

# VALVE



SUMMER 2024

Case Study: Mining

Life Cycle Assessments

Using AI? You Should Be

High-Purity Lab Build Out

## Moving to a Hydrogen Economy Using Existing Gas Infrastructure

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# OEM Support Services

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# Time Keeps on Ticking into the Future

## Welcome to the Summer issue of Valve.

If you're a late baby boomer or fellow GenXer that headline will likely cause you to hum the popular Steve Miller Band tune, "Fly Like an Eagle." And if your year is going like mine, it has been a whirlwind so far, and I don't see it slowing down any time soon – thus the reference to time flying by.



So far this year we've seen some major changes or potential changes that will impact our industry. Court decisions like the overruling of the Chevron Doctrine by the U.S. Supreme Court, and pending regulatory updates have come from agencies like the EPA on PFAS in water, covered in our Spring 2024 issue, could impact us all.

With the effects of climate change, the timeline to decarbonization is getting shorter every day. Companies struggle to keep up with all the rules and regulations and professional membership-based associations like the Valve Manufacturers Association (VMA) are doing their best to keep members apprised and updated with events, like the inaugural Hydrogen Valve Summit and the Valve Forum held earlier this year in Houston, and the upcoming PFAS Workshop being held in November in Alexandria, Virginia.

Moving toward a "hydrogen economy" is being touted as one way to lessen our dependence on fossil fuels that produce greenhouse gas emissions. For our cover feature, we revisited some of the information shared at the Hydrogen Valve Summit from Modern Hydrogen, EPRI and Emerson in the story on page 16. Hannah Mason also shares some of her expertise on all things sustainability with a deep dive into what exactly a life cycle assessment is, and explains some of the resources available to help suppliers measure their carbon footprint to share with their customers.

This issue's Valve Basics focuses on a product we don't talk a lot about but is critical to several end markets – plastic valves. Equilibr's Alan Black covers how the use of polymer in valves offers advantages for many applications. Other features include a case study on the sizing approach for valves in a difficult, abrasive mining environment, AI and more..

In September I'm heading to the International Manufacturing Technology Show (IMTS) in Chicago, the largest U.S. trade show of its kind covering manufacturing. I'm excited to visit booths focused on automation and digitalization in manufacturing, helping companies become even more competitive on the global stage and improve their efficiency and throughput while allowing their employees to focus on the tougher problem solving that only they can do. If you're in manufacturing, I highly recommend you attend and walk the show or attend workshops on everything from additive manufacturing to parts cleaning and industrial lasers. Send me a note if you're attending, I'd love to meet up!

**Heather Gaynor**, Editor-in-Chief  
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# VALVE MAGAZINE

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# 1846

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## US Supreme Court Overrules Chevron Doctrine

The U.S. Supreme Court overruled a longstanding precedent set in 1984 with *Chevron vs. Natural Resources Defense Council*, one of the most cited cases in American law. More than 17,000 lower court cases and 70 Supreme Court decisions were based on *Chevron*.

The principle of the 1984 ruling allowed regulatory agencies the power to interpret laws that were left vague and open to interpretation by Congress. The thinking was that Congress

couldn't anticipate all the consequences of laws it passed, and as such the regulatory agencies would be in a position to make those interpretations.

This ruling shifts the responsibility to the courts, especially when a statute is ambiguous. "Courts must exercise their independent judgment in deciding whether an agency has acted within its statutory authority," wrote Chief Justice John Roberts in the majority opinion.

He said that the ruling does not question prior cases that relied on the precedent, but going forward lower courts "may not defer to an agency interpretation of the law simply because a statute is ambiguous."

While there are anticipated to be many legal battles on past cases and regulations, today's ruling does apply to future regulations and provides an avenue for many legal challenges, especially in cases of alleged regulatory overreach that many manufacturers and others may believe they have experienced.



## Automation Group Rebranded as E Tech Group

E Tech Group, a leader in providing high-quality automation, control and engineering services for industrial clients and Gold Certified Rockwell Automation Partner, announced that the brand formerly called Automation Group has been renamed as E Tech Group. E Tech Group's acquisition of Automation Group was finalized on October 3, 2023.

Effective immediately, the brand formerly known as Automation Group will operate under the name E Tech Group, unifying the two entities under one brand. The transition to the new name will be seamless for clients and partners. All existing commitments remain in place, ensuring continuity and stability.

"The strategic direction and growth mindset of E Tech Group aligned seamlessly with that of Automation Group," said Randy Ruano, former president of Automation Group. "Our company has always placed a strong emphasis on taking care of our people, both internally and externally. Our first core value is being people-focused. During discussions with E Tech Group's leadership, we identified a shared commitment to prioritizing people, which made the decision to move forward with a buyout simple."

## Manufacturers Challenge Costly Water Standard

The National Association of Manufacturers, joined by the American Chemistry Council, filed a petition in the D.C. Circuit Court of Appeals challenging the Environmental Protection Agency's final rule setting individual standards for six per- and polyfluoroalkyl substances, also known as PFAS, in municipal water systems.

"Manufacturers support common-sense regulations on PFAS that recognize the criticality of these substances across several industrial sectors — for many of these critical applications, there are no viable alternatives," said NAM Chief Legal

Officer Linda Kelly. "What the EPA did, however, was to bulldoze ahead with standards that set an acceptable level for PFAS at near zero — which is wholly infeasible and threatens these vital substances' continued application in manufacturing processes. In doing so, the EPA relied on a deeply flawed cost-benefit analysis and failed to follow the clear-cut statutory procedures required by the Safe Drinking Water Act, among other substantive and procedural deficiencies. The NAM Legal Center is filing suit to overturn this unachievable standard and protect manufacturing operations and jobs across the country."



## Curtiss-Wright to Acquire Ultra Energy

Curtiss-Wright Corporation announced that it agreed to acquire the stock of Ultra Nuclear Limited and Weed Instrument Co., Inc. (“Ultra Energy”), a subsidiary of Ultra Electronics, for \$200 million in cash. Ultra Energy is a leading designer and manufacturer of reactor protection systems, neutron monitoring systems, radiation monitoring systems and temperature and pressure sensors that facilitate the safe and reliable operation of commercial nuclear power generation plants, and support UK nuclear defense as well as aerospace and industrial applications.

“The acquisition of Ultra Energy significantly increases the breadth of Curtiss-Wright’s global portfolio with highly complementary, critical measurement and control solutions supporting the modernization of existing commercial nuclear power plants, as well as the design of new and advanced power plants including small modular reactors, in both the U.S. and Europe,” said Lynn M. Bamford, chair and chief executive officer.

In other Curtiss-Wright news, the company’s Nuclear Division announced that its Brea, California facility has received a Certificate of Authorization from the American Society of Mechanical Engineers (ASME) for Section III Division 5, Class A & B components. This certification authorizes the facility to design, fabricate and test metallic components for use in Gen IV high-temperature advanced (AR) and small modular (SMR) reactors.

This achievement follows the Brea facility’s ISO 9001:2015 certification in 2023, highlighting the company’s adherence to stringent quality management practices. Additionally, in 2022, Curtiss-Wright’s Middleburg Heights, Ohio facility became the inaugural recipient of ASME III Division 5, Class A & B certification.

**CURTISS -  
WRIGHT**

## Dominion Energy Takes Step to Determine Feasibility of Small Modular Nuclear Reactors

Dominion Energy Virginia announced it has issued a request for proposals (RFP) from leading small modular reactor (SMR) nuclear technology companies to evaluate the feasibility of developing an SMR at the company’s North Anna Power Station in Louisa County, Virginia.

While the RFP is not a commitment to build an SMR at North Anna, it is an important first step in evaluating the technology and the North Anna site to support Dominion Energy customers’ future energy needs consistent with the company’s most recent Integrated Resource Plan.

For several years, utilities, state and federal agencies and leading technology firms have explored SMRs as the

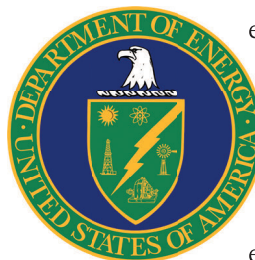
next generation of carbon-free nuclear power in the U.S. SMRs have the same reliability and environmental benefits as traditional nuclear, but with a significantly smaller footprint and lower upfront capital costs.

“For over 50 years nuclear power has been the most reliable workhorse of Virginia’s electric fleet, generating 40% of our power and with zero carbon emissions,” said Robert M. Blue, chair, president and CEO of Dominion Energy. “As Virginia’s need for reliable and clean power grows, SMRs could play a pivotal role in an ‘all-of-the-above’ approach to our energy future. Along with offshore wind, solar and battery storage, SMRs have the potential to be an important part of Virginia’s growing clean energy mix.”

## DOE Announces \$900 Million to Accelerate the Deployment of Next-Generation Light-Water SMR

As part of President Biden’s Investing in America agenda, the U.S. Department of Energy (DOE) issued a Notice of Intent (NOI) to fund up to \$900 million to support the initial U.S. deployments of Generation III+ (Gen III+) Small Modular Reactor (SMR) technologies. This funding — made possible in part by President Biden’s Bipartisan Infrastructure Law — will help strengthen America’s domestic nuclear industry and spur follow-on reactor projects, which are vital to achieving our nation’s ambitious clean energy and climate goals and meeting the growing demand for clean, reliable power. Today’s announcement underscores the Biden-Harris Administration’s efforts to support the demonstration and deployment of advanced reactor technologies, create new good-paying, high-quality jobs and reinforce America’s leadership in the nuclear industry.

“President Biden is determined to ensure nuclear power — the nation’s single largest source of carbon-free



electricity — continues to serve as a key pillar of our nation’s transition to a safe and secure clean energy future,” said U.S. Secretary of Energy Jennifer M. Granholm. “Today’s announcement will support early movers in the nuclear sector as we seek to scale up nuclear power and reassert American leadership in this critical energy industry.”

DOE estimates the U.S. will need approximately 700-900 GW of additional clean, firm capacity to reach net-zero emissions by 2050. Nuclear power is a proven option that could be deployed to meet this need, including the growing demand from artificial intelligence and other data centers and the reshoring of manufacturing, while creating high-paying jobs with concentrated economic benefits for communities most impacted by the energy transition. Per the Department’s Pathways to Advanced Nuclear Commercial Liftoff report, establishing a committed orderbook of reactors in the near-term is critical to accelerating technology learning and reducing deployment costs.



## Emerson Celebrates Major Anniversary

Emerson is celebrating the 150th anniversary of its Crosby line of pressure relief valves (PRVs), marking a significant milestone in the history of PRVs and overpressure protection products. Crosby technologies are field-proven and engineered to meet the latest regulatory standards.

“Emerson remains committed to innovation and excellence, continuously enhancing its range of overpressure products to meet and exceed the evolving needs of end users,” said Judson Duncan, the president of Emerson’s pressure management business. “With a steadfast dedication to regulatory compliance, safety, and customer satisfaction, Crosby is positioned to lead a safer, more sustainable industry over the next 150 years.”

## Welsford Co. Partners with SVF Flow Controls

Welsford Co., an industrial valve distributor specializing in high-quality valve solutions for various sectors, including pharmaceutical and food manufacturing, biotech, chemical processing, power generation and much more. The third-generation company is excited to announce its partnership with SVF Flow Controls to distribute the company’s sanitary and high-purity quarter-turn valves.

This collaboration enhances Welsford Co.’s product high-purity and sanitary offerings in its Philadelphia, New Jersey and New York territories as well as for its e-commerce division, ValveMan.com. The company’s president, Jason Welsford, said: “Welsford Co. has deep penetration into the pharmaceutical and food manufacturing markets and a ton of specialized knowledge in them. We are excited to bring these products to our existing network of customers as well as continue to grow our presence with SVF as well.”

## People In the News

The valve industry has lost two icons and former VMA Chairmen recently, **Ken Chickering** and **Al Kremers**.

Chickering, was the former president of **Daniel Industries** and **VMA Chairman of the Board**, passed away on June 18, 2024. He was recognized by VMA for his many contributions in 2002 with the VMA Person of the Year Award.

Al Kremers, former President of **DeZURIK** and **VMA Chairman of the Board**, died on June 5, 2024. After spending 15 years with DeZURIK, Al became president in 1975 and was appointed Group Executive for General Signal Corporation in 1984. He retired from DeZURIK for the first time in 1994, but was asked to return to DeZURIK as CEO in 2004. During that time as VMA Chairman, Al supported a new direction for VMA communications culminating in the formation of this magazine in 1982.

Bryan Burns, president and CEO of DeZURIK, Inc. said: “Al positively impacted everything he encountered in life, particularly his family, community and DeZURIK. His leadership and guidance over several decades instilled a strong culture that has been the foundation for DeZURIK’s growth and success.”

**Richards Industrials** announces the appointment of **John Samoya** as its new chief financial officer. With a strong background in finance, accounting and manufacturing, John is well positioned to help the Richards team serve its customers while achieving its strategic business objectives.

Samoya brings over three decades of finance expertise including twenty years in the manufacturing and consumer goods sectors. Before his tenure at Richards, John served as CFO for multiple businesses where he played a pivotal role in enhancing growth and profitability.

**Conval** President Scott Allard recently announced that **Carl Hyltin** has been appointed vice president of sales and marketing, responsible for all domestic and global sales and marketing initiatives and results. He replaces Don Bowers, Jr., who is retiring.

Hyltin joined Conval in 2019 as the southwestern regional sales manager. He is a high-energy, high-initiative, results-oriented manager with more than 30 years of experience in industrial valve sales in the power generation, petrochemical and pulp and paper industries. He has extensive product knowledge of control valves, turbine bypass, desuperheating and gas turbine valve technology. In 2023, he was promoted to director of new product development.



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FORWARD



## Standards Spotlight: Water Works

The American Water Works Association, or AWWA, was founded more than 140 years ago making it the oldest organization of water professionals globally.

