ARGENTINA: Brazil’s Raizen Combustíveis SA agreed to buy downstream assets in Argentina from Royal Dutch Shell PLC for $950 million. Raizen Combustíveis, a joint venture between Brazil’s Cosan SA Indústria e Comércio and Shell, will have a 20 percent market share in fuel distribution in Argentina after acquiring a network of 645 gas stations in the country. Raizen also is acquiring a refinery in Buenos Aires, LPG and aviation fuel terminals and a lubricant plant, among others, which have an annual output of $3.3 billion.

UNITED STATES: East Coast refiners are shipping more shale oil from the Gulf Coast. Refiners are looking to bring in more shale oil via rail, however, supply bottlenecks are making this difficult. Pipelines from west Texas to the Gulf Coast are full, and developers will not finish new lines until next year. Rail terminals are nearly all dedicated to bringing supplies to shale producers such as the huge volume of sand used to extract oil from the ground. In the last seven years, crude has gone to the East Coast by rail in June 2017. The transport bottlenecks could limit the pace of growth of shale production, and as pipelines fill, the price of oil in the region has fallen. That has caused East Coast buyers to jump on the chance to purchase cheaper U.S. crude, boosting flows from the Gulf Coast to the East Coast to three-year highs.

Gov. Nathan Deal, in conjunction with the Georgia Depart- ment of Economic Development (GDEcD), recently presented 40 Georgia businesses with GLOBE (Georgia Launching Opportunities By Exporting) Awards at the 2018 Go Global reception at the Atlanta History Center. This state-led awards program recognizes companies that entered into new international markets in the previous year. Deal also announced that Georgia has expanded its representation to a 12th international market, Peru. “The Go Global event high- lights the importance of international partnerships for maintaining our competitive edge and generating new in- vestments across the state,” said Deal. “Georgia businesses offer a diversified variety of ex- ports including chemicals, plas- tics, poultry, paper and aero- space products, which provide the foundation for long-term growth in the international marketplace. In the last de- cade, Georgia’s exports to Peru have increased by 42 percent and expanding representation to this market will continue to strengthen this relationship.” I applauded all of our Go Global Award winners for cultivating new international connections and for having such a tremen- dous impact on Georgia’s eco- nomic success. With our strong international presence, Georgia is ready and able to support companies looking to achieve new levels of success through global commerce.”

The fifth annual Go Global recog- nition highlights the in- novative products and services that Georgia companies offer to international customers,” said GDEcD Deputy Commiss-ioneer of International Trade Mary Waters. “Exporting is not easy, and I applaud the dedi- cation to global opportunities shown by these firms, and ex- porters all across the state. Our team looks forward to further bolstering Georgia exports in the coming year.”

Marathon Petroleum to Acquire Andeavor

Marathon Petroleum has planned an approximate $23 billion buyout merger to buy- out fellow refiner Andeavor, which will allow Marathon to capitalize on major trends in the energy sector. This buyout will make the combined compa- ny (Marathon-Andeavor) one of the biggest operators of U.S. gas station conven- nience stores. It would also assemble a portfolio of refin- ing assets that stretches from the West Coast to the Midwest at a time when profit margins for refineries are booming. The deal also gives Marathon ac- cess to infrastructure in the nation’s hottest oil-producing region and expands its pres- ence in Mexico, where U.S. energy exports have surged in recent years. The combined company will also be in a bet- ter position to produce fuel for the shipping industry just as new emissions rules for sea- borne vessels take effect.

Importantly, while Marathon’s refineries and transportation infrastructure are focused around the Gulf Coast and Midwest, Andeavor’s assets are spread around the Western United States, specifica- ly in the Permian Basin, the epicenter of the U.S. drilling rebound in western Texas and New Mexico. Andeavor operates gathering facilities in West Texas and has a 25 percent stake in a new pipe- line called Gray Oak that will transport crude oil across the state to the Gulf Coast refi- ning hub. That gives Mara- thon’s refinery in Galveston Bay, one of the nation’s larg- est, access to cheap oil from the region.

Valtorc Awarded Georgia Business Award

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Special Topic – Fugitive Emissions
Oil & gas processing fa- cilities must comply with increasingly stringent requirements relating to EHS regulations. This is particularly true for the rules governing allowable Fugitive Emissions of process steam valves.

Pages 4-5

End User Interview
John-Paul Schmidt, Pip- ing Stress Leader at Dow Chemical, speaks about working with clients to design projects, calculat- ing risk, common chal- lenges with equipment, as well as the best and most chal- lenging aspects of the job.

Pages 12-13

Valve World Americas | June 2018 • www.valve-world-americas.net
International Standard Valve: Delivering

With the undeterred aim of providing high-quality products and services — while delivering an equally high standard of company performance — International Standard Valve (ISV) has remained true to its purpose since the company’s inception in 2010. Valve World Americas had the opportunity to speak with Michael O’Quinn, President & CEO, and Engin Gulgun, VP of Engineering and Technologies, about the dynamic development inherent to the core of ISV.

A Running Start

After taking the industry by storm with its introductory leaps and strides, little room remained for baby steps on ISV’s blueprint — even in its infancy, the company hit the ground running. It was not long after its establishment in 2010 that ISV received its ISO 9001:2008 Quality Management System certification: within the first year, in fact, with the API 6D certification for U.S. Production following closely behind. Considering the fact that the company saw its first year through with the implementation of an impressive quality management and ERP system, surveys and development, supplier relations and product design and review, as well as a targeted focus on pressure and performance test equipment installation, such an ambitious pace of accomplishment would seem par for the course. In 2018, the company’s development is keeping pace: “We are primed for growth,” says Michael O’Quinn, President & CEO. “We are in the midst of transition and evolution.”

Setting the Pace

With 2018 marking the company’s eighth year of operation, ISV maintains its characteristically steady reputation of providing customers with unique valve designs including those for special service, such as cryogenic valves and metal seated floating and trunnion mounted ball valves — designs which employ up-to-the-minute engineering technologies geared towards enabling timely yet precise solutions to valve applications of various demands. The likes of North and South America, West Africa, the Middle East, Western Asia and Southeast Asia are among the key users comprising ISV’s loyal base, and for good reason, says Engin Gulgun, VP of Engineering and Technologies: “The ISV product range can be characterized as wide ranging, since we cover a number of API major valves and metal seated valves, and trunnion mounted ball valves—designs which employ up-to-the-minute engineering technologies geared towards enabling timely yet precise solutions to valve applications of various demands.”

ISV AT A GLANCE

Company Name: International Standard Valve, Inc.
Established: February 2010
Location: Stafford, Texas
Website: www.isvalve.com
Product Brand: ISV
Industries Served: Oil & Gas, Natural Gas Utility & Transmission, Petrochemical, Industrial, LNG
Principle Business: Industrial valve design, production, sales, service and distribution
Certifications: ISO 9001, API 6D, API 6D, API 607, CE PED, GOST
Product Portfolio:
- API 608 / ASME B16.34 Floating Ball Valves
- API 6D Trunnion Mounted Ball Valves
- Cryogenic Ball Valves
- Metal Seated Ball Valves
- API 6D Expanding & Slab Gate Valves
- API 6D Check Valves
- Cast Steel Gate, Globe & Check Valves
- Special Service Valves

ISV’s extensive product line is backed by careful detail. “We are very proud of the ever increasing range of floating and trunnion type ball valves that are engineered, assembled and tested at the Stafford, Texas facility,” Michael shares. “Our production in Stafford includes API 6D trunnion mounted ball valves, as well as a wide range of API 608 & ASME B16.34 industrial floating type ball valves in flanged ends, threaded ends and socket weld end configurations. Pressure ranges include up through ASME Class 2500.”

Extensive Offering Meets Expansive Reach

Maintaining a diversified product offering with key products suitable for a variety of industries is a factor integral to ISV’s continued success. Of this, Michael provides the example of the company’s API 6D trunnion mounted ball valves, which are particularly well-suited for natural gas pipeline and gas utility customer applications, in addition to oil & gas production, gathering and midstream customer applications. “We feature this product in a design category that makes it very suitable for general industrial pipeline applications and the related customers,” Michael explains. “We maintain a very large mix of floating style ball valves that meets the requirements
to the Highest Standards of Performance

“We continually seek to grow our products’ acceptance and approvals with the related end users and contractors in each industry segment while seeking to solidify our distribution channels appropriately for each market.”

Michael O’Boyle, President & CEO

of general industrial applications and customers, as well as oil & gas upstream, midstream and downstream. We continually seek to grow our products’ acceptance and approvals with the related end users and contractors in each industry segment while seeking to solidify our distribution channels appropriately for each market.”

Bearing in mind that the current market demand necessitates shortened delivery times, Michael acknowledges that consistently seeking to improve on its timely delivery is at the forefront of ISV’s priorities. However, timeliness is never at the expense of quality; at ISV, the two go hand-in-hand. “All ISV valves are shipped with the ISV guarantee of high quality design, materials and workmanship. ISV’s warranty is 12 months after installation or 18 months after date of shipment, whichever is greater. This is important to ISV and all of our customers,” details Michael.

