diaphragm prevents potential leakage of critical reagents
- Small form-factor saves space in OEM instruments and is ideal for bench-top analyzers, portable and hand-held field devices

### ASCO Series 055 Miniature Isolation Valves



These isolation valves are designed for use with highly aggressive liquids, with a PTFE body and diaphragm that isolates the internal solenoid components from the media.

- Excellent self-draining capability and easy-to-flush low-volume internal cavity
- Minimal dead volume thanks to valve stem design
- Available with different functions and piping connections for exceptional versatility

### ASCO Series 202 Preciflow Proportional valves



These solenoid valves are designed to proportionally control the flow of air and inert gases with high levels of precision.

- Compact design and low power consumption meet most stringent analytical instrumentation requirements
- Low hysteresis, excellent repeatability and high sensitivity
- Well suited for vacuum operation with no minimum operating pressure

### ASCO Series 411 Miniature Solenoid Valves



These compact general service valves provide high flow rates, improved maximum operating pressure differential and low power consumption, critical in battery-operated portable devices.

- Corrosion-resistant materials increase durability and maximize life
- Tested to hundreds of millions of cycles
- Manifold mount enables easy assembly



For more information, visit [Emerson.com/ASCO](http://Emerson.com/ASCO)

# Material characterization analyzers

General service and proportional valves play an essential role in controlling the chamber pressure and flow throughout the material characterization analysis process. Valves with a robust design, with extremely minimal leakage ensure the analysis process is very precise and consistent. The compatibility of Emerson's valve elastomer helps to minimize cross-contamination and preserve fluid integrity. In addition, by offering greater repeatability and reliability, the material characterization analyzers can attain high accuracy in a more efficient way.



## What's your opportunity?

- Valves offering greater repeatability and reliability enable the characterization instruments to achieve high levels of accuracy
- Preserve fluid integrity by selecting valves with the appropriate elastomer that helps to minimize cross-contamination



## Minimize development and engineering time for faster speed to market.

Working with Emerson experts you can streamline your design process. With Emerson's Rapid Engineered Solutions program, we can speed development by providing fast prototyping and customized turnkey solutions.



## Services offered...

- Development, design, build and factory-testing capabilities
- Faster access to valve samples and customized assemblies to support development of your unique analyzer
- Expert advice on simplifying fluid path designs helps to maximize efficiencies and reduce engineering costs

## Featured solutions for material characterization analyzers

### ASCO Series 076 Miniature Solenoid Valves



These general service valves are designed for use with air and inert gases, and can also be used to pilot other valves or cylinders.

- Compact, lightweight and low power consumption of 0.9 W
- Side-by-side mounting on complex manifold solutions is ideal for control of multiple flow paths in applications with small envelopes

### ASCO Series 088 Miniature Solenoid Valves



These general service valves are designed for use with air and inert gases, and their low power consumption and compact size makes them ideal for portable devices.

- Pad mount with different electrical connections to maximize versatility
- Compact design ideal for manifold setup

### ASCO Series S Miniature Solenoid Valves



These compact, lightweight general service solenoid valves are designed for use with air and inert gases, and have low power consumption.

- Larger orifice sizes and vacuum capability provide versatility across multiple applications
- Stainless-steel construction provides corrosion protection, IP65 rated
- Available in a variety of different porting configurations for manifold and in-line mounting

### ASCO Series 202 Preciflow Proportional Valves



These proportional solenoid valves are designed to precisely control flow rates of air and inert gases.

- Low hysteresis, excellent repeatability and high sensitivity
- Compact frictionless architecture saves valuable space and increases reliability
- Minimum operating pressure is not required, well-suited for vacuum operation



# Bring your analytical instrument to market faster with expert support

Emerson's Rapid Engineered Solutions program helps industrial analyzer manufacturers to accelerate the fluid control design and engineering phase of new product development. Our global team of experts work directly with your engineers to simplify and optimize the fluid path design, maximize efficiencies and reduce costs. A comprehensive portfolio of industry-proven 'standard catalog' valves support fast qualification and testing, and enhance device quality and reliability. We excel in designing and manufacturing customized solutions and fully functional prototypes tailored to the exact specifications of your device at unprecedented speeds. Ultimately, partnering with Emerson helps bring your new products to market faster.



## Rapid response

- Catalog valve samples hand-delivered by an Emerson expert for your rapid evaluation
- Valve samples with custom modifications rapidly engineered to suit your application
- Fully engineered custom manifold assemblies and modules – created at accelerated speeds allowing full functional testing



## Global support

- Global manufacturing, sales and technical support for all analytical and medical applications
- Technical support provided by local experts and product specialists, with experience in analyzer applications



## Project expertise

- Deep expertise across applications and broad product offering
- Easily design customized solutions for the most complex applications
- Work directly with expert Emerson product development engineers
- Receive fully functional prototypes for beta testing



## Manufacturing capability

- Fit test your fluid path designs with our in-house 3D printing of stereolithography (SLA) models
- Dedicated prototype labs in the Americas, Europe and Asia
- Class 8 equivalent clean room manufacturing to eliminate potential contamination
- In-house additive manufacturing capability



With locations all over the world, we are always nearby to help solve your industrial analyzer challenges – no matter where you are. Contact us today!





## Get started



Emerson delivers time-tested and innovative fluid control solutions designed to maximize the performance and reliability of your industrial analyzer. Contact us now for world-class technologies, expertise and services that can optimize your measurement and analysis equipment. Getting started is easy.

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