BY: PAUL OLSON, Senior Manager of Standards

COMPANY: AWWA

The American Water Works Association, or AWWA, was founded more than 140 years ago making it the oldest organization of water professionals globally. With more than 50,000 members, the group's tagline is "Dedicated to the world's most vital resource," something every human being can and should support!

Membership of AWWA is a mix of utilities, manufacturers, consultants and individuals, and there are 43 local AWWA sections across the U.S., Canada and Mexico.

AWWA isn't a regulatory body but creates voluntary standards that are ANSI approved. Key standards offer minimum requirements for the design, installation, performance and manufacturing of products that are used in water works applications. The primary focus and application of AWWA standards have been on potable water and raw source water systems. Topics include: chemicals for water treatment; plant equipment; pipes, valves, pumps and other equipment; storage tanks and wells, and more. These nearly 200 standards were developed by industry experts, most of which are volunteers that serve on councils within AWWA and are developed through multiple rounds of review and consideration to get a consensus before they are adopted. AWWA standards address product use, performance, configuration, etc. and offer no certification just voluntary conformance.

There are myriad standards that AWWA has developed that are specific to valve manufacturers. They are grouped by valve types and include those listed in the chart below:

### Butterfly Valve Standards

- C504-23, Rubber-Seated Butterfly Valves
- C516-21, Large-Diameter, Rubber-Seated Butterfly Valves (78-in. and larger)
- C519-18, High-Performance Waterworks Butterfly Valves (3-in. to 60-in.)
- Manual M49, Quarter-Turn Valves: Head Loss, Torque and Cavitation Analysis

### Ball, Rotary Cone & Plug Valve Standards

- C507-23, Ball Valves 6-in. to 60 in.
- C521-23, Plastic Ball Valves

- C522-22, Rotary Cone Valves 6-in. through 60 in. (new standard in 2023)
- C517-16 (R21), Resilient-Seated, Cast-Iron Eccentric Plug Valves

### Air Valve, Control Valve and Service Lines

- C512-15, Air-release, Air/Vacuum, and Combination Air Valves for Water and Wastewater Service
- C514-20, Air Valve and Vent Inflow Preventer Assemblies for Potable Water Distribution System and Storage Facilities
- C530-22, Pilot-Operated Control Valves
- C800-21, Underground Service Line Valves and Fittings

### Actuators, Gaskets and Coating/Lining Standards

- C541-16 (R21), Hydraulic and Pneumatic Cylinder and Vane-Type Actuators for Valves and Slide Gates
- C542-16 (R21), Electric Motor Actuators for Valves and Slide Gates

Additional valve resources published by AWWA include Manual M44, Distribution Valves: Selection, Installation, Field Testing, and Maintenance (published 2016) and Manual M86, Large Valve Installation (in development with a planned release in 2025).

AWWA does not test, certify or approve any products, services or manufacturers, but creates these standards to be voluntarily complied with by all parties.

For more information about AWWA visit [awwa.org](http://awwa.org).

### ABOUT THE AUTHOR

Paul Olson is responsible for leading the AWWA standards program in the development of standards for the water industry. He's been with AWWA since 2000 and managed the Standards Department since 2009. He's been with AWWA since 2000 and managed the Standards Department since 2009.





# A Thank You to Valves

I recently heard a radio story that the “Potomac River Tunnel Project” run by DC Water had broken ground. DC Water provides both clean water and sewer services to Washington, DC. Once finished the tunnel will reduce the number of gallons of sewer discharged directly into the Potomac River by 93% from the current 654 million gallons of discharge that happen now.

After getting over the disgust factor of knowing that in 2024, the capitol of the United States still directly discharges sewer water into a river, I was once again proud to be a part of the valve industry.

There are so many other examples like this of how industrial valves and related products have helped to better the environment, increased safety, or provided valuable medicine, energy and other needs that benefit us all. The VMA Staff Team recently had our mid-year planning meeting, and one of the items discussed was the importance of promoting our industry’s contributions to society — and this one certainly hits close to home — to our elected officials.



We also discussed plans for the rest of 2024 and into 2025 — including the VMA/VRC Annual Meeting, a new PFAS Conference & Member Exclusive Workshop, and what tools, information and analysis, educa-

tion and services our members may need to help support their business efforts. Some of this discussion centered around government affairs and the impact of the election or recent Supreme Court rules on regulations, sustainability and energy transition, and workforce challenges. Some of the discussion was on providing more market trend information for emerging and traditional markets. Some was around how to best facilitate the networking and benchmarking and relationship building that happens during VMA committee meetings and at VMA events. And some of the discussion surrounded how to better communicate all that VMA offers to members and those who would benefit from joining.

Throughout our planning discussion, it was obvious that there is both so much VMA can do to help our members thrive, and that there is so much the industry and our members have to be proud of. I am grateful for both a great staff team at VMA, and each member company. And while I am still searching for how many valves will be used in the 5+ miles of tunnel, I know there will be more than a few! And I know that every time I drive into VMA’s office and view the Potomac River, I will smile knowing that our industry’s products are an integral part of the infrastructure to clean up the Potomac River — a river I walk by and boat in, but don’t swim in...yet.

***Our industry’s products are an integral part of the infrastructure.***

Heather Rhoderick, CAE  
President

## VMA Welcomes New Member

*This section of Valve will provide readers with a look into some of the key issues and activities VMA is actively addressing. Members can contact VMA for more detailed information. To learn about becoming a VMA or VRC member, contact VMA President Heather Rhoderick at [hrhoderick@vma.org](mailto:hrhoderick@vma.org).*

The Welsford Company, formerly known as F.S. Welsford Company, has been a leading valve distributor across the eastern half of Pennsylvania, Delaware, New Jersey, and New York City since 1965. As a third-generation, family-owned business, Welsford Co. continues to specialize in problem solving for customers for their valve and instrumentation needs. In their commitment to expand and enhance their services, Welsford Co. launched their e-commerce division, ValveMan.com. Over the past 12 years, ValveMan has become one of the premier online valve distributors in the country and is committed to continuing to grow. ([valveman.com](http://valveman.com) and [fswelsford.com](http://fswelsford.com))



## VMA Launches Expanded Resources for Members

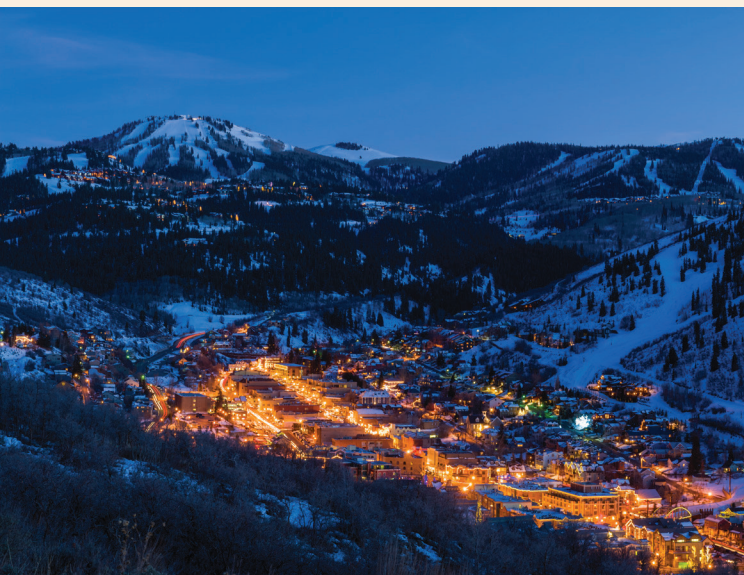
VMA is excited to provide our members with an expanded and updated Member Only Resources section, available to all members on the VMA website. Examples of some of the information available to members include: "Introduction to the Valve Industry" tutorial (perfect for new employees or those new to the industry); legislative and regulatory analysis and information on issues affecting our industry such as PFAS, trade & tariffs; presentations from past conferences and webinars; and a library of the VMA/VRC member e-newsletter, "Quick Read," so that members can keep up with the latest VMA and VRC activities and announcements. All members must have an online profile to view the information on the site.



## PFAS Implications for the Flow Control Conference & Member Exclusive Workshop Announced

VMA is expanding its offerings of education and tools to help the industry understand and prepare for PFAS bans and increased regulation. An industry-wide conference will be held on November 12, 2024, in Alexandria, Virginia. This conference will provide an overview of the global, federal and state PFAS activities to date, and cover research into replacements, testing, legal and liability considerations, insurance implications, current compliance requirements and supply chain implications.

An exclusive members-only workshop follows on November 13, 2024. The workshop will offer opportunities for further discussions with speakers from the previous day, and discussions on how different functional areas within companies are managing PFAS implications. The event is produced in conjunction with The Hydraulic Institute and Fluid Sealing Association. More information is available at [www.vma.org/pfasconf](http://www.vma.org/pfasconf) or see page 14 for registration and other information.



## Excitement Builds for VMA's 86th Annual Meeting

VMA's 86<sup>th</sup> Annual Meeting takes place in Park City, Utah, October 2-4, 2024, in conjunction with the VRC Annual Meeting, and is open to VMA and VRC member companies. The event provides the most unique opportunity in the industry to network with leaders, benchmark with competitors and business partners and have discussions on the most pressing issues affecting the industrial valve and flow control industry.

Topics this year include: the energy transition; market insights in hydrogen, oil/gas, and mining sectors; PFAS activities; potential implications of the 2024 U.S. elections; global business views; economic forecasts and more. Networking activities, a robust spouse/guest program and a gala featuring membership awards and dinner round out the event. VMA and VRC members can register and learn more by visiting [www.vma.org/annualmeeting](http://www.vma.org/annualmeeting), and for those interested in VMA membership, contact VMA President, Heather Rhoderick at [hrrhoderick@vma.org](mailto:hrrhoderick@vma.org).

Don't miss any of these events!

Visit [vma.org/events](http://vma.org/events) \*VMA/VRC Members Only

**October 2 - 4, 2024**

\*Annual Meeting | Park City, UT

**November 12 - 13, 2024**

PFAS Implications Conference & Members' Workshop | Alexandria, VA

**April 8, 2025**

Hydrogen Valve Summit | Orlando, FL

**April 8-10, 2025**

Valve Forum Conference & Exhibits | Orlando, FL



## Dates and New Location for the 2025 Hydrogen Valve Summit and Valve Forum

The VMA is excited to announce the dates for the 2025 Hydrogen Valve Summit and Valve Forum Conference and Exhibits. Both events will take place in Orlando, Florida, at the DoubleTree by Hilton Orlando SeaWorld, and both events are open to anyone in the industry – with reduced registration rates offered for member companies.

Following its resounding success in 2024, the Hydrogen Valve Summit will take place on April 8, 2025. Attendees can look forward to insightful presentations and discussions on current trends, governmental and academic perspectives, end-user applications, testing and qualifications, materials, and standards. The event concludes with a reception, will also serve as the opening activity for the Valve Forum, allowing attendees of both events the ability to meet with exhibitors.

Following the opening reception with exhibits on April 8, the event continues with educational sessions on technical, manufacturing, valve fundamentals, repair and business topics, as well as product demonstrations, hands-on opportunities, a tour of a local facility and numerous networking opportunities.



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### Call for Abstracts Now Open!

Are you interested in presenting at the Valve Forum or Hydrogen Valve Summit?

Join a renowned list of industry speakers

– submit your abstract for consideration by October 28, 2024, by visiting the event websites or contact Caitlin Hughes at [chughes@vma.org](mailto:chughes@vma.org).

See the ad inside the back cover for more information.

## Pulse Survey Information

VMA members have the ability to participate in a quarterly pulse survey on key economic and business environment indicators in the industry. VMA's Q1 & Q2 2024 Pulse Survey results indicate mixed sentiments and a changing outlook. From the start of the year, companies report an increase in shipments but less orders booked, indicating that there may be some leveling of backlog fulfillments. Labor challenges with both hiring and retention continue to be top of mind for executives, as well as concerns surrounding supply chain predictability and future regulations and governmental requirements. More detailed information is provided to VMA members and survey participants.

# VRC Board of Directors Ramps Up Activities

The Valve Repair Council (VRC) Board of Directors is gearing up for its annual business meeting at the VMA/VRC Annual Meeting later this fall. The Board is focused on developing a long-term vision and corresponding goals for the organization and has identified key priorities for growth.

First on the docket is finalizing the VRC Value Proposition which was originally brainstormed in 2021. Additionally, the Board will be working with legal counsel and the VMA Board of Directors to review and update the VRC Bylaws to ensure modern, efficient and relevant business operations. As part of this update, the Board will facilitate a call for nominations for new positions that will be announced later this summer.

Lastly, the Board is working to identify a date and location to hold the 2025 Valve Repair Seminar. Stay tuned for more exciting news and watch the VRC section of the VMA Member Only Resources for updates. The VRC Board invites all Valve Repair Council members to get involved with new projects and reach out to any of its members with questions or contact Caitlin Hughes at [chughes@vma.org](mailto:chughes@vma.org).



## NEW! PFAS IMPLICATIONS FOR THE FLOW CONTROL INDUSTRY CONFERENCE NOVEMBER 12, 2024

### AND MEMBER EXCLUSIVE WORKSHOP NOVEMBER 13, 2024

#### Join us to explore and better understand PFAS ban implications to your company and the industry

The current focus on banning all PFAS raises a significant threat to our industry, as many components and other parts rely on this substance to protect health, the environment and meet regulatory requirements.

- Current compliance requirements
- Legal and liability considerations
- Research into replacements
- Testing approaches and findings
- Supply chain and customer impacts, and more



#### Special Member Exclusive Workshop

On November 13, 2024, the exclusive session for members only, will offer opportunities for further discussions with speakers from the previous day, and discussions on how different functional areas within companies are impacted by a potential ban on PFAS.