“All product-related services are performed by ISV’s trained valve assembly technicians. This ensures the customer receives a factory direct, knowledgeable and experienced valve technician that is well versed with ISV products.”

Maintaining a rigorous standard of quality is central to ISV’s approach when it comes to conducting performance and pressure tests on their products. As a minimum, each ISV valve is pressure tested in accordance with the standard for which it is designed. In many cases, Engin notes, the company’s standard test procedures and instructions exceed the industry’s standard product design test requirements. These include, for example, longer test durations than what is required by the industry test standard. “We perform the optional seat test on ball valves as an ISV standard, rather than bypassing it,” explains Engin. “Additionally, we perform PMI (Positive Material Identification) as a standard on all alloy ball valve bodies, end caps and key components.”

Engin further explains that each PMI reading is retained in the company’s database and linked to the valve’s serial number for future traceability, while random material verification tests are performed to confirm that purchased component materials meet or exceed the intended material standards. As the company’s testing results are a key part of its quality assurance program, ISV has created a detailed testing report process by compiling each valve’s test data in the company’s test database. This way, the test reports for each valve purchased by any customer can be provided to the customer upon request. “ISV had the unique opportunity of establishing our company during a time in which computer technology had already grown from its infancy stages. As such, from day one, we were able to utilized and employ data management technologies starting at the valve component level all the way through a completely finished valve product,” Michael notes, adding that all ISV valves, including the smallest size of .25”, are serial-ized — allowing full product traceability for many years beyond the point of its installation in the field. This traceability incorporates a thorough record of the production process, from original mill test reports for each component to the name of the employee performing the final inspection. In addition, general assembly drawings are available upon request for all ISV products. This allows the company to more efficiently communicate to the customer the exact details of the product being offered and considered. In turn, the customer’s review and feedback can help the company to understand any special requirements or features specific to the customer.

ISV’s every endeavour goes beyond standard procedure; though exemplified through the customer experience, the company’s attention to detail and commitment to service permeates every facet of its innerworkings. With equal devotion to the core of its values, the precision of its service and the quality of its products, International Standard Valve is simultaneously a multi-tasking and laser-focused force.
Qualifying Stem Sealing Valve Solutions In Compliance with ISO-15848-1 Fugitive Emission Standard

Over the past two decades, oil and gas processing facilities have been challenged in complying with increasingly stringent regulatory and legislative requirements relating to Environment, Health and Safety (EHS) regulations. This is particularly true for the rules governing allowable Fugitive Emissions (FE) of process stem valves.

By Christophe Valdenaire – Saint-Gobain Performance Plastics, Seals

To help customers with this challenge, Saint-Gobain Performance Plastics, Seals responded by dedicating efforts to develop compact, polymer spring-energised seal solutions meeting low fugitive emission (LFE) leakage requirements per international standards such as ISO. Performance of their seals is validated by internal experimental measurements according to ISO 15848-1 Industrial Valves, Fugitive Emissions – Measurement, Test and Qualification Procedures. The ISO 15848-1 standard has three different leakage limits that range from extremely stringent (Class AH) to non-strict (Class CH), and are measured with the appropriate leakage detection method as mentioned in the standard.

Polymer spring-energized seals are prevalent in the oil and gas industry since they perform well in high and cryogenic temperatures, aggressive media and compression load. The seals (Figure 1) are pressure assisted sealing devices consisting of a PTFE jacket or other polymer, partially encapsulating a corrosion resistant metal spring energizer. When it is seated in its groove, the spring is under compression, forcing the jacket lips against the groove walls and thereby creating a leak-tight seal. The metal spring provides permanent resilience to the seal jacket and compensates for material wear and hardware misalignment or eccentricity. System pressure also assists in energizing the seal jacket. Spring loading, assisted by system pressure, provides effective sealing at both low and high pressures.

After reviewing customers’ needs and emerging critical requirements, Saint-Gobain Seals decided on the following objective for their OmniSeal® product of spring-energized seals: develop a single stem sealing solution for ON/OFF valves that passes a leakage tightness of Class AH, endurance class CO1 (205 cycles) from -50°C to 160°C according to ISO 15848-1. To achieve this goal, the seals manufacturer invested in internal testing capabilities that are in full alignment with ISO 15848-1. In 2014, they successfully developed a spring-energized seal that not only met but also exceeded the requirements specified in the ISO 15848-1 standard for class BH (Figure 2).

The single stem sealing solution provided these main benefits:
- No need for secondary seal
- High Pressure, High Temperature combinations
- Easier installation compared to compression packings
- Does not need to be compressed axially
SPECIAL TOPIC – Fugitive Emissions

tem, many factors determine its per- formance such as operating conditions re- lating to pressure and temperature but also seal material and seal design. In parallel, the hardware configuration and deformations, surface finish and instal- lation protocol can affect the sealing ca- pability of the complete arrangement. All these influencing factors need to be fully understood in order to be able to design a reliable sealing solution.

After examining how these factors influ- ence the performance of a spring-ener -gized seal, Saint-Gobain Seals adapted the existing test rig that simulates the conditions of a quarter turn ball valve and allows measuring the leakage rate ac- cording to the ISO 15848-1 specification for Class AH (Figure 2). All testing is per- formed with pure helium as a gas media. Methane can be used but such testing is uncommon due to safety concerns.

Passing the Class AH specification re- quires a more challenging development process compared to what is needed for passing Class BH. Therefore, Saint- Gobain Seals is focusing on the mate- rial behaviour for sealing with helium, which involves a basic understanding study on several seal jacket materials. In this study, contact loads and contact lengths needed to reach Class AH for a given material and temperature are in- vestigated using a load cell test setup. With this input and the use of validated FEA (Finite Element Analysis) tools, a LFE Class AH sealing solution is being designed that should make the differ- ence to customers who are now strug- gling with fugitive emissions compli- ance challenges.

ABOUT THE AUTHOR

Christophe Valdenaire is Global Market Manager Oil & Gas for Saint-Gobain Seals. He has a solid knowledge of the O&G industry requirements for high performance Poly- mer Sealing Systems in demanding applications such as Topside and Subsea engineered valves, Fugitive Emission applications, FPSO turret swivels, Cryogenic transfer sys- tems and HPHT challenges. Saint-Gobain Seals is a global designer and manufacturer of critical sealing and polymer parts used in core systems with challenging conditions.

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Figure 2. ISO 15848-1 class B sealing solution.

Figure 3. Saint-Gobain Seals’ internally developed LFE ISO 15848-1 test rig.

• Lower operating torques / forces
• Long life

The solution was developed internally through a material selection campaign based on a permeation study, which was then followed by a seal design parametric study conducted on an in- ternally developed test rig. This test rig simulates the conditions of a quarter turn ball valve and allows measurement of leakage rate according to the ISO 15848-1 specification (Figure 3).

Since developing the single stem so- lution in 2014, Saint-Gobain Seals has successfully supplied thousands of its advanced ISO 15848-1 class BH stem seals for numerous projects and end users worldwide. In today’s operations however, end users are pushing valve performance on leakage to even more stringent requirements, outperform- ing Class BH and aiming for a Class AH tightness in accordance to the ISO 15848-1 standard. In order to meet fu- ture challenges for fugitive emissions, Saint-Gobain Seals has started development of low fugitive emission seals for Class AH.

Within a fugitive emission sealing sys-
An Inside Perspective on Lowering Fugitive Emissions

Valve World Americas recently had the opportunity to have a lengthy discussion with the technical team from Micromazza about many subjects that are critical to the valve industry and current industry trends that they have noticed over the last few years.

In this third, and final, installment of our three-part series, we speak with the team about fugitive emissions and the important role that valves play in prevention. We cover what the term ‘fugitive emissions’ actually pertains to, how the team deals with this challenge in their roles and why it is so important for everyone to be involved in the initiative of lowering fugitive emissions.

Interview by Candace Allison

In very general terms, what exactly are ‘fugitive emissions’?

Basically speaking, fugitive emissions are classified as a chemical, or a mixture of chemicals, in any physical form that represent an unanticipated leak from equipment, such as a valve or a pipe, on an industrial site like a refinery.

In your roles, how do you deal with the problem of fugitive emissions?

Since we are part of the engineering team for a valve manufacturer, we are often in the position of having to develop valves for customers that meet the very specific requirements for low fugitive emissions.

Doing everything we can to ensure that the final product does not emit fugitive emissions during its end use application is something of vital importance we always have to keep in mind.

What are just some of the industries where fugitive emissions are a big problem?

Over the last decade, the problem of fugitive emissions being emitted from plants all over the Americas, and the world, has become an increasingly concerning problem. It affects many different industries but the main ones often are the chemical & petrochemical and oil & gas sectors.

How can valves specifically contribute to the problem of fugitive emissions?