Anyone who is responsible for managing or understanding the implications of PFAS on the industry and their company should attend.

Service providers – Reserve your sponsorship & tabletop display!

Location: The Westin Alexandria Old Town 400 Courthouse Square, Alexandria, VA 22314 (20 minutes from Washington, D.C. and DCA Airport)



Register Now and Find out More! [vma.org/PFASConf](https://vma.org/PFASConf)



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## HYDROGEN GENERATION

# Moving from Fossil Fuels to a Hydrogen Economy

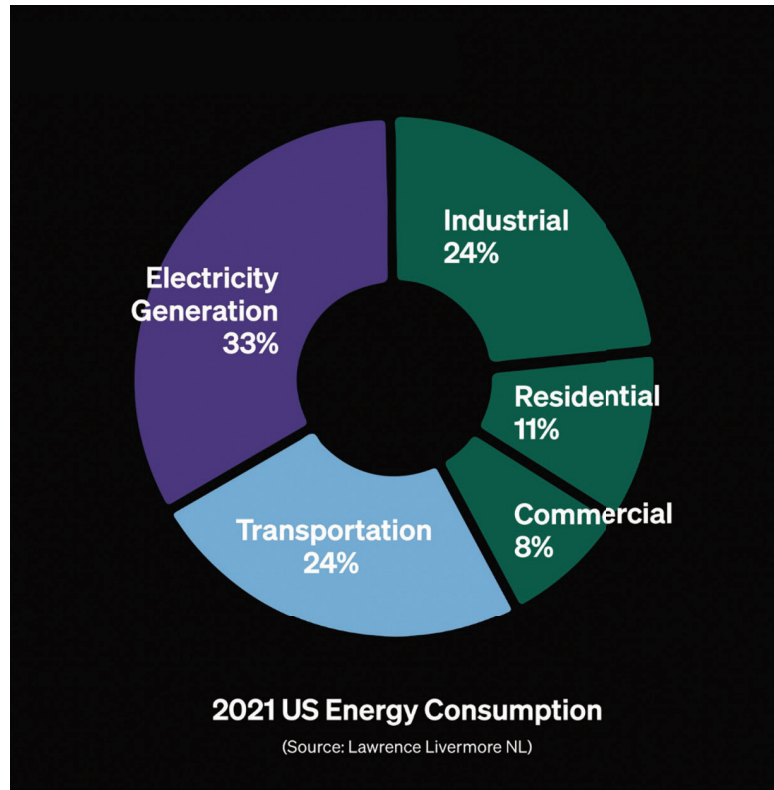
Manufacturers, standards organizations and industry are collaborating to accelerate hydrogen as a replacement fuel to power our grid and our economy.

BY: **HEATHER GAYNOR**, *Editor-in-Chief*  
COMPANY: VALVE MEDIA

**The Valve Manufacturers Association** held its first Hydrogen Valve Summit this spring in Houston, Texas. Speakers from across the industry presented on the opportunities as well as the challenges faced not only in the U.S. but around the world as we phase out fossil fuels for renewables, particularly hydrogen solutions.

Many experts say we must move faster to decarbonize to meet the goals stated by world leaders. With a stated goal of decarbonizing the U.S. electrical grid by 2035, at today's rate we'll need **three times** the overall generation capacity compared to 2020. Annual solar and wind deployments must occur at **four times** the current rates, and 200,000 miles of new high voltage transmission lines must be installed. For reference, only 675 miles of lines were built in the U.S. in 2022.

The carbon footprint of hydrogen is more than just production. Energy is used to convert the input material to hydrogen, as well as to compress or liquify it and to transport it via truck or rail and pipeline. Liquification makes transporting and storing hydrogen much more efficient as it is 853x denser in liquid form than in gaseous form, occupying only 1/1000 of its original volume in gas form. This makes storage and transportation more efficient and eliminates the need for new pipeline construction where it isn't feasible. It can be converted back to gas later to be processed as an energy source. All these factors must be considered



Source: Lawrence Livermore National Laboratory

when looking at the full impact of hydrogen production as the world moves away from traditional fossil fuels and to greener energy solutions.

But production isn't the only hurdle to building a fully renewable grid. Intermittency, storage, permitting, generation and transmission capacity, grid connections, workforce and lead times to production also factor into the equation. Testing is also underway to learn more about how the components that make up the grid and infrastructure will behave in hydrogen service. This includes metallurgical studies, leak tests and temperature tests as hydrogen must be transported at very low temperatures. While components are generally compatible with hydrogen, a lot still needs to be learned.

### Curbing Emissions

Today, it's estimated that more than 40 percent of emission in the U.S. come from heat generated by electricity, especially in large scale and non-conductive applications that don't work with today's technology. Even with a fully decarbonized electrical grid, high-heat applications require a faster and more effective decarbonization solution. To address this, a heating fuel is required that won't emit CO2 or other greenhouse gases, and clean hydrogen offers a very promising future.

Companies around the world that are exploring every aspect of decarbonization and greenhouse gas emissions reductions. Those working in clean hydrogen and moving toward hydrogen-based energy sources both for electrical grids and even for vehicles are making great strides. This article will discuss specific ideas shared at the forum, as well as highlight work being done by organizations globally



Source: Modern Hydrogen

to accelerate the transition to more hydrogen-fueled power.

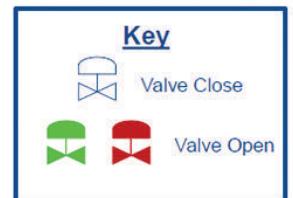
One way to accomplish this is through on-site pyrolysis. This method allows for companies to create two revenue streams (hydrogen and solid carbon), avoids transportation costs via distributed production, and bypasses reliance on infrastructure and renewables. Modern Hydrogen is one of the companies leading the charge in this technology.

### On-Site Conversion to Green Hydrogen

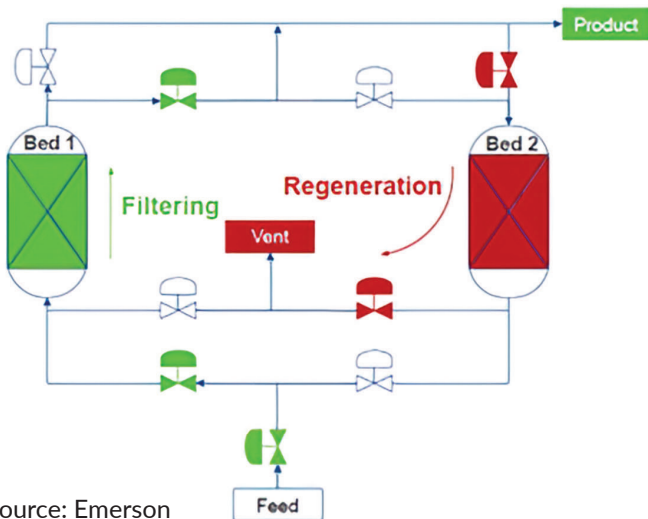
Backed by venture capital through Bill Gates, by utilities

such as NextEra Energy and National Grid, and by industrial companies, Modern Hydrogen is succeeding at proving that generating hydrogen via methane **pyrolysis** is not only viable but creates valuable byproducts. This process creates new revenue streams for companies that adopt it.

Pyrolysis of natural gas is possible today and doesn't require extensive new infra-

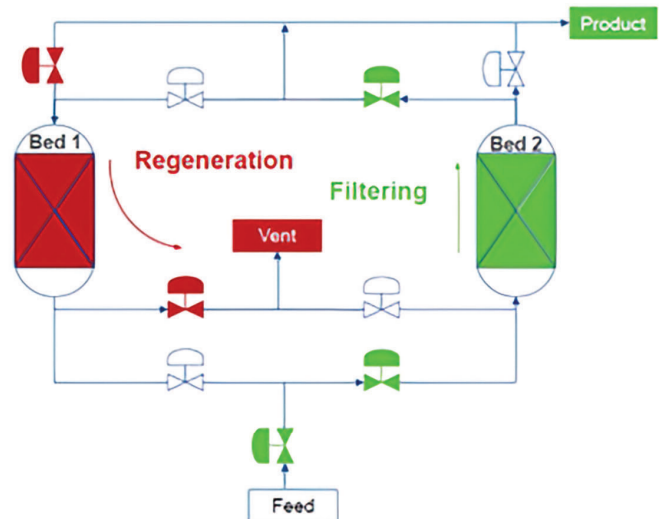


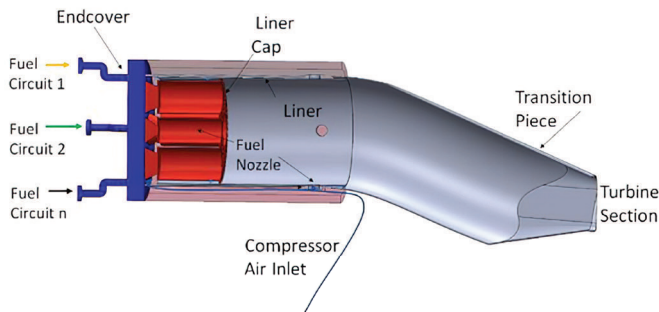
### Bed 1 – Off Gas Purification Bed 2 – Regeneration



Source: Emerson

### Bed 1 – Regeneration Bed 2 – Off Gas Purification





EPRI indicates parts of gas turbine combustion systems that may need to be adjusted for hydrogen service. Source: EPRI

structure or inputs. It can draw from the existing natural gas infrastructure already available. Today, the usage of natural gas is comparable to that of coal, nuclear, solar, wind and hydrogen energy sources combined. Notably, natural gas is already composed of about 80 percent hydrogen.

Natural gas (methane), RNG or biogas is piped from existing gas pipelines into on-site hydrogen generation units where the gas is heated until it breaks down into solid carbon and hydrogen molecules. The carbon is removed from the system in solid form and can be sold to companies to use in asphalt,

while the hydrogen is delivered for end-use applications, with a small amount recycled into the system to power it.

Modern Hydrogen’s modular methane pyrolysis units are relatively small, about the size of a shipping container, and can be placed on-site at facilities to generate the energy that powers industrial process energy plants, commercial steam boilers or transportation refueling centers.

The technology can also be placed earlier in the natural gas distribution process. For example, in Oregon, the hydrogen that is generated by Modern Hydrogen technology is blended into gas delivery lines at the Northwest Natural distribution center and delivered to businesses and homes via Portland’s existing infrastructure. With more than \$2 trillion of deployed natural gas assets across the United States, these Modern Hydrogen systems can be easily implemented into existing systems.

### Additional Technologies for Hydrogen Production

Another technology used to produce hydrogen from natural gas is **steam methane reforming (SMR)**. These projects are being initiated by downstream hydrocarbon industrial companies to remove CO2 and reduce greenhouse gas emissions (GHG).

**Pressure Swing Adsorption (PSA)** is another process used that separates the hydrogen from off-gas emissions by using two adsorption beds operating in parallel, with one bed puri-



**Production, Operations & Maintenance**

- CGA H-10, Combustion Safety for Steam Reformer Operation
- CGA H-11, Safe Startup and Shutdown Practices for Steam Reformers
- CGA H-12, Mechanical Integrity of Syngas Outlet Systems
- CGA H-13, Hydrogen Pressure Swing Adsorber (PSA) Mechanical Integrity Requirements
- CGA H-14, HYCO Plant Gas Leak Detection and Response Practices
- CGA H-15, Safe Catalyst Handling in HYCO Plants
- CGA P-89, Prevention of Plant Instrument and Utility Gas System Cross Contamination

**Delivery**


- CGA G-5, Hydrogen
- CGA G-5.3, Commodity Specification for Hydrogen
- CGA H-4, Terminology Associated with Hydrogen Fuel Technologies
- CGA G-5.4, Standard for Hydrogen Piping Systems at User Locations
- CGA G-5.5, Hydrogen Vent Systems
- CGA G-5.6, Hydrogen Pipeline Systems
- CGA G-5.7, Carbon Monoxide and Syngas Pipeline Systems
- CGA PS-31, Position Statement on Cleanliness for Proton Exchange Membranes Hydrogen Piping/Components
- CGA PS-46, Position Statement on Roofs Over Hydrogen Storage Systems
- CGA PS-48, Position Statement on Clarification of Existing Hydrogen Setback Distances and Development of New Hydrogen Setback Distances in NFPA 55
- CGA PS-69, Position Statement on Liquefied Hydrogen Supply System Separation Distances

**Storage**

- CGA G-5.4 Standard for Hydrogen Piping Systems at User Locations
- CGA G-5.5 Hydrogen Vent Systems
- CGA H-3 Standard for Cryogenic Hydrogen Storage
- CGA H-5 Standard for Bulk Hydrogen Supply Systems (an American National Standard)
- CGA P-28 OSHA Process Safety Management and EPA Risk Management Plan Guidance Document for Bulk Liquid Hydrogen Supply Systems
- CGA P-74 Standard for Tube Trailer Supply Systems at Customer Sites
- CGA PS-46 Position Statement on Roofs Over Hydrogen Storage Systems
- CGA PS-48 Position Statement on Clarification of Existing Hydrogen Setback Distances and Development of New Hydrogen Setback Distances in NFPA 55
- CGA PS-69 Position Statement on Liquefied Hydrogen Supply System Separation Distances

**Application**

- CGA G-5 Hydrogen
- CGA G-5.4 Standard for Hydrogen Piping Systems at User Locations
- CGA G-5.5 Hydrogen Vent Systems
- CGA H-3 Standard for Cryogenic Hydrogen Storage
- CGA H-5 Standard for Bulk Hydrogen Supply Systems (an American National Standard)

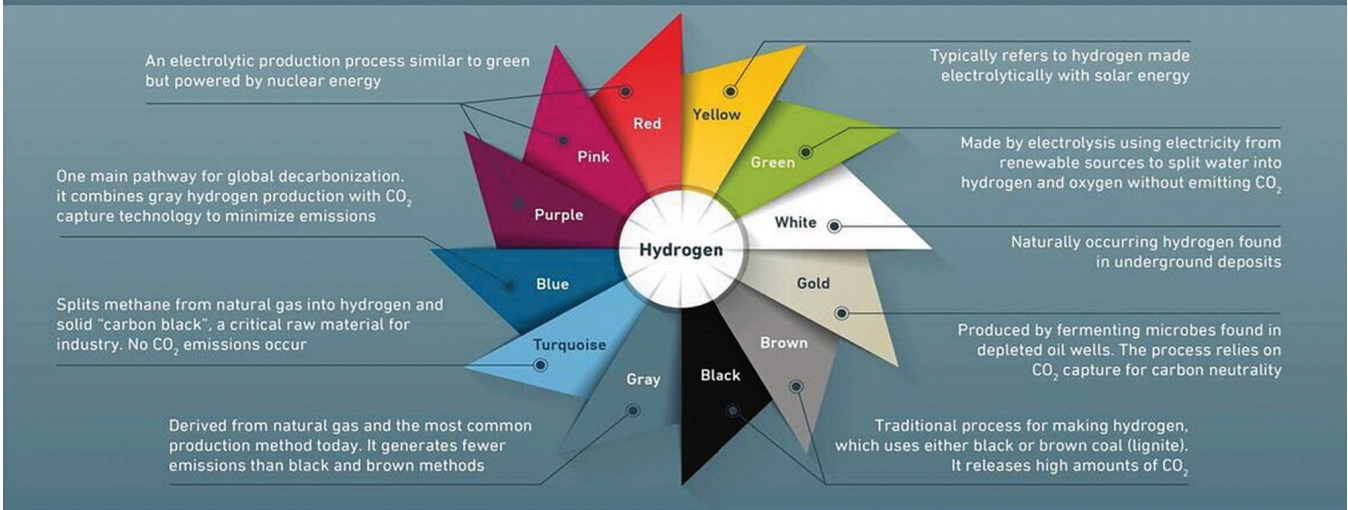


[SafeHydrogenProject.org](https://www.SafeHydrogenProject.org)

Source: Safe Hydrogen Project

## THE HYDROGEN COLOR WHEEL IS EXPANDING

Hydrogen is one of the key replacements for fossil fuels in industry and a critical factor in the race to net zero CO<sub>2</sub> emissions by 2050. But if there's going to be enough hydrogen to meet the expected growth in demand, low-carbon production of the gas will need to be scaled up. There is an expanding range of techniques to achieve this, each referred to by a different color



Source: Mitsubishi Heavy Industries Group



fyng the off-gas while the other regenerates. High purity hydrogen (above 99.9%) can be produced by PSA units according to Emerson.

Once hydrogen is extracted, it is often liquified for transportation at temperatures as low as -425°F (-254°C). At this extremely low temperature, embrittlement becomes a concern, with materials breaking down and cracking and allowing the hydrogen to escape, creating a source of fugitive emission.

EPRI, the Electric Power Research Institute, is currently working with a number of utilities around the world on a variety of hydrogen studies and demonstration systems to test the process from end to end. So far, they have found areas within gas turbine combustion systems that may need to be adjusted for hydrogen service are: fuel nozzles; coatings, based on new flame structures; liner and transition piece length and diameter, based on hydrogen flame speed; and combustor pressure drops, which may require changes to account for updated performance and turbine cooling requirements.

### Testing and Certification of Components

As would be expected, a variety of industry groups and standards organizations are developing new tests or modifying existing ones for components used in hydrogen service, transport and storage. Among these groups are ASME, MSS's Committee for Severe and Special Service Valves, including cryogenic tests and new standards regarding hydrofluoric acid service. These standards and recommendations are currently in committee and under testing and review. The

Compressed Gas Association represents member companies across industry and works with regulators, code developers and international standards bodies on technical guidance. Their Safe Hydrogen Project has mapped all its guidelines and regulations to date that are designed to ensure the safe storage, handling and transport of hydrogen.

### Types of Hydrogen

There are a number of different ways to describe and define the types of hydrogen being generated today. Using colors to denote the process used to generate the final hydrogen fuel, industry has settled on at least a few colors – green, blue and gray – but other colors are being described, too. Mitsubishi Heavy Industries has created a color wheel, showing the expanding nature of the hydrogen color assignments, as well as a description of how each "color" is created.

### The Path Forward

Even with all that still needs to be learned about moving our economy one run on hydrogen as a replacement for fossil fuels, there is a lot that is already known and technology that has been developed and is being proven out today. Companies like Modern Hydrogen are seeking customers to install their pyrolysis technology to move toward creating their own energy plants run on clean fuel. Emerson and Flowserve are two large valve manufacturers, among other products, that have dedicated enormous resources to testing existing components and developing new ones that will be required for hydrogen service to be widely adopted. Valve Magazine and the VMA will continue to provide content on these developments to readers, both online and in the printed magazine. X

CASE STUDY

# Sizing of Tailings Tank Level Control Valves in Mining Applications

Tailings tank level control valves in mining applications play a critical role in mineral processing, especially in the process of increasing water recovery, which is paramount for improving the environmental sustainability of mining projects.

BY: AMIR EMAMI, P.ENG. & MARIA AGUIRRE, P.ENG.,  
COMPANY: SPECIAL ALLOY FABRICATORS

Tailings tank level control valves in mining applications play a critical role in mineral processing, especially in the process of increasing water recovery, which is paramount for improving the environmental sustainability of mining projects. One example of this application in mineral processing is the tailings control valve at the bottom of an Eriez Coarse Particle Flotation circuit using HydroFloat technology. The throttling response, reliability, flow dynamics, wear resistance and sizing practices of the control valve in this critical service (crucial to the operation of the flotation cells) require a

comprehensive engineering approach to ensure the valve is properly designed to handle this abrasive service.

This article explains valve sizing practices to account for changes in slurry fluid behavior during the mine start-up phase versus normal operation. The changes in slurry fluid properties impact valve sizing and throttling response, and if not accounted for with proper engineering practices, can lead to valve and piping failures, resulting in unplanned downtime and repairs. The article is a case study of an in-service valve that was analyzed after its installation at Newcrest Cadia in Australia, demonstrating the coarse particle flotation technology.

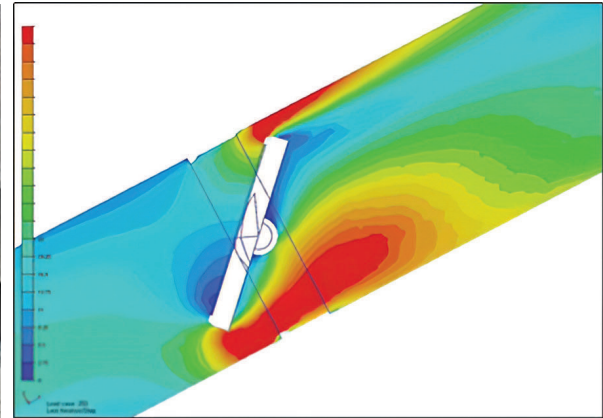
Cadia is one of Australia’s largest gold mining operations, owned by Newmont Corporation, and is found in central west New South Wales nearly 155 miles (250 km) from Sydney. The company produces gold doré bars, or unrefined gold, from a gravity circuit and gold-rich copper concentrates from a flotation circuit, which is the process this case study involved. The concentrates are piped to a dewatering plant then exported. The customer required severe service control valves that were designed to handle the challenging flow conditions of tailings applications need to have proper engineering checks and balances to ensure reliable service.

Customers like the Newcrest mine that deal with extreme abrasive processes, require product designers to have a design philosophy that ensures control valves for these processes provide the right control and the longest lifespan. This article proposes the following as a proven design philosophy approach:

1. Dedicated effort in sizing each valve for the full spectrum of process conditions.
2. Streamlining and optimizing flow components to reduce unwanted turbulence for the majority of the throttling positions of the valve.
3. Using the toughest materials available for flow components to slow the damaging effects of erosion.

In this particular technology test and demonstration, the Newcrest mine installed a valve with the coarse particle flotation technology, that was designed with the considerations above to mitigate the challenges in this tailings control application. In addition to evaluating typical process conditions covering minimum, normal and maximum flow conditions, the design engineer sought to understand the mine start-up flow conditions, which had vastly different

Metal seated butterfly valve damaged due to control of abrasive media. Source: SAF



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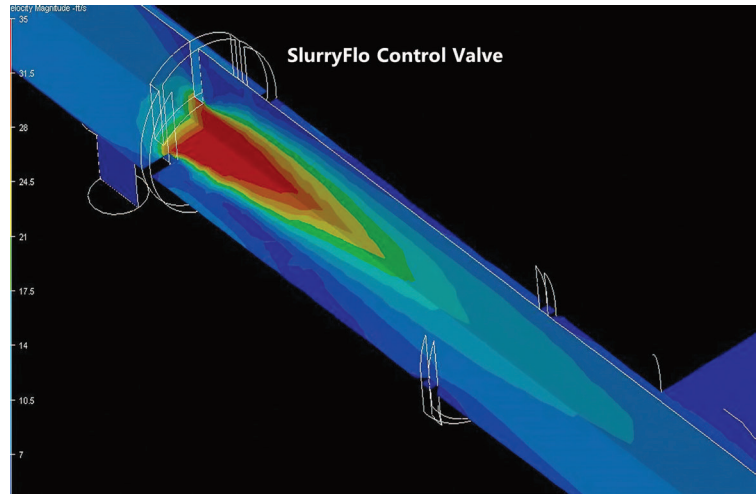
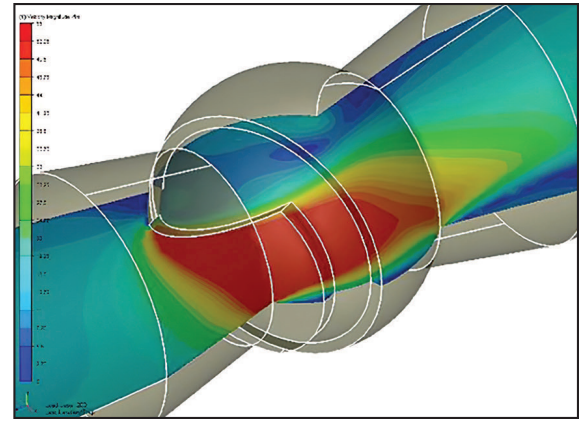
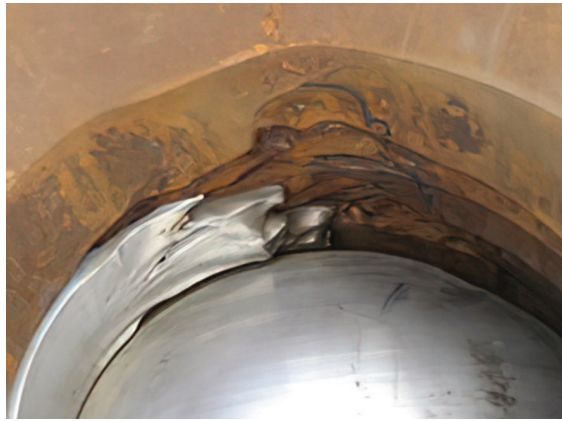
▶ MINING CASE STUDY

Metal seated ball valve damaged due to abrasive media. CFD of new control Source: SAF

flow environments and fluid properties that significantly impact the throttle characteristics of the valve. In this project, the mine start-up phase produced very high viscosity tailings, which are considered a non-Newtonian fluid, requiring a Cv (flow coefficient) correction method using high viscosity numbers. The science of valve sizing for non-Newtonian fluids is not exact, and there is no straightforward calculation; however, iterative approaches coupled with experimental data can assist a valve design engineer in ensuring the rated flow capacity of the valve can handle higher flow demands required with very high viscosity tailings fluids. This detailed flow and sizing analysis is a critical starting point in custom engineering a control valve for this type of service.

The next step was the design and development of the valve trim components, which are the parts that control

Computational fluid dynamic (CFD) image of the valve with the custom trim from SAF. Source: SAF



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OF THE VALVE AND FITTINGS INDUSTRY

# '24 SCHOLARSHIP AWARDEES

Congratulations to the 2024 Recipients of the  
MSS McClinton/Hannifin Scholarship Awards!

<p><b>Jonah Byrd</b> Morris, AL Auburn University <i>Mechanical Engineering</i> American Flow Control</p>	<p><b>Caralyn Conrad</b> Ipswich, MA UMass Lowell <i>Mechanical Engineering</i> A.W. Chesterton</p>	<p><b>Brady Livingston</b> Knoxville, TN Lenoir Rhyne University <i>Computer Engineering</i> Flowserve</p>
<p><b>Sarah Livingston</b> Knoxville, TN Tennessee Technological University <i>Mechanical Engineering</i> Flowserve</p>	<p><b>Jacob Mizer</b> Beaver, PA Ohio University <i>Mechanical Engineering</i> AUMA Actuators</p>	

For more information on MSS scholarships, membership, or standards, please contact: [membership@msshq.org](mailto:membership@msshq.org) or 703-281-6613.

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the fluid through the valve. An iterative approach using Computational Fluid Dynamics (CFD) simulations was employed to study the velocity gradients through the valve at different flow conditions and analyze flow parameters such as turbulence, eddies and areas of flow recirculation that could create excessive erosion damage to valve components. This design approach allowed the engineering team to minimize unwanted turbulence and evaluate valve performance in all throttling conditions while carefully monitoring the discharge jet and many other variables to predict valve performance in the field.