An emission can be released through a number of different ways, many of which are related to a piece of equipment such as a valve. For example, if the valve is not manufactured properly or constructed using the correct alloy based on its end use application it could crack causing whatever is inside it to leak into the atmosphere. But it’s important to keep in mind that it’s not just valves that can cause fugitive emissions. For instance, a crack in a storage tank could also cause a dangerous leak or spill that could release a fugitive emission into the air.

“By far the biggest trend we have seen is that increasingly it has become indispensable that the valves have seals systems to meet the low fugitive emissions requirements. That has been a really helpful improvement on the engineering side.”
As a team, we prefer to focus on prevention through developing valves that meet the rigorous requirements for low fugitive emissions. In fact, we have a whole valve line dedicated to low fugitive emissions. This is how we can continue to help address the problem, and hopefully in the future, prevent it completely.

What are some of the challenges you have experienced dealing with the problem of fugitive emissions?

When dealing with fugitive emissions in any capacity, but especially in our role, it is necessary to carry out research on sealing materials and carry out standard and practical tests on prototypes in search for the best solutions. So basically it is a lot of research and trial and error in our labs to find what works best.

In your opinion, why do you feel that sustainability is important?

We feel it is very important because it is critical to seek the balance of our ecosystem. It is essential to think about lowering fugitive emissions along with the ideas of protecting and sustaining our environment. Everyone from manufacturers to refinery operators need to think of all of these ideas as part of a whole and not separately.

1.9% Lower Emissions

This past April 2018, the Environmental Protection Agency (EPA) released the most recent update of its US Greenhouse Gas (GHG) Inventory. The report revealed that the US greenhouse gas emissions reached 6,511.3 million tons of carbon dioxide equivalent (CDE) in 2016. This is approximately 2.4% higher than in 1990, but about 1.9% less (or 126.8 million tons CDE) less than 2015, which is a definite improvement.

Decrease in CO2 Releases

According to the EPA, the year-to-year decline was driven mostly by a decrease in a carbon dioxide release from fossil fuel operations. Some of the attributing factors include moves from coal to natural gas and nonfossil oil sources to generate electricity as well as generally warmer winter weather in 2016, which reduced both the commercial and residential demand for heating fuels.

USA Reduced Emissions the Most

EPA Administrator E. Scott Pruitt has commented that over the last decade the United States has managed to reduce greenhouse gas emissions more than any other country in the world. “American ingenuity and technological breakthroughs, not top-down government mandates, have made the US the world leader in achieving energy dominance while reducing emissions—one of the great environmental successes of our time.”

Energy-related Activities

In 2016, energy-related activities made up 83.8% of the total US GHG emissions including 97% of the CO2, 43% of the methane and 10% of nitrous oxide. The inventory specifically detailed, “Energy-related CO2 emissions alone constituted 78.9% of national emissions from all sources on a [CDE] basis, while the non-CO2 emissions from energy-related activities represented a much smaller portion of total national emissions (4.9%).”

Other Findings

This latest inventory also shows a continued downward trend in overall methane emissions even though the US oil & gas production rose dramatically compared to other years. APT’s Regulatory and Scientific Affairs Senior Director Mr. Howard J. Feldman is on the record as saying, “According to the report, methane emissions from natural gas and petroleum systems decreased 14% between 1990 and 2016, at a time when gas output increased by more than 50%. It is clear that hydraulic fracturing and other advanced technologies are continuing to help America become the world leader in reducing emissions. This is in addition to the US continuing to lead the world in reducing carbon emissions, which are near 25-year lows.”

Source: The Environmental Protection Agency, Oil & Gas Journal

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As engineers, what do you have to keep in mind when working to prevent fugitive emissions?

We always have to remember to seek increased sealing efficiency through continuous improvement.

From your perspectives, what can be done to better prevent fugitive emissions overall?

Awareness. It really all comes down to that, on all sides. Everyone involved from the manufacturer to the end user to the refinery operator, etc. all have to be involved in the search for the best solutions. Everyone also has to be on board to want to do better in this regard.

Are there any trends in terms of fugitive emissions and valves and/or sustainability that you are noticing?

Yes, there are quite a few that we have noticed over the last several years. By far the biggest trend we have seen is that increasingly it has become indispensable that the valves have seals systems to meet the low fugitive emissions requirements. That has been a really helpful improvement on the engineering side.

What are the top three important things you would like the reader to know about valves, fugitive emissions and sustainability?

1. Whenever and wherever possible, always work with valves that are certified for low fugitive emissions.
2. Even though the valves certified for low fugitive emissions may at first seem more expensive than the non-certified options, in the long-run they are worth every cent because they prevent fluid loss and protect the environment.
3. We should all raise awareness on the importance of lowering fugitive emissions and make our colleagues aware of sustainability!

“Awareness [can help to lower fugitive emissions]. It really all comes down to that, on all sides. Everyone involved from the manufacturer to the end user to the refinery operator, etc. all have to be involved in the search for the best solutions. Everyone also has to be on board to want to do better in this regard.”

Always Room for Improvement

With the release of the Environmental Protection Agency (EPA) update of its US Greenhouse Gas (GHG) Inventory, it was certainly a good sign that there were 1.9% lower emissions in 2016 than in 2015 but as many industry insiders are saying, there is always room for improvement.

Emissions are still much higher than they should be which is both dangerous and costly.

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“Always Room for Improvement”

It’s important for everyone in the industry from manufacturers, end users, engineers, regulators, operators, etc. to keep in mind that even though there has been a reduction in emissions there is still a long way to go. Emissions are still much higher than they should be which is both dangerous and costly.

Miss the first two parts of this series?

The first part of this three-part series was published in the April issue of Valve World Americas on pages 6, 7 & 8 and focused on valve casting, materials and testing.

The second part of this series appeared in the May issue on pages 19, 20 & 21 and focused on valves for cryogenics and severe service environments.
Speed: a Matter of Fine Margins

For early production facilities (EPFs), speed is everything. Every day of delayed production erodes profit and undermines the investment. If a typical EPF can boast production of 10,000 barrels of oil per day (bopd), then a week’s delay could easily equate to $600,000 of deferred revenue at $60 per barrel (bbl). A month could defer more than $2.4m while incurring operational costs.

By James Moir, Group Sales Director - PJ Valves

What’s more, EPFs are having their moment. Their sweet-spot is somewhere in the $50-$65/bbl range. At this price point, they are economic enough to attract the industry’s attention, but any higher and they begin to lose out to more profitable big industry projects.

EPF operators are resourceful and adaptable, but even a small mistake along the supply chain can derail and delay a project at great cost. The race to first oil requires serious investment, backed by experience and expertise in every facet of the project. Take for example, valves.

The Additional Edge

While some EPF projects might be profitable with relatively little effort, others will demand every possible marginal gain. Valves make up a relatively small portion of an overall project, but demand exactly this kind of close attention. If they’re wrong or late, the whole project can be held up while the right components are procured.

On the one hand, the need for speed would suggest buying off-the-shelf, ready to ship valves wherever possible. However, on the other, it’s crucial to get it right the first time. Even if it’s a case of 90 per cent stock to 10 per cent tailored valves, the ability to get both quickly and reliably is a small detail that the success of the entire project depends on.

Experience and Expertise

For operators and suppliers in the EPF space, each project is a learning opportunity.

Developers have become extremely adept at deploying a modular, quick-start design approach to EPFs, allowing them to minimize time to first oil. They have also demonstrated a flexibility and openness to ongoing improvement that is difficult to achieve in larger projects. Again, this applies right down to the individual component level. A good valve supplier will not just fill an order sheet, but actively engage with the project’s specifications based on accumulated experience. Maybe a different valve here will mean a quicker deployment? Perhaps an adjustment there will mean more reliable production?

A two-way, consultative relationship with suppliers may seem like the slower option, but can make significant improvements on time to first oil, while minimizing the chance of delay.

A Misnomer?

EPFs sound temporary, and are often designed to operate for a few years. However, some end up being semi-permanent installations, capable of 15-year lifespans with careful maintenance.

In fact, there is a trend in some African and Middle Eastern markets for smaller, local operators to use EPF facilities on a longer-term basis to extract the last 10 per cent of recoverable oil in fields. These are typically projects where multinational players with large projects have lifted the majority of the oil, but left behind the final, unprofitable reserves. Using cheaper, more agile EPF facilities, local operators can then turn a good profit from what remains.

In this way, certain EPFs become not just long-term, but late production facilities. A misnomer indeed.

A combination of attention to detail, experience, expertise, and an eye on the future, is essential across the EPF supply chain. It needs to be embedded in the approach to every component, as well as the bigger picture design. Anything less risks running a losing race, missing targets and losing revenue.