Another crucial design step in the custom engineering of a valve for this specific abrasive flow environment was the dedicated approach to streamline flow components. This final step of the design philosophy required selecting materials appropriate for the given application in terms of corrosion, temperature, pressure limitations and especially abrasion. In some cases, a proprietary composition of carbide was selected to balance toughness and strength with abrasion resistance, as these valves must function in some of the harshest flow environments with large solids and high-velocity tailings fluids.

Following the above described design and custom engineering philosophy, the reliable and predictable operation of severe service control valves designed to handle tailings discharge has been practically demonstrated at NewCrest. In many mining applications, end users are reluctant to use control valves for throttling high percentage solids tailings fluids, as they have proven to be difficult for most control

valve types. However, this test case demonstrated that for the specific severely abrasive control applications in this mining application, the right approach is an engineered valve designed specifically for the process conditions to ensure proper control while minimizing turbulence and centering the flow. ❗

**ABOUT THE AUTHORS**

**Amir Emami, P.Eng.** is a mechanical engineer and vice president of engineering at Special Alloy Fabricators (SAF). He has 14 years of experience in valve design, flow analysis and product development, and has led the engineering team with a dedicated approach to custom designing flow equipment for the last nine years.



**Maria Aguirre, P.Eng.**, edited this article and is a mechanical engineer and business development manager at SAF. She holds a master's degree in engineering and has 14 years of experience in the valve and automation industry



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## ESG REPORTING

# Ready for Life Cycle Assessment?

Suppliers are increasingly being asked to report data related to carbon footprint and environmental impact. The requirements are likely to spread through the supply chain. Here is an introduction to life cycle assessment (LCA).

BY: HANNAH MASON, *Sustainability Correspondent*  
COMPANY: GARDNER BUSINESS MEDIA

As manufacturers work toward requirements for reduced carbon emissions and overall environmental impact, many of these goals are likely to have ripple effects down the supply chain.

For example, a first step for many OEMs is to evaluate the current environmental impacts of their products through increasingly prevalent life cycle assessment (LCA) studies, which can help inform decisions about materials and processes for a particular product during its design or identify which areas of a process might have the highest environmental impacts to help companies make decisions about where to dedicate optimization efforts.

As companies conduct more LCAs, suppliers at each level of the supply chain are increasingly asked by OEMs to report their own data related to carbon footprint, water usage and other environmental impacts.

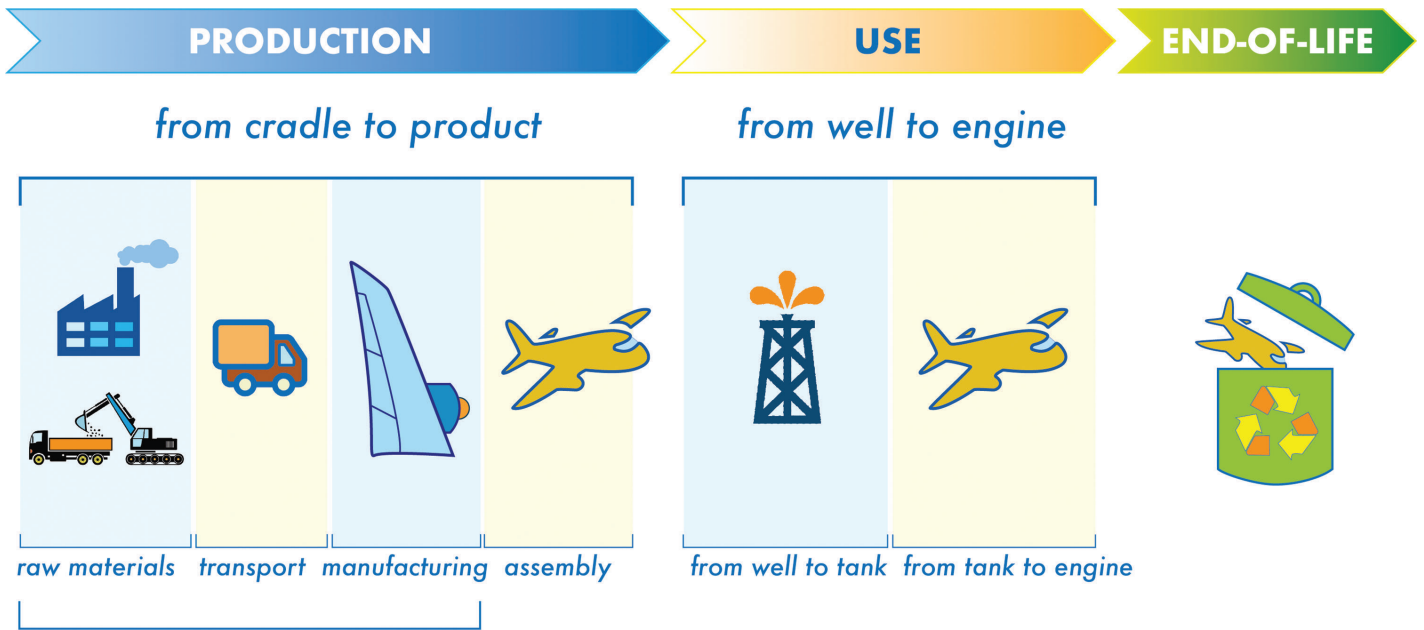
What is an LCA, and how can suppliers get ready to meet these needs?

### What Is An LCA?

Life cycle assessment (also called life cycle analysis) is a process for evaluating a product's environmental impact in multiple categories (for example, resource depletion, water and global warming potential [GWP]), across its full life cycle, starting from the production of its raw materials

Source: Getty Images





## CRADLE-TO-GATE

A cradle-to-gate LCA covers impact through manufacturing, while a cradle-to-grave LCA evaluates a part's environmental impact through production, use and end of life. Source: European Composites Association

through manufacture, use and eventual disposal at the end of its usable life.

A cradle-to-gate or partial LCA (commonly performed by suppliers) assesses impacts from the production of a product's raw materials through manufacturing of the part, ending at the point the product is ready for use by the consumer; a cradle-to-grave or complete LCA (commonly performed by OEMs) assesses the product through its use and eventual disposal at its end of life (EOL).

Either way, the goal is to quantify the carbon emissions of each step of the supply and value chain for a given product or process. Generally speaking, emissions are labeled by their scope. Scope 1 emissions are direct greenhouse gas emissions, such as those associated with fuel-burning facility equipment like furnaces or boilers, or by gas-powered vehicles. Scope 2 emissions are a company's *indirect* greenhouse gas (GHG) emissions, such as those associated with electricity or heat for the facility. Scope 3 emissions are also indirect emissions, but those that result from assets not directly controlled by the company in question — including everything from production of raw materials, transportation and distribution, and any other emissions not covered by Scope 1 and 2.

***A first step for many OEMs is to evaluate the current environmental impacts of their products.***

## LCA Guidelines and Standards

How are LCAs performed? While there is no global standard for conducting LCAs to date, there are several guidelines available with varying degrees of complexity and specificity. For example, ISO standards are widely used, primarily 14040 and 14044 — the former provides “principles and framework” and the latter provides “requirements and guidelines.”

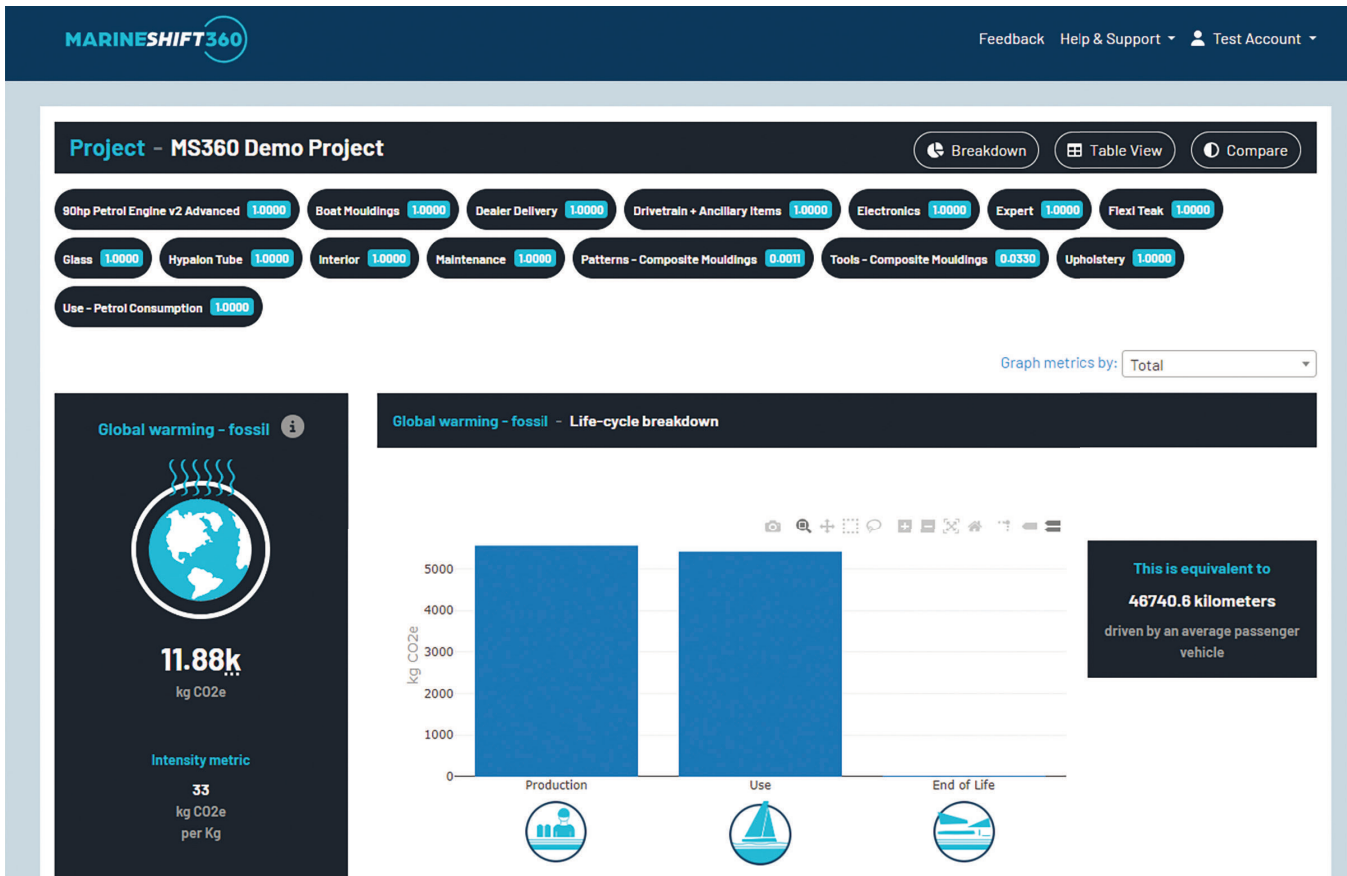
There are also a variety of other LCA guidelines for specific industries (such as ISO 22526 for bio-based plastics) and specific regions (like Japan's EcoLeaf program, the European Commission's International Reference Life Cycle Data System (ILCD) and proposed Product Environmental Footprint (PEF), currently under review.)

While specific LCA methodologies differ, in general these studies comprise three components:

- A section defining the goals, scope and units used in the LCA
- A life cycle inventory (LCI) which quantifies the carbon footprint of input materials as well as output emissions and waste
- An impact assessment which translates the LCI into a measurable climate impact. Per ISO 14040, for example, these final impacts are given in terms of global warming potential (GWP), or the carbon dioxide equivalent (CO<sub>2</sub>e).

## The Rising Demand for LCAs

So why are companies interested in LCAs now? First



This demo project from MarineShift360 illustrates the way the tool breaks down GWP/CO<sub>2</sub>e for each component of a boat. Source: Anthesis

conducted in the 1960s, LCAs have waxed and waned in popularity over time depending on the concerns of the day. Today, OEMs are facing greater demand for transparency into the “sustainability” of their products, spurred by environmentally conscious consumers as well as proposed legislation like the EU’s PEF guidelines.

For suppliers, this means customers may be looking for data into process or materials operations. Markus Beer, group lead for sustainability at automotive consultant firm Forward Engineering GmbH, explains that OEMs conducting LCAs need Scope 3 emissions data, obtained from carbon emissions data gathered from their suppliers.

He adds that in addition to working with customers, “Some Tier 1s and 2s do LCAs for other reasons — for example, they may want to differentiate their products against other materials or against competitors’ products.”

“The value of LCA really exists in its ability to, as a manufacturer, model all of your variables and find the lowest impact solution,” notes Ollie Taylor, associate director at sustainability consulting firm Anthesis Group. “LCA isn’t purely about reporting. It’s much more about finding optimization and eco-design. It’s a decision support tool. The trouble with LCA is, of course, that it’s time-consuming. And it can be very complex.” Therefore,

a number of tools are available today to simplify the process according to a company’s needs.

### LCA Tools and Approaches

One option is to employ a third-party consulting firm, in which case consultants will work with the company to define goals and parameters for the project, collect needed data and use their preferred or in-house software and databases to generate an impact report.

If a company wants to learn more about its carbon footprint data directly, there are now numerous software applications available — ranging in complexity, cost and target industry — that companies can use to conduct an LCA themselves.

While not an exhaustive list, common LCA software platforms include expert-level tools like LCA for Experts (formerly known as GaBi), from software and consulting services company Sphera; SimaPro, from PRé Sustainability; and Umberto, from iPoint-systems GmbH. There are also free, simplified tools available such as Greendelta’s openLCA, a several industry-specific tools such as the marine market’s MarineShift360, developed by Anthesis Group in partnership with 11<sup>th</sup> Hour Racing.

Companies can perform LCAs through either a top-down or bottom-up approach. A faster, top-down LCA will rely on data readily available in databases. Databases generate carbon emissions calculations based on averages of data provided to the database creator by primary suppliers. Because the data is based on modeled averages and not

the actual specific information from a product's real-life supply chain, the generated carbon footprint information will be an estimate. Top-down approaches are ideal for early product design phases, when the materials and process are likely to change.

A bottom-up approach is more in-depth and more accurate, conducted after selecting a product design and its processes and materials. This type of LCA requires specific data from materials suppliers and manufacturers.

### Challenges and Potential

As additional research, regulations and tools continue to be developed, Anthesis Group's Taylor cautions that understanding the reason behind conducting an LCA remains vital. "Because we don't have one common way of doing LCA at a global level, companies can manipulate LCA results to support whatever case they want to make," he says.

One way to combat using LCAs for data manipulation or greenwashing is increased data availability from suppliers. "As more companies publish data, the more accurate the numbers will be, and the more critical review we can have of what it all amounts to," Taylor says. Common guidelines and legislation will also help, "but regulations are slow. I see legislation hitting people in the pocket in probably 10 years."

On the other hand, using data through LCA work can also help determine whether a particular sustainability-related solution actually reduces the carbon footprint or not.

Ultimately, in an era where data and digitalization in general are a growing focus for many manufacturers, LCA is another tool to use data specifically for achieving environmental and sustainability goals within their supply chains. Taylor adds, "If you don't have the data, you're shooting in the dark. LCA is a core tool that allows you to measure the data, simulate what can change and then set a path of travel that reduces your impact. In the last two years, there's been much more awareness within our client base that they need to start doing this if they're serious about reducing their impact on the world, and I think it's only going to keep growing." ❗

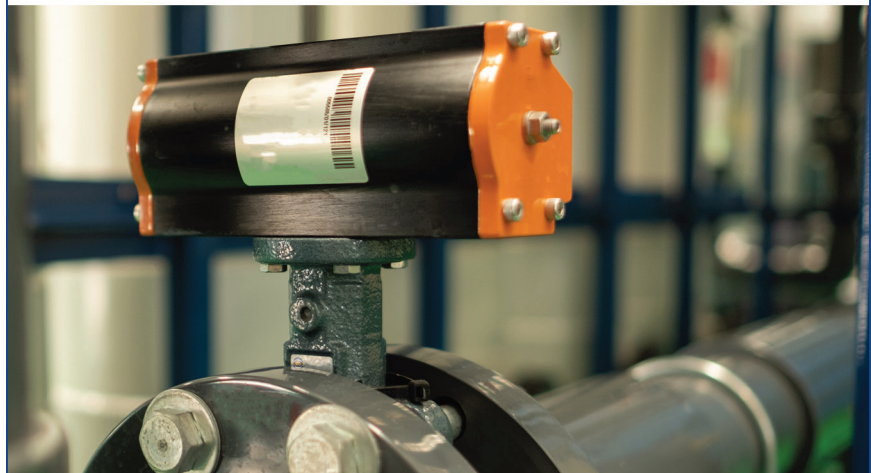
### ABOUT THE AUTHOR

**Hannah Mason** reports about the composites manufacturing industry for *CompositesWorld* and about sustainability in manufacturing for parent company Gardner Business Media.



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## INSIGHTS

# Are You Using AI in Your Business?

Artificial intelligence tools can help businesses function better. Here are some suggestions on where to start.

BY: MATTHEW KIRCHNER, *Contributing Writer*  
COMPANY: TECHED PODCAST

A recent study by Pew Research Center suggests that by February 2024, 20% of employed Americans had used ChatGPT at work, more than doubling the 8% who said they had in March 2023. What about this study is most surprising? By February, only 1 in 5 had used the tool on the job! The businesses in which I'm involved literally could not function without our use of artificial intelligence (AI) tools, including but far beyond ChatGPT, and I worry about what the future holds for the 80% of us who haven't yet started using the most basic of AI tools.

The pressing question for many embarking on their AI journey is where to begin. Mike Dover serves as president and CEO of The Wagner Companies, an employee-owned Wisconsin manufacturing organization. Dover relayed to me some terrific advice he gleaned from a presenter at a recent conference. For those who want to delve into AI and

aren't sure where to start, Dover suggests picking a single AI platform and making it their go-to.

This approach makes the process of getting started much less daunting and once a company finds a simple starting point, the adoption of other AI platforms flourishes from there. In the case of our family of companies, we're now using more than a dozen AI platforms to operate our businesses. While some like **Data Factory** and **Azure** are more advanced, perhaps one of the following offers AI newbies a launching point.

**ChatGPT** is the free and easy button and everyone in manufacturing should already be using it regularly for tasks, including inspiring writing, drafting simple emails, creating rough drafts of work instructions and troubleshooting process issues. A simple download from the app store and you're off and running.

I like **Perplexity** even better and use it more often than ChatGPT for answering simple questions one might otherwise search on an internet browser. The best example to illustrate its value will resonate with anyone who has ever searched Google for a dinner recipe, Tuscan Chicken for example, chosen a link from the search results provided and then waded through 10 pages of the history of Tuscany, the history of chicken, the history of Tuscan Chicken and the 20 best ways to prepare chicken before finally landing on the recipe. Perplexity takes you right to the recipe. I use this relatable example, but the platform readily answers business and manufacturing questions with the same precision and efficiency.

For those using Microsoft, **Microsoft Copilot** is a straightforward place to begin using AI. Think of Copilot a bit like using ChatGPT, trained not just on a huge data set but because Copilot might access the user's own emails, calendar, documents and other user-specific data, it can offer responses and content catered more specifically to the individual organization. Todd Wanek, CEO of the world's largest furniture manufacturer Ashley Furniture Industries, joined me on the TechEd Podcast and shared how his organization is experimenting with this tool.

**Ren Systems** offers an easy entry point. We uploaded our



entire contact database, 26,000 names in all, and receive daily updates whenever a contact or their company appears in any of 350,000 news sources. We know about things happening in our network long before anyone else and act accordingly. The company's CEO, Canay Deniz, joined me on The TechEd Podcast to explain.

Speaking of the podcast we cut our required back-end show production time by more than half using **Otter.ai**. In our case, we use this voice transcription software to convert audio to text for much more efficient editing of raw audio to the finished product, but this platform also creates automated meeting notes and action items using AI. When it comes to producing our video content, **Riverside** is an invaluable AI-backed tool. Likewise, if you've ever wondered how TikTokers create text over their videos, **descript** shows you how

These days I'm delivering several keynotes each month on the topic of applied AI and **Midjourney** is becoming an indispensable tool for PowerPoint image creation. Using the social platform **Discord**, I simply write a text prompt of an image I want to use in a slide and Midjourney utilizes generative AI to create the desired image. The platform is in open beta stage so it's not quite perfect, and writing prompts in a way that produces the right image takes some practice, but Midjourney is a phenomenal platform for creating original images using AI.

When it comes to graphic design, **Canva** is a free online AI tool that can be leveraged to create everything from social media content to videos to logos.

Ashley Furniture's Wanek suggests performing an AI readiness survey when determining which departments or teams are most ready to begin their AI journey. In our case, it's our marketing team.

They regularly use the AI platform **Grammarly** to optimize written communication. This app rides along with the user when drafting emails, producing social media posts and completing other written tasks, making suggestions on grammar, spelling and style as you go. This team also leverages **Hemingway Editor** and Buzzsprout's **Cohost AI** in their daily work.

There are myriad AI starting points available. The key is to start. Five years from now there will be two types of manufacturing companies, those who leverage AI across every element of their business and those who – strike that. Five years from now there will only be one type of manufacturing company. The future of your business rests on its rapid adoption of AI and if you're one of the 80% who hasn't yet started, the time is now. 🚀

## ABOUT THE AUTHOR

**Matt Kirchner** is an international speaker, author and podcast host on topics of interest to educators, public policy makers and private employers. Previously Kirchner led three world class manufacturing companies during a 20+ career as an industrial CEO. He and his partners sold their last company, American Finishing Resources, to DuBois Chemicals in 2014.



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## LAB CLEANLINESS

# High-Purity Labs Require Careful Planning

When a new product is required to meet a minimum level of “clean” consistently, your existing quality lab environment may not be sufficient in its current state.

BY: PETER FEAMSTER, *Product Management Director*  
COMPANY: JOMESA NORTH AMERICA

**EDITOR’S NOTE:** *Many valve and actuator companies manufacture high-purity products, or products that require specific cleaning to ensure no contaminants are present when shipped to customers. What follows appeared initially in Products Finishing Magazine, but has been repurposed and edited for the readers of Valve.*

**Manufacturing cleanliness** is a metric that must be considered far beyond the lab inspection reports for any given component or assembly. When a new product is required to meet a minimum level of “clean” on a consistent basis, your existing quality lab environment may not be sufficient in its current state.

Even if you currently perform contamination testing in some fashion, there are several key points your quality team should consider before moving forward with new cleanliness requirements that might be impossible to reach with your current lab process and equipment.

### Specifications/cleanliness requirements

The first and more important point to consider is the new cleanliness requirement(s) to be analyzed by your lab. Assuming your lab already has the capability to prepare a cleanliness test filter sample, you should confirm the ability to achieve the proper “blank” value with your equipment according to the ISO 16232 standard method

A blank test will analyze the cleanliness of your test equipment and environment alone, without the presence of

a test part. Refer to ISO 16232:2018, Chapter 6. The amount of contamination present on your handling equipment should not contribute significantly to your component test; the blank test will confirm that.

If your facility has already produced similar components with similar requirements, it would be reasonable to assume you can meet those requirements in terms of blank values on your test equipment. However, if the new component has a much stricter requirement, the first step in qualifying your lab is to prove ability to meet blank levels consistently.

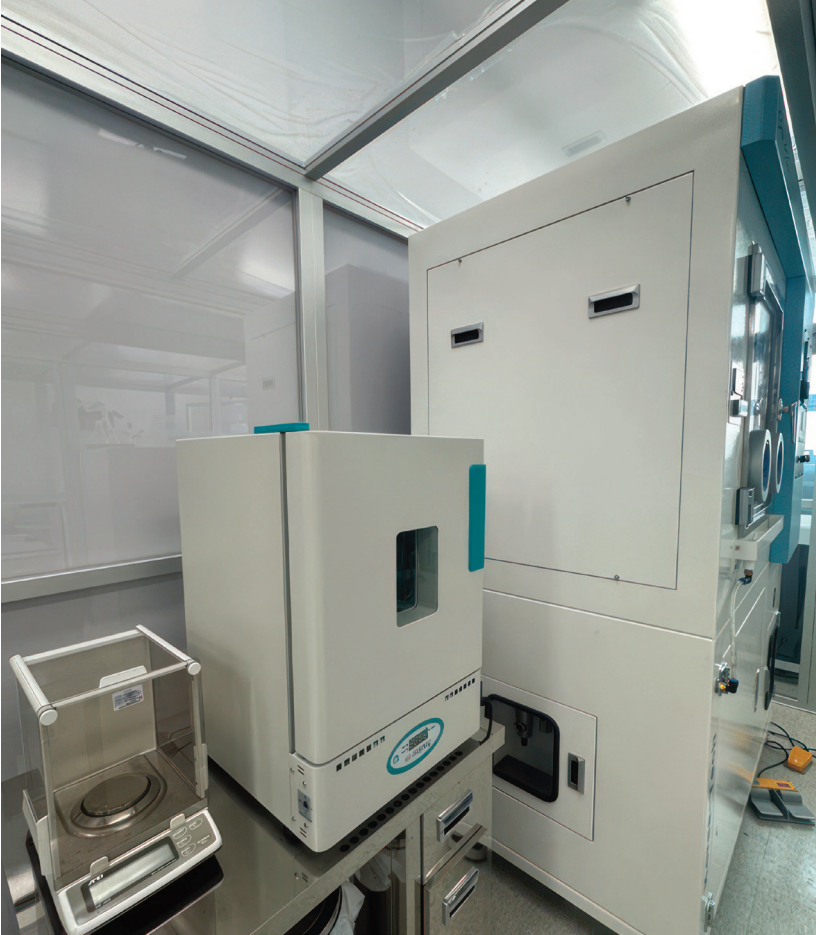
If you are starting a new test lab from scratch, consult with equipment manufacturers and industry experts to ensure you are procuring the right equipment to meet the requirements you have. A majority of cleanliness requirements can be analyzed with the same set of tools with only minor adjustments.

### Trained staff

When new cleanliness specifications are implemented, the staff in charge of performing the tests must fully understand and be trained in the methods for preparing and analyzing the samples. If the new requirements are put in place by an outside customer or OEM, the customer should offer support to explain how the test should be done in order to match the process at the OEM. The only way to ensure the test is done repeatably is to coordinate the materials and equipment so the process can be matched as closely as possible. General ISO 16232 training as well as supplemental training from your lab equipment manufacturers can be helpful to understand new specifications.

When creating a new test lab from scratch, consult with equipment manufacturers and industry experts to ensure you are furnishing the right equipment to meet requirements. Most cleanliness requirements can be analyzed with the same tools. Source (all photos): Jomesa North America





There are several key points your quality team should consider before moving forward with requirements that might be impossible to reach with your current equipment.

### Layout

The layout and workflow of your test lab can impact your results (especially blank tests). Cleanliness testing results do not need to be an expression of how clean your entire lab room is (unless absolutely necessary). It is important that your test process is isolated from the open-air environment of the plant as much as possible.

Test processes should be isolated from the open-air environment of the facility as much as possible. Also, consider the layout and workflow of the test equipment,



Foot traffic should be kept to a minimum to avoid unnecessary dust and fibers from collecting in the area. The test equipment should be kept far away from metallurgical saws and machining tools. A regular dusting and cleaning routine for all surfaces is critical.

When possible, the testing area should have a positive air pressure by forcing filtered air into the room and enabling the air to flow toward the floor and out beneath/through the doorway or other exhaust vents on the floor. This is the ideal way to control excess dust and fibers from collecting on your test equipment. If you discover that you cannot pass a blank-value test because of fibers or small dust particles, consider the location of your equipment and the airflow in that space.