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A combination of attention to detail, experience, expertise, and an eye on the future, is essential across the EPF supply chain. It needs to be embedded in the approach to every component, as well as the bigger picture design. Anything less risks running a losing race, missing targets and losing revenue.
Emerson Enables Reduced Cost and Complexity with Zoned Safety Valve Island

Emerson has introduced the ability to integrate multiple safety zones within a single ASCO Numatics® Series 503 valve island. This enables the creation of up to three independent electro-pneumatic safety zones, while also allowing independent safe sections to co-exist within one valve island assembly. Alternative solutions enable the isolation of one zone only per island. The zoned safety approach helps the design engineer satisfy the Machinery Directive while eliminating the need to co-exist within one valve island as pneumatic safety zones, while also enabling valuable machine space to be saved and improves design flexibility.

The ASCO Numatics zoned safety valve island enables the operator to choose if they have to shut down the entire machine by releasing compressed air with a redundant safety/dump valve. Instead, the valve island can be configured to shut down pilot air and power only to the group of valves that controls the machine’s motion in the operator’s vicinity.

Because zoned safety capability is designed into the standard ASCO Numatics Series 503 valve island platform, no redesign is required and the user has optimal choices when selecting valve options, accessories, and flow requirements,” said Weickel. “The flexible approach also significantly reduces safety system cost and enables valuable machine space to be saved for other purposes.”

The ASCO Numatics zoned safety valve island has been evaluated by TÜV Rheinland (Report No. 968/FSP 1228.00/16) and is compatible with category 3 PLd.

Val-Matic Stainless Steel Wastewater Air Valves

Val-Matic’s Stainless Steel Wastewater Air Valves perform two important functions in a piping system: they maintain system design efficiency and provide system protection. Exhausting and admitting air keeps the system from restricted flow reducing pumping costs and reduces the potential for destructive surges and water hammer that can collapse a pipeline. The seamless cast stainless steel body prevents corrosion and increases integrity which is lightweight to facilitate installation. The valve design provides ease of maintenance and years of trouble-free operation in the harshest conditions. The cast stainless steel bodies are recommended for severe service where hydrogen sulfide or industrial chemicals produce accelerated corrosion in iron. Visit www.valmatic.com for more information on Stainless Steel Wastewater Air Valves.

Val-Vatic Adds API 6D Swing Check Valves to Stainless Product Offering

Val-Matic has announced that their initial inventory for their new API 6D Swing Check valve product line is now flowing into their Houston sales and distribution center. While establishing a presence in the Salt Water Disposal market by supplying stainless steel API 6D Trunnion Mounted ball valves, they learned of the requirement for full port swing check valves in the same material. Phase I of their product development program is complete for the 150#, 300# and 600# valves in sizes 2” thru 12”. Phase II, which is currently underway, will include 900# and 1500# valves in sizes 2” thru 8”. Inventory for these higher pressure classes is expected in Houston starting in Q3 of this year. These full port valves are designed to the API 6D standard, meet ASME B16.5, B16.10 and NACE MR 0175 specifications and tested to the API 598 requirements. The standard materials of construction will be CF8M body, disc and cover with integral stellite seat design. Other materials, including the Duplex and Super Duplex alloys will be available upon request with factory lead time.

Val-Matic’s Stainless Steel Wastewater Air Valves perform two important functions in a piping system: they maintain system design efficiency and provide system protection. Exhausting and admitting air keeps the system from restricted flow reducing pumping costs and reduces the potential for destructive surges and water hammer that can collapse a pipeline. The seamless cast stainless steel body prevents corrosion and increases integrity which is lightweight to facilitate installation. The valve design provides ease of maintenance and years of trouble-free operation in the harshest conditions. The cast stainless steel bodies are recommended for severe service where hydrogen sulfide or industrial chemicals produce accelerated corrosion in iron. Visit www.valmatic.com for more information on Stainless Steel Wastewater Air Valves.

Eaton Expands AxisPro Platform

Power management company, Eaton, has expanded its AxisPro industrial proportional valve platform, which now includes new two-stage valve offerings, along with the release of its new Pro-FX Configure software.

The latest capabilities are designed to offer ease of configuration and improved diagnostics to a wider range of industrial machinery.

Eaton’s AxisPro valves are now available in two-stage D05 (NG10) and D07 (NG16) designs, which provide the same capability as Eaton’s single-stage AxisPro valves, but in a higher flow package. The new sizes mean the Axis-Pro valve portfolio now features single-stage and two-stage valves that accommodate flow rates of up to 375 LPM. The company says that the new two-stage valves help fill the gap in flow capacity between its existing single-stage D05 and two-stage D08 offerings.

Eaton has also updated Pro-FX Configure, the programming software for AxisPro valves. The new Pro-FX Configure 2.0 enables users to configure and tune AxisPro valves by following a streamlined, step-by-step graphical workflow. The company says that the setup simplifies everything from setup to tuning to commissioning.

Products

New Products!

Valve World Americas features the latest in valve innovations, flow control products and a variety of valve components and accessories. If you would like to feature a product in an upcoming issue of the journal, please contact Sarah Bradley at s.bradley@kci-world.com.

T-T Flow Receives Accreditation for Swing Gate Valves

T-T Flow has announced that it has been awarded accreditation from the Water Regulations Advisory Scheme (WRAS) for all its swing gate valves. WRAS contributes to the protection of public health by preventing contamination of public water supplies and encouraging the efficient use of water by promoting and facilitating compliance with the Water Supply Regulations and Scottish Byelaws. These require that a water fitting should not cause waste, misuse, undue consumption or contamination of the water supply, and must be ‘of an appropriate quality and standard’.

WRAS approval is granted directly by representatives of the water suppliers and is accepted as evidence of compliance by every water supplier in the UK. To qualify, the full range of swing check valves has undergone testing for the approval.

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Flashforge has announced the immediate availability of the new Finder 3D printer, a compact desktop design with a 300 x 300 x 300 mm build area. The printer is now shipping worldwide and is available directly from Flashforge and official dealers.

Finder 3D printer is a compact and affordable desktop design with a 300 x 300 x 300 mm build area. The printer is now shipping worldwide and is available directly from Flashforge and official dealers.

New Products!

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SVF Controls Introduces Bi-Directional Stroke Adjusting Actuator for Process Control Applications

SVF Flow Controls, a sister company of Matco-Norca, has introduced a new direct-acting on/off valve actuator engineered for dependable operation and reliable sealing in demanding process control applications. The EZ-Tork Actuator is a pneumatic rack & pinion actuator engineered for dependable and smooth operation in demanding process control applications. It comes with an ISO 5211/ NAMUR design for universal mounting and accessory attachment. Available in 17 models ranging from 1.8 lbs. up to 486 lbs. in weight, the EZ-Tork Actuator features a hard anodized aluminum housing and a nickel-plated alloy drive shaft. Models have 1/8”/1/4” or 1/2” NPT air inlet manifolds.

Special mechanical features of the EZ-Tork Actuator include a “Versa-View” continuous mechanical position indication and bi-directional stroke pinion travel stop adjustments that ensure precise positioning in all flow control services. EZ-Tork travel stops have been designed to absorb the actuator’s maximum rated torque and the maximum impact loads associated with the recommended stroke speed.

Arca 6H Rotary Gate Valve — A New Approach for a Severe-duty Microflow Valve

Control valves are used in a wide range of capacities, from butterfly valves with a rated flow coefficient Kvs of more than 50,000 m³/h (enough capacity to fill an Olympic swimming pool within 3 minutes) down to microflow valves with less than 10-5 m³/h rated flow capacity. Such a microflow valve would need more than 20 hours to fill a glass of water.

Typically, microflow control valves are globe style valves with seat diameters 2 mm or less, where the plug either is a parabolic plug or a V-notch type. The turndown ratio and control performance of such a valve is mainly dependent on the tolerances between plug and seat ring. Assuming a control ratio of 20:1 and Kvs 10-5 m³/h (and following the rule of thumb, that a KV of 1 m³/h corresponds to 28 mm² vena contracta area), on such valve trim the tolerance between plug and seat ring must be less than 3 μm.

Besides the challenge to produce such high-precision parts, it is beyond any discussion that this kind of trim can be used on clean process fluids only and, due to the thermal expansion, only within a restricted temperature range. This new (patent pending) approach is based on a (rotary) sliding gate valve, where two slices with lapped surfaces are installed in the valve, pressed together by a spring and the differential pressure. This enables zero-tolerance, without any limitation due to tolerances or thermal expansion.

Each slice has one or more bores for the flow passage. Normally the flow passage of such sliding gate valve is only open when the bores overlap. Especially with small rated flow coefficient (meaning small bores) this results more or less in an on/off characteristic of the valve.

In this new design one of the slices is equipped with a tangential flow channel, which leads and expands into the bore of this slice. This enables a smooth control behaviour with sufficient opening angle (more than 60 degrees). The slices can be made of any material (even ceramics), which makes the trim resistant against each process fluid and pressure drop.

Although the valve plug movement is quarter-turn, a standard globe valve housing DN 15 – 25 (ANSI ½” to 1”) rated PN16 – PN 250 (ANSI Class 150 – 1500) is used. This makes the design economic and allows changing from a standard valve to the new design, even at an existing valve.