### Measurement equipment

Most cleanliness requirements can be measured with the same types of equipment. It is important to have the proper glassware (beakers, vacuum flask, filtration funnels, fritted-glass filter holder and so on) that fits the size and number of components you need to analyze. This also holds true for

any rinsing trays or cabinets; the component to be tested must fit easily and safely inside to capture the contaminants that are rinsed off. Large parts may require fixtures to hold the component at certain angles to rinse the necessary areas for analysis. You might also need a much larger flask to hold the amount of fluid necessary for each test.

For the actual particle measurement process, you must confirm that your microscope is capable of reporting the particle size and count requirements for the new specification. For example, if your lab has followed the ISO 4406 particle counting standard in the past, this does not necessarily mean that your microscope is appropriate for the ISO 16232 standard. Contact your microscope manufacturer to discuss your specific needs. ❗

### ABOUT THE AUTHOR

**Peter Feamster** is the product management director for Jomesa North America Inc., a manufacturer of microscopic filter analysis equipment.



# VALVE Basics Plastic Valves

Polymer materials of construction expand capabilities of valves for specific applications.

BY: ALAN BLACK, PRODUCT MANAGER  
COMPANY: EQUILIBAR

Choosing the optimal material of construction for a valve can be a consequential decision when designing fluid control systems. Some materials can handle corrosive chemicals while others are suitable for high temperatures. Some offer environmental advantages and others are cost effective. In advanced, complex applications, multiple factors are usually involved, so it is valuable to have a wide selection of materials.

Metals have been used to make valves since the Romans fabricated bronze plug valves to use in their waterworks, if not earlier. Even today, the majority of valves continue to be made of some type of metal, with

materials ranging from inexpensive die cast to aluminum, brass, stainless steel and finally high performance high-nickel alloys such as Hastelloy and Monel.

At the same time, modern plastics such as PEEK, PVC, PTFE and polypropylene play an increasingly important role in valve design. These materials can allow valves to perform in service conditions that would have been impossible a few decades ago, including many pharmaceutical, semiconductor and chemical processes that have impacted countless lives around the world. Plastic valves will no doubt continue to enable cutting edge innovation even as scientists and engineers deal with the environmental challenges that current polymers sometimes present.

## USE OF POLYMERS IN SEALING AND VALVE SEATS

Most commercial valves use polymers for their static and dynamic sealing, including the main closure seat. For static or sliding seal applications, polymers or elastomers (polymers with viscoelasticity) are often selected due to their ease of use, robustness to a wide range of tolerances and generally good leak tightness.

For the main valve seat closure, polymers are also robust to a wide range of tolerances and provide for Class VI or bubble-tight shut-off, which is adequate for most industrial and chemical applications.

While metal/metal seals and shut-off are considered to have the tightest sealing performance and are especially useful when working with high vacuum or small molecules like hydrogen or helium, they are more difficult to work with, requiring much more force and much tighter tolerances. As a result, metal/metal seals are usually used only where required.

*This single-use valve is made of USP Class VI polymers with a reusable stainless steel cradle and is a particularly good choice for applications in biopharmaceutical manufacturing because the valve body can be gamma irradiated for sterilization prior to use. All Photos Source: Equibar*

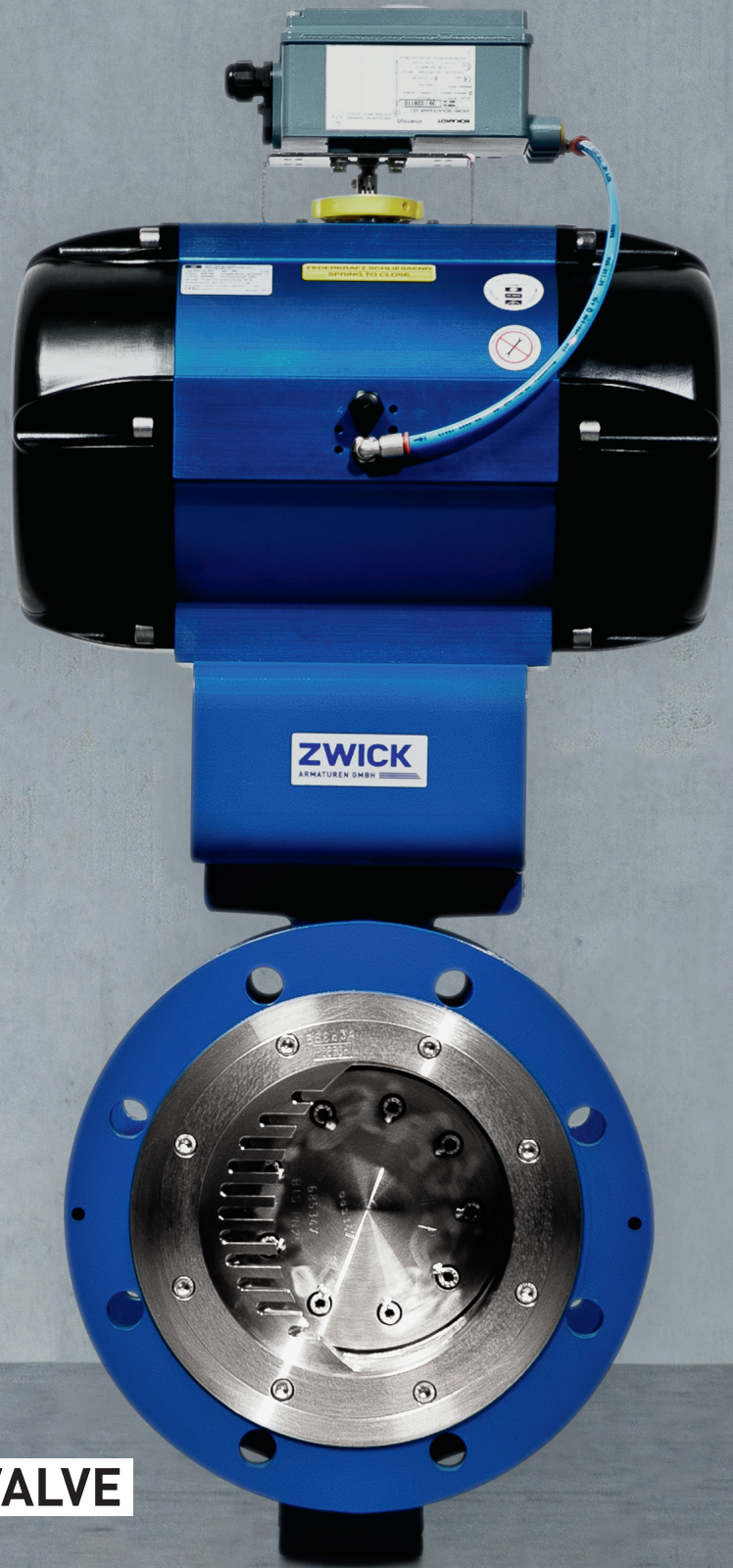


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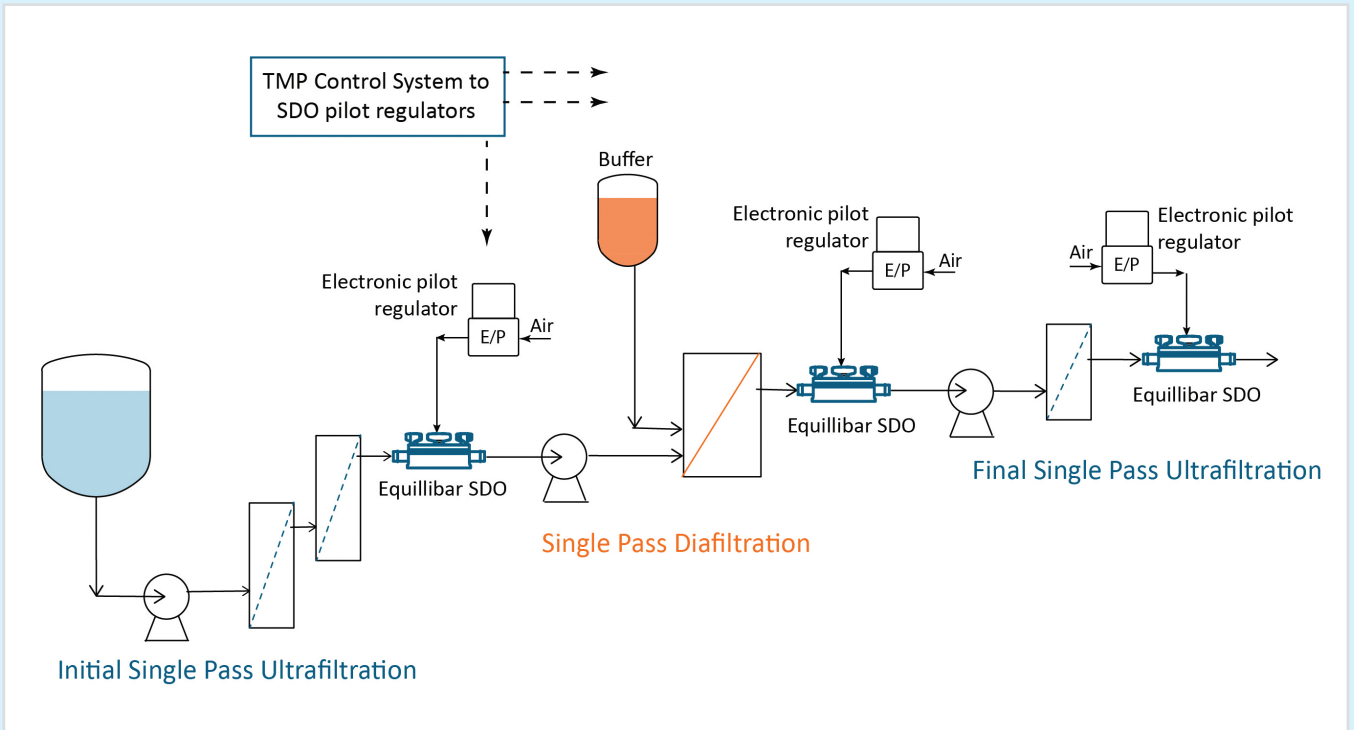
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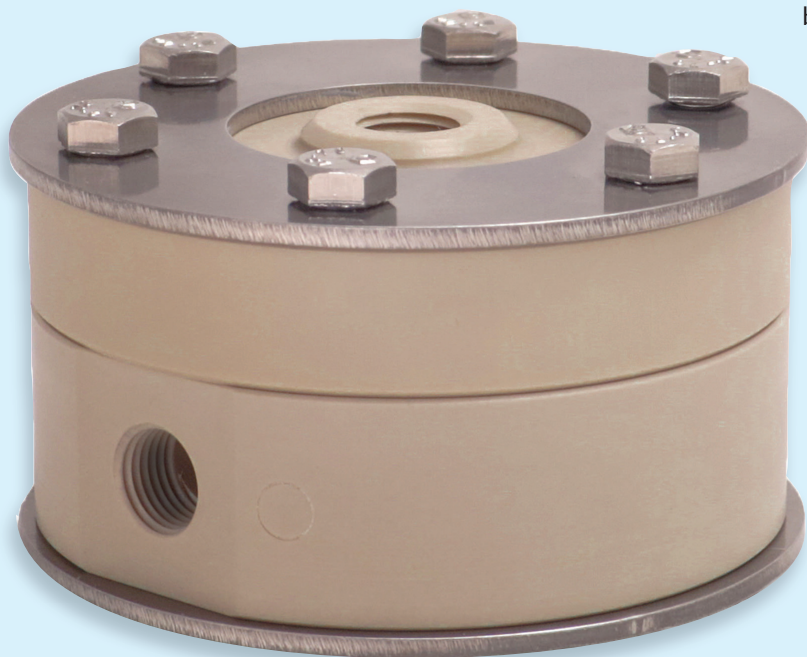
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Three single use polymer back pressure regulators provide transmembrane pressure control in a Single Pass Tangential Flow Filtration (TFF) biopharmaceutical application.

A low flow back pressure regulator in polyether ether ketone (PEEK) can be a good selection for ultra-pure water applications involved in semiconductor manufacturing.



### USE OF POLYMERS IN VALVE BODIES

Plastic bodies are not as widespread as polymer valve seats. They are usually specified for one of the distinct advantages they offer, including:

- Lower cost of some polymers
- Ability to be injection molded
- Superior resistance to acids, bases and certain corrosion attack modes
- Ability to provide superior ultra clean technology by avoiding metal ion contamination, as is required in semiconductor applications and related fields
- Ability to be gamma irradiated for single-use biopharm and medical applications
  - Ability to be easily welded to flexible tubing for biopharm and medical applications

At the same time, these advantages must be weighed against potential disadvantages of plastic valve bodies. Depending on the specific polymer, these may include:

- Pressure limitations
- Temperature limitations
- Inability to reliably predict stress failure, requiring extra consideration for pressurized gas above 7.25 psi (0.5 bar) pressures
- Lack of structural robustness, requiring extra support
- Susceptibility to solvent attack for certain polymers
- Potential for static discharge in special applications
- Environmental and health concerns

## POLYMER LINED VALVES

When an industrial process requires high pressure and/or extreme temperature together with excellent corrosion resistance, a polymer lined metal valve is often the solution.

Polytetrafluoroethylene (PTFE), perfluoro alkoxy (PFA), and polyvinylidene difluoride (PVDF) are high value fluorinated materials that resist aggressive chemicals, but they are structurally weak, soften with temperature and are too expensive to be used in large installations. These complex lined valves are typically cast from carbon steel and lined with intricate sleeves of fluorinated polymer and seals.

## APPLICATIONS

Not surprisingly, certain industries tend to value the advantages of plastic valves more than others. These include the following:

### Chemical Processes

Chemical processes using all-polymer piping and fluid systems are the most common type of industrial application using plastic valves. For example, injection-molded trunnion ball valves are dominant in plastic piping systems. Such systems are selected for their low cost and excellent chemical resistance.

Many polymers are used in these systems, including:

- Polypropylene for excellent chemical compatibility, good cost and moderate temperatures
- Polyvinyl chloride (PVC) for lowest cost and with moderate temperature service conditions
- Chlorinated polyvinyl chloride (CPVC) for improved temperature compared to PVC
- PVDF at higher cost, but offering very high chemical compatibility and higher temperatures
- PTFE, PFA, and acrylonitrile butadiene styrene (ABS) for specific requirements

### Single Use Biopharm and Medical Applications

The high cost and complexity of sanitizing valves and other fluid components has led to a large movement toward single use components and tubing in biopharmaceutical and medical applications. The ability for gamma and other high-energy radiation to penetrate polymer components, as well as the hygienic nature of injection molding, has caused valves made from certain polymers to be increasingly selected in these applications.

Polymers should be selected considering gamma stability and typically include polyethylenes, polypropylenes and other materials capable of being rated as USP Class VI and ISO 10993. Pressure ratings for these liquid valves are typically not greater than 60 psig, and they are often used below 10 psig, making these applications well suited for plastic valves.

### Residential Water Systems

Residential potable water systems frequently use polybutylene (PEX) or acetal (POM) valves to meet cost, puri-

ty, and reliability requirements. Residential drain systems frequently use PVC valves and piping in larger sizes for cost reasons.

## Ultra-Pure Applications for Semiconductor and Related Technologies

A big user of high-value polymer valves is that of ultra-pure applications where metal ion contamination is a concern. Ultra-pure water (UPW) is surprisingly aggressive as a chemical. During the purification process, trace metal ions are removed. As a result, the UPW creates a high affinity to strip metal ions out of even high value stainless steel piping and valves. Therefore, the use of piping and components made of inert plastics such as PVDF, polyether ether ketone (PEEK), or olefin (polyethylene, polypropylene) is a requirement for maintaining ion-free liquids in a wide variety of semiconductor, photography and other sensitive processes.

## Environmental Concerns about Fluorinated and Microplastics

Virtually all segments of modern manufacturing, including the valve industry, are grappling with increasing scientific evidence showing the harmful effects of accumulated PFAS and microplastics in water supplies and living organisms around the world.

As a recent article in this magazine explained in detail, the issue of forever chemicals — as these materials are known — is extremely complex. Fluorinated polymers like PTFE, PFA and PVDF have certain properties that our modern technology could scarcely survive without. In addition, these materials are key to green energy innovation such as hydrogen applications that promise to have a positive environmental impact. They are also key to the production of life-saving medications.

The challenge for valve engineers going forward will be to balance competing needs and use the most appropriate materials for each application. The mindful consideration of factors such as end-of-life recycling and disposal will become increasingly important, as will the adoption of emerging technology capable of destroying forever chemicals in the environment or otherwise mitigating their harmful effects. ❗

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## ABOUT THE AUTHOR

Physicist Alan Black is lead applications engineer and product manager for Equilibar, part of the Richards Industrials family. He specializes in using computational modeling to predict valve performance, with a special focus on hydrogen fluid control and aerospace applications.



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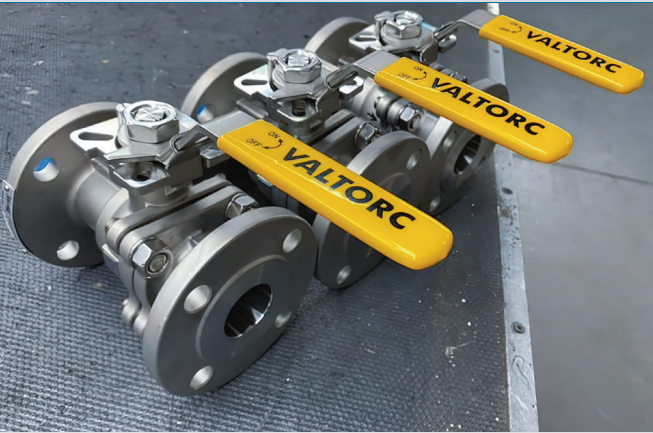
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# LATEST LAUNCHES



## Valtorc International Launches New Fugitive Emissions Valve

Valtorc Series 197 ball valves were designed for corrosive media applications with a flanged end design that will fit most piping applications. With high performance PTFE seats for highly corrosive media applications, the Series 197 ball valves are available from ½-in. to 6-in. The valves are available in stainless steel and in carbon steel, with either manual handles or fully automated with pneumatic or electric automation. The valves are readily available with standard lead times and are ready for immediate purchase. [valtorc.com](http://valtorc.com)

## IMI Unveils First HIPPS for Hydrogen Post-Production Processes

IMI has unveiled what is believed to be one of the first high-integrity pressure protection system (HIPPS) to protect against overpressure propagation during the hydrogen post-production process. The new HIPPS is specifically engineered to isolate the source of dangerous high pressure, instead of relieving the excess flow in the case of an overpressure event. This offers a critical layer of protection for pipelines and downstream components and promotes the safe storage of hydrogen post-production, prior to its transportation to the point of use.

The system uses electronic transmitters specifically designed for hydrogen applications and an electronic logic solver to sense a potential overpressure event. If triggered, failsafe valves will be activated within two seconds to isolate the exposure and protect the downstream assets and plant personnel.

For more information on IMI's HIPPS for hydrogen power generation, visit the company's website. [imi-critical.com](http://imi-critical.com)



## Emerson Enhances Control System Software

Global technology and software manufacturer Emerson is further expanding the DeltaV Automation Platform with the DeltaV Version 15 Feature Pack 2 update for its distributed control system (DCS). This feature pack release allows users to easily transition to a DeltaV DCS from more third-party control systems, expands support for data-rich Ethernet device networks and reduces the complexity of state-based control implementations.

As plants try to capture the most elusive performance gains to meet today's ever-increasing efficiency and sustainability goals, they are looking for technologies that modernize control without excessive engineering risk, overhead and downtime.

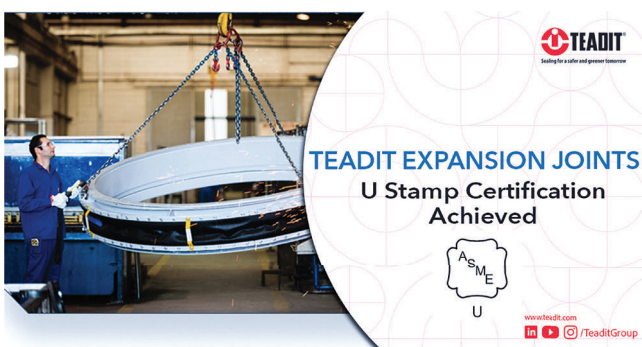
The latest release of the DeltaV control system continues the regular cadence between major DeltaV releases to help users more quickly realize the project savings and operational efficiencies that come with new features for their control system software.

Plants can now transition to a modern DeltaV control system from the most common third-party systems — immediately reaping the benefits of modern control — and transition their I/O infrastructure gradually, on their own schedule, to minimize downtime and risks. [emerson.com](http://emerson.com)

## Teadit Receives Certification of Standard Achievement

Teadit, an industrial sealing solutions manufacturer, announced it has achieved the highly coveted U-Stamp certification from the American Society of Mechanical Engineers (ASME). This achievement marks a milestone in Teadit's commitment to providing high-quality and innovative solutions for unfired pressure vessels.

The U Stamp accreditation is awarded to organizations meeting stringent ASME standards for pressure vessel design, fabrication, inspection and testing. These stamps differ from other QA/QC stamps as they are granted based on standards that a third party develops. This accreditation underscores Teadit's dedication to maintaining the highest levels of safety and reliability. [teadit.com](http://teadit.com)



## SAMSON Awarded Certification for Additively Manufactured Pressure Equipment

SAMSON has been certified for its additively manufactured pressure equipment for use within the scope of the European Pressure Equipment Directive (PED) 2014/68/EU (PED). The certificate issued by TÜV SÜD Industrie Service GmbH confirms that SAMSON is qualified to additively manufacture high-quality pressure equipment in series and to place this equipment on

the market. This certification is a major achievement in valve engineering.

Additive manufacturing is of strategic importance to SAMSON since it opens up new opportunities that go beyond conventional manufacturing methods. 3D printing, as the method is more commonly known, offers SAMSON new ways of optimizing its products and supply chain processes to better serve its customers. Additive manufacturing also helps SAMSON meet the increasingly stringent requirements that apply in certain industries, such as chemicals, petrochemicals or oil and gas.

Valves are classified as pressure equipment if they are operated at a maximum permissible pressure (PS) of more than 0.5 bar. The Directive 2014/68/EU applies to the economic operators (manufacturers, authorized representatives, importers and distributors), material manufacturers, operators of pressure equipment as well as the notified bodies or user inspectorates, which are commissioned to conduct conformity assessments. The Directive regulates the design, manufacture and conformity assessment of pressure equipment and assemblies.

[samsongroup.com](http://samsongroup.com)

## Westinghouse's AM Innovation Improves Safety and Efficiency

In an industry first, Westinghouse Electric Company used additive manufacturing (AM) to fabricate bottom nozzles that improve debris capture and fuel endurance within its fuel assemblies. The nozzles were integrated into four lead test assemblies delivered to Alabama Power's Joseph M. Farley Nuclear Plant operated by Southern Nuclear, in the first quarter of 2024.

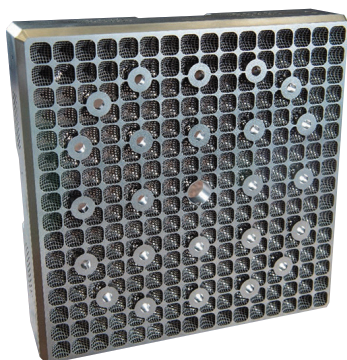
Debris-wearing action on the fuel rod cladding — known as debris fretting — is the primary source of leaks in Pressurized Water Reactor (PWR) fuel assemblies. AM technology offers significant improvements in debris filtering thanks to enhanced design freedom which reduces the diameter of debris that can enter into the reactor. In testing, the additively manufactured components demonstrated a 30% improvement in debris resistance.

"Over the past decade, Southern Nuclear has led the industry in the development and implementation of new technologies that improve fuel resiliency," said Southern Nuclear President Pete Sena. "The existing nuclear power fleet is the backbone of our country's clean energy supply, and we are innovating nuclear fuel today to be more robust to

deliver safer, more affordable and more reliable carbon-free clean nuclear power for decades to come."

"Our additive manufacturing technology is allowing us to achieve breakthrough performance with an immediate positive impact for our customers," said Tarik Choho, Westinghouse President of Nuclear Fuel. "This significant technology innovation for PWR reactors mitigates the risk of leakage in the fuel rods due to the accumulation of debris, strengthening the safety and efficiency of our customers' operations."

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



INDUSTRY

# PROFILE

## Jean Dockendorf



Jean with her dogs, Odie and Ella.

We recently asked Valve Magazine Editorial Advisory Board member Jean Dockendorf about what got her into this world of fluid controls, and what she does outside of the world of valves and actuators. Here's what she said.

**What inspired you to pursue a dual path of mass communication and biology?** I was originally drawn to the combination because I wanted to be a science/technical writer. As I developed journalism skills, I found that I enjoyed making complex subjects easily understandable through the use of clear, concise language. I developed additional skills in advertising, public relations, branding and event planning. The more I learned, the more I wanted to learn about all aspects of marketing.

**Why did you decide to get involved with VMA and the magazine editorial advisory board?** I've been an avid reader of *Valve Magazine* for many years and thought this would be a good opportunity to contribute to the association and also network with other key individuals in the industry.

**Are there any projects or initiatives you are working on that you'd like to highlight to our readers?** I am very excited about new technology, and the evolution of DeZURIK's Digital Transformation has been a fascinating project over the past decade, with a major new initiative that launched in late 2023. My role has been to ensure the user experience is ideal through testing, documentation and strategic communications. Users can now gain access to real-time information through our fully integrated business system that will provide value to our customers for decades to come.

**How do you stay up to date on changes in the valve industry?** I read, a lot. Publications, newsletters, social media, etc. I not only read about our industry and B2B marketing, but also about other industries, B2C marketing and the world in general. I also try to network with many different sources including our sales reps and customers.

**What do you think the biggest challenges are for valve manufacturers? For end users?** The pandemic created a seismic shift in many aspects of business, and the speed of change is unprecedented. I think the challenges faced by end users are many of the same issues affecting us as manufacturers: workforce changes/talent acquisition, digital transformation, supply chain disruptions, aging infrastructure, artificial intelligence (AI), cybersecurity, climate and sustainability (especially water – too much and too little), Buy American/AIS, PFAS, etc. are some the biggest challenges we face.

**What you do outside of work – family, hobbies, etc.?** The hobby that consumes most of my time is competing in dog agility trials. I have two English Springer Spaniels (Odie and Ella, pictured above) who have achieved their agility championships and are now working on their grand championships. The advanced level of communication with your dog required to navigate these complex courses is fascinating to me.

I like to hike, bicycle, swim and garden in the summer. In winter, I like to downhill ski and snowshoe. I'm a voracious reader (mostly fiction, and mostly audiobooks lately since I drive a lot) and am learning to watercolor.

**Do you have any secret talents or skills that would surprise and delight our readers?** I just achieved Level 37 in Pokemon Go and have caught almost 10,000 Pokemon. "Gotta catch 'em all." 🎮

Read the full interview: [VALVE-MEDIA.com/articles/industry-profile-jean-dockendorf](https://valve-media.com/articles/industry-profile-jean-dockendorf)

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