First flow characteristic and critical flow factor FL measurements up to 150 bar differential pressure have proven the performance of this approach, even under pressure drop up to 250 bar.

Arca 6H Rotary Gate Valve — A New Approach for a Severe-duty Microflow Valve

Rexroth has showcased a unique system for subsea actuation at the Offshore Technology Conference (OTC) in Houston, Texas. The Subsea Valve Actuator (SVA) is an electro-mechanical actuator with a hydrostatic drive, uniquely designed to complete the range of traditional hydraulic and all-electric subsea actuators for subsea control and production systems.

By combining the best features of electrohydraulic actuators and electro-mechanical actuators, Rexroth is revolutionizing actuator technology with the world’s first hybrid Subsea Valve Actuator.

The SVA is an energy efficient system, in accordance with the Rexroth 4EE standard, minimizing the required peak and stand-by electric power. It is compatible with Industry 4.0 technology, and the SVA includes various integrated components and lean production management processes. Also, it possesses an environmentally-friendly set up with redundant pressure compensation and no fluid leakage. There is up to 75% reduction in comparison to all-electric actuators available in the market.

Rexroth Introduces SVA

At Velan, we know what it takes to design and manufacture industry-leading valves that stand the test of time. After all, we’ve been doing just that for over sixty years.

We offer a wide range of valves with SIL 3-capability safety rating designed to meet any industrial application. So the next time you’re in the market for a high-quality valve that requires superior sealing, bubble-tight shut-off, and longer cycle life you can rely on our resilient-seated Memoriseal ball valves.

Velan’s Memoriseal seat design ensures reliable sealing even on low pressure service. When it comes to valves that offer low fugitive emissions, easy maintenance, and long and reliable service, Velan is the name to trust.

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Simmons Edeco Wins Wellhead & Valve Contract

Simmons Edeco, a supplier of wellhead valve maintenance, asset integrity solutions, and onshore drilling services to the global oil and gas industry, announced that it has been awarded a multi-million dollar contract by a major North Sea oil and gas operator. In addition, the company will continue to provide onshore wellhead and valve maintenance services for all North Sea assets owned by this operator. In addition, the company will continue to provide onshore wellhead and valve maintenance services for all North Sea assets owned by this operator. In addition, the company will continue to provide onshore wellhead and valve maintenance services for all North Sea assets owned by this operator.

As a result of this two-year contract, Simmons Edeco, which has its headquarters in Alberta, Canada, will provide wellhead and valve maintenance services for all North Sea assets owned by this operator. In addition, the company will continue to provide onshore wellhead and valve maintenance services for all North Sea assets owned by this operator. In addition, the company will continue to provide onshore wellhead and valve maintenance services for all North Sea assets owned by this operator.

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To ensure integrity of all production valves, the company also will manage the ongoing program of valve integrity testing and maintenance. To carry out these operations, personnel at the company’s recently expanded European base of operations in Great Yarmouth, England, provides engineering, operational, and administrative support.

Sensata Technologies Agrees to Sell Valve Business

Sensata Technologies, an American industrial technology company, has announced that it has entered into an agreement with Pacific Industrial Co., Ltd. to sell its valve business to the latter company for a total enterprise value of approximately USD $173 million. The proposed transaction is subject to customary legal and regulatory requirements and is expected to close in the third quarter of 2018.

Sensata’s valve business manufactures mechanical valves for pressure applications in flow control and tires, and assembles tire hardware aftermarket products with manufacturing locations in both the United States and Europe. The valves business was acquired as part of Sensata’s acquisition of the Schrader group of companies in 2014. For the full year 2017, the business generated approximately $117 million in revenue and $20 million in adjusted EBIT, which excludes intercompany transactions. Sensata’s Tire Pressure Monitoring Business and the Global

TPMS Aftermarket business (Schrader Performance Sensors) are not part of this transaction and will remain with Sensata. Pacific is an industrial valves manufacturer based in Ogaki, Japan with manufacturing and sales operations in the U.S., Taiwan, South Korea, Thailand, China and Belgium. The Pacific brand has been established as a leader in quality and technology in overseas markets, particularly in Asia, and this move reinforces Pacific’s strategy to grow its presence in Europe and the Americas.

Shutter Valve First Control Valve to Achieve API 641 Certification

Clarke Valve recently announced the API 641 certification of its proprietary Shutter Valve design, the first control valve to achieve this certification of low fugitive emission performance. The API 641 standard applies to all stem seal materials and requires a stringent maximum allowable leakage of 100 parts per million by volume (ppmV). This API test standard calls for 610 cycles of the valve under extreme temperature fluctuations to evaluate emissions performance over an accelerated life cycle. Fugitive emissions from legacy valve designs in industrial facilities are a major contributor to air pollution and global warming.

Kyle Daniels, President & CEO said, “Most people are unaware that 80% of refinery methane emissions come from traditional valve stems. Since the Shutter Valve’s unique design provides a superior seal at the valve stem, it drastically reduces these emissions.” The patented Shutter Valve, by Clarke Valve, was independently tested by Yarmouth Research and Technology, LLC, who certified the valve passed testing with less than 20 ppmv of leakage, well below the 100 ppmv limit. “We are excited to offer the only full-bore control valve in the world that meets API 641 standards,” said Daniels.

MOGAS Wins Severe Service Isolation Valve Contracts

MOGAS Industries, Inc. (MOGAS) recently received four orders to manufacture severe service isolation valves with actuation from Sinopec Zhenhai Refining & Chemical Company (ZRCC). Located in Ningbo, Zhejiang province, the Zhenhai refinery is the most profitable company under Sinopec, one of the world’s biggest refiners. Sinopec plans to build itself into a world-class, high-tech and integrated refining and chemical base. MOGAS will provide more than 300 severe service valves in various proprietary configurations with actuation comprising manual/electric, pneumatic and pneumatic/electric operators. All valves will be installed in ZRCC’s ebullating bed hydrocracking unit.

MOGAS Global Projects Sales Manager, Chuck Walker, commented: “MOGAS has been a dedicated supplier to Sinopec projects and technologies for over twenty five years, and we are honored to continue this long-standing relationship on their prestigious ZRCC project. EPC contractor Luoyang Engineering (LPEC), as part of the ZRCC team, has a dedicated team of engineering professionals with an unwavering focus on safety and quality. We truly appreciate the confidence Sinopec and LPEC have put in MOGAS as their partner for these critical severe service valves.” MOGAS is the only manufacturer with valves installed in every ebulliated bed unit worldwide—totaling well over 8,800 valves.
PJ Valves Wins Duplex Valve Contracts for FPSOs

PJ Valves, a manufacturer of valves for the global energy industry with offices in North America, has secured two contracts worth $3.5m for the supply of valves for FPSOs (floating, production, storage and offloading). The valves will be supplied for two major oil and gas operators.

PJ Valves will manufacture and supply the valves to the projects offshore Malaysia and the UK North Sea. Around 2,000 ball valves, which include manual and pneumatically actuated, will be delivered to the project in Malaysia. According to PJ Valves, all the valves will be manufactured as per the project’s requirements. The valves are to be used in several process applications, including gas processing and treatment, and will be installed on the topside modules. For the UK North Sea, PJV will supply more than 150 forged steel gate, globe and check valves, as well as ball valves from its facilities in Italy. The specification of the products include up to 1,500lb pressure class with Grayloc hub ends. These valves will be manufactured in duplex and super duplex materials. In addition, PJ Valves will manage the DNV inspection process.

PJ Valves has offshore experience in manufacturing and supplying valves to more than 30 global FPSO projects.

Emerson to Buy Aventics

On May 17, 2018, Emerson announced that it has agreed on terms to acquire Aventics from Triton for €527 million (approximately USD $621 million). Aventics supplies ‘smart’ pneumatics technologies for machine and factory automation applications. Emerson is a provider of fluid automation technologies for process and industrial applications. The transaction will be completed in cash.

The purchase of Aventics is meant to build on and strengthen Emerson’s capabilities and solutions in key discrete and hybrid automation markets. Emerson’s portfolio of fluid control and pneumatic devices incorporates sensing and monitoring capabilities to improve system uptime and performance, enhance safety and optimise energy usage.

Weir Offering Pressure Control Solutions & Service

Weir Oil & Gas, an upstream provider of pressure pumping and pressure control equipment and services, has announced that it is launching its global pressure control offering following recent acquisitions.

The company has rigorously tested and re-engineered products from legacy brands KOP and Seaboard to create a portfolio built on the strongest offerings from each.

From North America to the EMEA region to the Asia Pacific, the company can solve specific engineering challenges and support oil and gas operators with a global product offering and localized service capabilities that meet the unique needs of each operating environment.

In North America, Weir Oil & Gas provides its family of state-of-the-art wellheads, groundbreaking Simplified Frac Iron System and industry-leading Intelligent Systems for drilling and flowback applications. With service centers in every North American basin, the company helps reduce downtime with on-site service and support.

DFT Releases New Resource for Control Valve Selection

Control valve selection and installation is a vital process that can have a profound effect on the effectiveness of a fluid system. Specifically, process conditions and how they impact the selection process are important to understand.

To help identify some of the key factors and process conditions that affect the decision, DFT has created a new eBook detailing a number of important details. In Selecting Control Valves, you will learn:

- How the type of valve can influence the impact of certain process conditions
- The relationship between flow rate and pressure and what this can mean for your system
- How temperature and pressure directly impact the selection process
- Tips to find the proper information needed in control valve selection

Download your copy today by visiting DFT’s website.

DFT’s website.

Emerson Automation Solutions. “With Aventics, we will gain a valuable foothold in Germany, a key market for automation technology and investment.”

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A global team of technical experts with extensive inventory and a robust network of valve and engineering centers— all to meet your valve automation needs.

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Global Compressor Opens Service Repair Center in Houston

Global Compressor LP, the one-stop-shop for quality compression parts and service, has opened a service repair center at 13415 Emmett Road, Houston, TX 77041.

With an inventory of more than 28,000 compressor parts, Global Compressor’s repair center is fully equipped to inspect and evaluate all compressor components to offer new, machine-repaired and exchange units. The center is capable of refurbishing, manufacturing and shipping parts to customers the same day.

“Our goal is to help our clients minimize downtime in times of equipment failure, so maintaining an effective customer response is critical,” said Global Compressor partner, Sarah Jackson.

“Our ability to inspect and evaluate any compressor part to determine the proper procedures to meet the OEM specifications is vital. Our Houston service repair center supports our aim of delivering viable, creative solutions for equipment repair, enabling us to offer pick-up and delivery services as well as coordinating projects based on our customers’ schedules,” Jackson concluded.

The repair center has been equipped to recondition valves, packing cases, clip and bore connecting rods, rebuild oil pumps, assemble torque pistons, widen piston ring grooves, assemble and hydro test cylinders, hone cylinder bores and rebuild unloaders.

Flowserve Corporation, a provider of flow control products and services for the global infrastructure markets, has announced today that Lanesha Minnix will join Flowserve as Senior Vice President (VP) and Chief Legal Officer, beginning Monday, June 11.

Ms. Minnix will join Flowserve from BMC Stock Holdings, Inc., a leading provider of diversified residential building materials, where she served as senior vice president, general counsel and corporate secretary, since 2017. In this role, she had responsibility for all legal, compliance and risk management matters for the company.

Prior to BMC, Ms. Minnix was vice president, deputy general counsel and chief compliance officer, at ABM Industries Incorporated where she oversaw the legal operations and global compliance program. She was also the divisional general counsel for the Company’s international divisions, the Aviation and AirServ business and the Building and Energy Services business.

“I am extremely pleased to welcome Lanesha to our executive leadership team and look forward to leveraging her leadership and legal experience in many of the industries we serve. I know that her nearly two decades of global legal experience will help drive a continued focus on ethics and integrity, as well as serve to support our ongoing Flowserve 2.0 transformation efforts,” said Scott Rowe, Flowserve president and chief executive officer.

Additionally, Ms. Minnix served as senior legal counsel for Shell Oil Company. While at Shell, she managed the legal support for the production start-up of Pearl GTL, the company’s $19 billion capital investment project in Qatar. She also served as lead counsel for the retail lubricants and downstream aviation business.

“I look forward to joining Flowserve at an exciting time in its transformation efforts. This company has both the industry-leading product brands, the global footprint and customer relationships to grow into the flow control leader across the industries it serves. I’m thrilled to lead the legal organization as part of this effort while helping the business achieve its success,” said Minnix.
Acceptable Risk

A Day in the Life of John-Paul Schmidt, Piping Stress Leader – Dow Chemical

Valve World Americas had the pleasure of speaking to John-Paul Schmidt, Piping Stress Leader at Dow Chemical, about working with clients to design projects, calculating risk, common challenges with equipment, as well as the best and most challenging aspects of the job.

Raised in the small chemical plant town of Mont Belvieu, Texas, where nearly everyone in town worked in the plant, John-Paul Schmidt was exposed to the industry at a young age, quickly discovering a passion for engineering and “creating something useful out of something worthless”. After obtaining his BSc in Chemical Engineering from Lamar University and an MBA with a focus on Project Management, Procurement and Project Finance from the University of Houston, Schmidt recently obtained his PE license—considered the highest standard of competence in the engineering profession.

Today, Schmidt works in a mechanical engineering capacity at Dow Chemical, but has prior experience working in a variety of roles in both capital and maintenance projects. After graduating during a downturn in the market, Schmidt was able to use one of his hobbies, computer animation, as a jumping point into drafting, where he worked for several years before moving into a process engineering role, and then into piping engineering.

In his current role, Schmidt works out of the Dow Houston office, where he guides the day-to-day activities of a handful of designers and engineers, as well as coordinates their training and performance reviews. He also helps a variety of clients with capital and maintenance projects.

“The designers create a proposed design,” he explains, “and the pipe stress engineers review that design to make sure that the physics involved are safe. After the designer has proposed a routing, we check the thermal growth, the weight, and flow phenomena like transient flow, water hammer, flow-induced vibration, acoustically-induced vibration and all the different rigors that we put the pipes through to make sure that there are absolutely no unplanned events.”

“Unplanned events are unacceptable,” Schmidt tells World Valve World Americas. “Dow plans to be safe, to protect the environment, to ensure the health of the community, and to make a profit. Hurricanes, ice, and other natural phenomena are no excuse to deviate from the plan.” It is up to Schmidt and his team to predict the risks associated with piping and to help the owner manage them.

Acceptable Risk

To make his calculations, Schmidt draws from a wealth of information already documented and known in the industry, taking the concepts of materials engineering and applying them to the industrial world. The risk of an earthquake, for example, can be calculated in several different ways, some of which are very complex, but the team is usually able to find a more simplified method, one in which the pipe is never pushed “to the ragged edge of danger.”

“In any business or engineering endeavor, we have to take risks,” explains Schmidt. “My goal is to take intelligent risks. For example, a designer will attempt to apply a design to a situation and I evaluate the risks associated with that design, in that situation, and of course I try to limit those as much as possible.”

“In some cases,” he continues, “with the accuracy of the calculations involved, it is better to err on the side of safety, say 20 percent or even 30 percent, as opposed to trying to save a few pennies and then shaving it down to a 1–3 percent margin of error.”

Sometimes an owner’s consulting engineer will recommend an expensive solution to what they perceive to be a credible risk to the operating plan.
When the owner disagrees with the proposal or the risk assessment, Schmidt’s team will be called in for a second opinion. Many times, the key conflict is on risk tolerance and deciding the best engineering model to apply to a design. Negotiating this conflict resolution can be challenging technically and socially.

“Schedule delays on large projects can mean large financing charges. Delaying a 300-million-dollar project 6 weeks costs 3 million at the company’s borrowing cost,” says Schmidt. “The capital costs can be huge but the time to market, and the cost of a deployed construction team not being productive, may surpass them.”

**Mentorship**

Dow has a strong mentoring program focused on skill development, employee engagement and strengthening best practices. Mentorship programs are a long-term investment and can make a real difference in the dynamics of an organization, though not all companies in the industry embrace mentorship and knowledge transfer, which depends on the learning curve for new employees.

“At Dow, we are able to leverage the talent we have with our mentors,” explains Schmidt, “while mentees bring fresh ideas. The mentor-mentee relationship is effective in helping to accelerate the growth of the mentee and to provide unique insights for the mentor. It’s really a win-win situation.”

Another advantage of a mentor program, Schmidt points out, is that by training mentees he is sometimes alerted to gaps in his own knowledge.

“I noticed, during training sessions with my mentees, I became more aware of what I didn’t know. It turned into an opportunity for me to learn new things and fill those gaps in my own understanding. I have definitely found that the best way to continuously learn and to find holes in an established process is to train somebody new.”

Schmidt himself was mentored by his predecessor, Scott Allen, who guided him into the world of pipe stress engineering.

“Being mentored helped me accelerate my own learning and expertise and gave me opportunities to succeed,” he says. “The sustainability of the industry as a whole depends on this relationship, and I believe that everyone must do their part.”

**Equipment**

In his role, Schmidt works with a variety of equipment, including valves, pumps, expansion joints, and hoses.

While plant technicians generally take care of any hose issues, Schmidt is very hands-on with the company’s many expansion joints, which require a higher level of technical expertise.

“With expansion joints, I get involved pretty quickly,” he says. “They can get quite complicated. Expansion joints are typically used in places where you are trying to isolate vibration, where there is some usual movement (like settlements), or where there is a delicate nozzle that needs to be taken care of. For example, we have a lot of glass-lined reactors at Dow Chemical, which are great for reducing corrosion or product contamination. These reactors have a glass nozzle, which is obviously quite delicate, so we often use expansion joints to protect those.”

He also works with many different types of pumps—including positive displacement and centrifugal compressors—and says that one of the biggest challenges he sees in terms of safe pump installation has to do with the vendor.

“If vendors don’t have a clear idea of the allowable load, that can make safe installation a challenge.”

He continues: “When installing the pump, I am interested in making sure that the forces on the inlet and outlet are low enough that it is going to work reliably. A pump that is getting too much force on its connections will suffer case deformation or coupling misalignment. If that happens, you are going to have difficulty getting that pump to work; you might have seals failing early and general reliability issues, which translates to downtime in your plant.”

As the group leader for process safety valve installation, Schmidt is also no stranger to relief devices, and spends a good deal of time working with pressure safety valves (PSVs), rupture discs and many other types. Generally, Schmidt is less concerned with the inner-working of the relief devices and more concerned with how they relate to the pipe assembly.

One of the first things he asks the process engineers on a site is whether a valve is fast opening or closing. It turns out, this is critical information for a man whose primary responsibility is predicting the unpredictable.

**Fluid Hammer**

Fluid hammer, also called water hammer or hydraulic shock, is a pressure surge or wave caused when a fluid in motion is forced to stop or change direction suddenly. It often occurs when a valve closes suddenly at an end of a pipeline system, when steam from one pipe mixes with condensate from another, or two-phase flow occurs producing

Is the vertical part of this line installed in a way that may cause an unplanned event? A variety of tools exist for the piping engineer to use: non-destructive testing and the experiences shared through the ASME code.
END USER INTERVIEW

A pressure wave in the pipe. This pressure wave can cause major problems, from noise and vibration to pipe rupture.

“The equipment is never designed to handle fluid hammer — neither is the pipe. It is unpredictable and dangerous,” explains Schmidt. “Fluid hammer can cause the pipe to fail, the pump to fail and it can destroy the surrounding steel and damage the internals of valves.”

A properly designed, operated and maintained steam system rarely, if ever, suffers a fluid hammer event — however, by its very nature, it is impossible to plan for it. Avoiding fluid hammer requires both a thorough understanding of its causes and contributing factors and following good design, operations and maintenance protocol. Other strategies for reducing the effects of fluid hammer pulses include accumulators, expansion tanks, surge tanks and pressure relief valves.

“My primary job is to make sure there are no unplanned events,” he adds, “to make sure the designs our designers create are safe. Fluid hammer is unpredictable, and we try to avoid it but if it is going to happen we want to be as safe as we can and put in extra support.”

The Human Factor

As the reader can imagine, coordinating a team of 18 engineers, consulting on capital projects and providing on-site support is no easy feat. Of all his daily responsibilities, Schmidt says the most challenging are the human factors: understanding how to communicate with and align to the goals of his co-workers.

Coordinating, training and motivating people is an amazingly difficult thing to do in any profession, but Schmidt believes in the importance of counterpoints: alternate points of view and people who will challenge our ideas and inspire us to work hard and make progress.

“I need my co-workers, even though sometimes it is difficult to deal with them,” he laughs. “But without people to challenge us, we stagnate.”

For Schmidt, the best parts of the job are the freedom to learn new technical information, and the opportunity to interact with peers, inside and out of the company. “I interact with ASME professionals and professors, read technical journals, etc. I have been given a lot of leeway to collect a vast sphere of knowledge and then apply it to real world problems, which is exciting and gratifying.”

One of his favorite experiences working with Dow was being called out to a job site at 2 o’clock in the morning on a Sunday. “When I arrived, there was about a dozen very angry pipefitters who had encountered an unforeseen problem with the design of a maintenance project. When I left two hours later they were smiling because they had a clear solution. Helping people find a solution to a problem is gratifying. The next morning, I had an encouraging email from the group leader waiting for me, which I still have pinned to my wall today.”

“I’m proud to say that I work for a safety-conscious company,” concludes Schmidt. “I admire this company and what it stands for. The employees can hold a capital project or maintenance operation if they feel that something is unsafe. Safety is our primary concern at Dow, but in an unplanned event we’re motivated to get the plant up and running or the project back on schedule.”
A Moment With...  Matt Gobert, EMSI

2018 Fugitive Emissions Summit Americas Steering Committee Member

Valve World Americas was pleased to speak with Steering Committee member Matthew Gobert, Vice President of Business Development for Emission Monitoring Services, Inc. (EMSI). The Steering Committee plays a vital role in ensuring high quality presentations are included in the conference program and Matt’s expertise and knowledge has been a great resource to the team. He was eager to share his experience in the environmental industry and the importance of networking and sharing with industry peers.

The Fugitive Emissions Summit Americas Conference will take place at the George R. Brown Convention Center in Houston, Texas from June 26th to 27th and will touch on a number of relevant and informative topics focused on low emission products, inspections, and environmental solutions throughout various industries.

Matt:

I went to Lamar University in Beaumont, Texas and majored in Business. I have been in the Leak Detection and Repair industry (LDAR) for over 27 years and have worked every facet from operations to marketing, to my current role which is Vice President of Business Development. I have also worked hand-in-hand with the Environmental Protection Agency (EPA) for many years. I was the 2017 AWMA, which is the Air Waste Management Association’s Secretary. I also co-chaired the LDAR symposium for five years and am part of the ASEPM, the American Fuel and Petrochemical Manufacturers Association. I have been in the industry for a long time: I guess I look at my position as though I am trying to appease everybody — I am an LDAR aficionado of sorts. My favourite part of my day-to-day routine is seeing people stress-free after we help relieve their pain. I love working with people and coming to solutions that help make their lives easier.

What is the importance of being involved in a Conference like the Fugitive Emissions Summit Americas?

Matt: I think the importance of being involved is participating in the major networking opportunities. Someone at the conference is likely dealing with or has dealt with the issue that you are currently handling and having the opportunity to speak to others about that issue is extremely valuable. Not only that, but some of the presentations and information can make a major difference to your company’s operations, especially in the environmental world. Whether you save millions of dollars or pay millions of dollars, every bit counts.

What is the appeal of going to the Fugitive Emissions Summit Americas Conference in particular?

Matt: I think this conference will pair two worlds. In the environmental world, there are a lot of different aspects. You have got the guys who are trying to maintain compliance, most of whom are trying to make sure they meet the regulatory requirements of the government. The great part about the Fugitive Emissions Summit Americas Conference is that you also have a lot of valve manufacturers involved. I think that is a unique twist because most other conferences just have a lot of people that assist when it comes to reporting and calculating emissions, and things of that nature, whereas the Fugitive Emissions Summit Americas event will actually have the guys that manufacture the equipment to help minimize emissions and cut down on leaks. I think that is a huge benefit.

How do you think the Fugitive Emissions Summit Americas conference program caters to end users?

Matt: End users will get a couple of things. I hope they will participate in the networking aspects, because they are extremely valuable. They will receive a lot of good information not only from the presentations, but also from the guys actually doing the day-to-day emission calculations, tracking, and monitoring. They will get information from the actual manufacturers of valves and other components that will help to reduce emissions. Those guys usually don’t attend environmental shows, so that is very unique to this event. I think...
the biggest thing they will take away is a lot of good points on how to maintain compliance, from the broad range of perspectives from end users and OEMs across the country. They will learn different methods than what they have been accustomed to. Also, being able to get contact information of the presenter is points of reference for future questions is invaluable. I think all those things are huge.

What will you be presenting on at the Fugitive Emissions Summit Americas conference?

Matt: I will be moderating the Regulatory Updates workshop. Usually as a moderator what I try to do is introduce the speaker, give a quick bio of the presenter, and try to make sure we stay on schedule. I really try to not only listen to what they are speaking about, but also jot down three to four questions. From what I have seen, a lot of people are a little gun shy when it comes to question and answer sessions, so I try to open it up and have a few questions off-hand I feel the audience is thinking. Sometimes no one really wants to put up their hand to ask, so it just gets the conversation going. One, it makes the presenter feel really good that someone actually listened to what he was talking about. Two, I like to open it up to ask a few questions—that way we can hopefully get that one person in the room that’s having that particular issue to feel comfortable enough to ask and get something out of the presentation. That is the biggest thing for me: having everyone who attends walk away feeling like they got something from the conference. I don’t plan to be the smartest guy in the room — I usually ask the most questions.

How does the participation in the Steering Committee help shape the conference?

Matt: I think it is very important. I think when you have people like myself who have been in the industry for 20+ years, a lot of the newer people in the industry who don’t have a lot of the same experience and knowledge, come to us and ask us which conference we feel is the best to attend. They ask us, which conference do you feel you obtain the most information from? I think having experts involved helps guide those people to certain areas. I think that is important — having people with a lot of experience and those with little experience together as they are not speaking the same language. Nowadays, more and more people are very limited on the number of conferences they can attend a year, so it is good to have people already in the industry pushing those newbies towards certain conferences — the ones where they feel they can get the biggest bang for their buck.

What topics do you think will be well-attended at the conference?

Matt: I feel that I am partial to the LDAR side, so I have been really pushing that and telling people about it. I am really looking forward to that one — I feel it will be very well-attended with the amount of industry here in Houston and being so close to downtown.

What do you feel is the importance of bringing young people to these types of events?

Matt: It is extremely important. Young professionals today think of things in a whole different manner. Getting young professionals into the industry early and showing them that this event is a great learning and networking environment is tremendously important. Quite frankly, a lot of the guys who help develop the other conferences are getting older, retiring, and getting out of environmental altogether. 80 to 85% of the people look at two major factors when they’re looking for training and what shows they should attend. The biggest factor is, “What is the content and what can I learn?”, and the second is, “Can I have fun while I am there?”. No one wants to go to a conference in the middle of nowhere; they would much rather go to Houston, Dallas or LA. If they only have one opportunity to go for one training a year, they want to make sure it is somewhere they can enjoy it.

In your opinion, how do conferences like the Fugitive Emissions Summit help to bridge the knowledge transfer gap?

Matt: The way they do this more than anything is setting up really good presentations, but then offering an opportunity for attendees to participate in some sort of relaxed happy hour or after-show mixer. This is where people can talk to presenters and may be able to ask them questions that they did not want to ask in a formal group of people. It puts them in a relaxed atmosphere where they feel more comfortable walking up, introducing themselves and asking some additional questions.
**MARKET REPORT**

By 2030, EIA predicts that in the U.S., natural gas generation will increase to 42 percent and coal generation will decrease to 16 percent of total power generation. Natural gas will provide 34 percent of the nation's electricity in 2019 continuing the trend of recent years. Coal held the top spot as recently as 2015 and 15 years ago produced more than half of all U.S. power, at 51 percent compared to just 17 percent for natural gas.

Nuclear power produced 20 percent of U.S. electricity in 2017 and is forecast to hold that level this year, then fall to 19 percent in 2019.

Over the next three years new gas turbine combined cycle (GTCC) capacity additions will average 18 GW per year in NAFTA. Ten percent of existing valves will be replaced each year. This results in replacement valves for 62 GW. (2)

This will result in valve purchases of $1.56 billion per year. Half of this total will be high performance valves. High performance valves are defined as those in severe or critical service. They can also be defined as those valves where potential performance, maintenance and life factors outweigh initial cost when it comes to total cost of ownership.

The top 100 gas turbine plant owners will spend $542 million per year for high performance valves in the NAFTA region. The combination of a market dominated by 100 purchasers and a group which will be buying based on total cost of ownership creates the conditions for a sea change in the market.

When you consider that many of the larger participants such as Duke Power are monitoring the valves at their many plants and making decisions centrally for all plants the magnitude of the sea change increases.

How does a valve supplier interface with an end user who is using data analytics and remote monitoring to determine the total cost of ownership for each valve in the system? The answer is that the valve supplier will need to be able to understand the unique aspects of each process where valves are being used. Flow accelerated corrosion will vary from plant to plant and system to system depending on the cycling rate. Some plants are having major problems with desuperheaters. Are there different valve designs which would help solve the problems? Will automating the on/off valves result in a high return on investment? The answer to this question is also dependent on how quickly the owner is moving to remote monitoring and operation. (3)

Many operators are opting to install zero liquid discharge systems either due to the aridity in the region or stringent wastewater emission standards. These systems involve evaporation, solids and other challenging conditions for valves. All these questions need to be answered to achieve success in this new market.

The sea change in the market can only be successfully navigated if the valve supplier is able to understand the unique aspects of each process where valves are being used. Flow accelerated corrosion will vary from plant to plant and system to system depending on the cycling rate. Some plants are having major problems with desuperheaters. Are there different valve designs which would help solve the problems? Will automating the on/off valves result in a high return on investment? The answer to this question is also dependent on how quickly the owner is moving to remote monitoring and operation. (3)

**Significant Growth Potential for Gas Turbine Valves in NAFTA**

NAFTA is the leading purchaser of valves for gas turbine combined cycle power plants. The installed capacity of gas turbines will reach 620,000 MW by 2021. (3) The region will account for one third of the world capacity at that time. With the expectation of plentiful low-cost gas in the region the capacity growth will continue at a high pace.

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**By Robert McIlvaine – The McIlvaine Company**

**Gas Turbine Combined Cycle Power Generation Capacity MW**

<table>
<thead>
<tr>
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<th>2021</th>
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Gas Turbine Valves in NAFTA

### MARKET REPORT

**Significant Growth Potential for Gas Turbine Valves in NAFTA**

A [market report](#) highlights the potential for growth in the gas turbine valve market within NAFTA countries. The report indicates that the demand for gas turbine valves is expected to increase significantly due to various factors including the rise in natural gas usage and the need for efficient power generation systems.

### ABOUT THE AUTHOR

Robert McIlvaine is the CEO of the McIlvaine Company which publishes Industrial Valves: World Markets. He was a pollution control company executive prior to 1974 when he founded the present company. He oversees a staff of 30 people in the U.S. and China.

**http://www.mcilvainecompany.com**

### Gas Turbine Valve Purchases - NAFTA - Annual 2018-21

<table>
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<tr>
<th>Category</th>
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### REFERENCES

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2. Industrial Valves: World Markets published by the McIlvaine Company
3. IIoT and Remote O&M published by the McIlvaine Company
4. Gas Turbine Decisions published by the McIlvaine Company
5. Power Plant Valve Decisions published by the McIlvaine Company

### Valve Supplier

Supplier becomes very knowledgeable about the unique processes at each major corporate client and if the supplier develops lowest total cost of ownership analyses (LTCO) for each valve type in each process. Some insights will come from third party, plant, automation and process suppliers but they also must come from subject matter ultra-experts and knowledge system providers.

The distributor is another important resource. Suppliers of complimentary components and valve sub components (seals, actuators, etc.) can help the valve supplier so that each develops products with the LTCO.

The best course to navigate the sea change is to focus on the large individual corporate clients and collaborate with suppliers of process systems and complimentary components. The starting point is to determine which companies your distributors now represent. If your distributor is successful by combining complimentary products then these same OEMs can collaborate and share knowledge to help each other develop the necessary process knowledge so that each offers the LTCO.

Navigating the sea change is going to be difficult but the impact on revenues and profits is potentially very large and there is no time to delay before resetting the compass.

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Isolate the Problem
Interview with Jody Millsap, President

A small company president’s role involves much more than sitting in a corner office. Jody Millsap gets his hands dirty. “My personality is not that I can be content sitting in an office,” he said. “I like to interact with the customers, help with sales calls and getting my hands on the equipment. President is just a title. You have to be a jack of all trades. I like to be out doing stuff and staying busy.”

Solving problems for his customers is what sets Jody Millsap apart from the pack.

“I love to investigate a problem and find a solution,” the 50-year-old president and owner of Water Solutions Engineering said. “This is what I really enjoy. This is one reason why I like to do consulting in addition to our regular work. The customer I started consulting with in 2012 had a 15-year-old problem. It was water related and we were able to solve it. This is what I really love to do—go in and help a customer solve an issue—to show what the problem was and show how we solved it. The gratification of doing that means the world to me.”

Background
Millsap became interested in engineering at an early age. “My dad had a huge impact on my life,” he said. “Growing up I was good in science and math. He recognized the skills I had. I now can admit that perhaps fathers and mothers know more than their kids know.”

Millsap earned his Bachelor of Science degree in Chemical Engineering from UT then worked the next two years in management for a textile chemical company and then worked at a coating company. Then he landed a project process engineering position with a fiberglass extrusion company, which is where he got more involved with valves, automation, and large mixing projects. He worked there for about 5 years and then became interested in chemical water treatment.

For the past 10 years, he has been running Water Solutions Engineering, which treats industrial water for corrosion, scale, microbiological issues, cooling towers, boilers, chill water systems, and everything industrial, but nothing potable. He cofounded the company with another gentleman in 2008, but became sole owner in 2014.

Chemical water treatment typically consists of adding numerous types and sometimes excessive amounts of chemicals necessary to overcome poor water quality in the attempt to achieve acceptable performance from water systems. “The key to our chemical water treatment programs is to first provide and maintain the best possible water quality through physical water treatment, followed by chemical treatment to enhance the performance of water; rather than combat poor water quality with an abundance of chemicals,” Millsap explained.

Water Solutions Engineering™ is headquartered in Kingsport, TN. (90 miles north east of Knoxville). Reducing overall water and energy consumption is a priority. Water Solutions Engineering™ relies on its experience and expertise to design total water solutions for its customers utilizing the latest technologically-advanced industrial wastewater treatment equipment and a wide variety of environmentally-friendly chemical water treatments.

“We have about 100 customers, and perform chemical water treatment on a much smaller scale for small and mid-size industries and commercial accounts,” he said. “Employees handle the day-to-day operations of seeing customers, ordering chemicals, ensuring the chemical levels are correct and that the equipment is functioning the way it should. In 2012, I began doing some consulting to help customers as a chemical water treatment supplier and to help them with overall water re-use, water savings, and overall industrial water usage and chemical programs. For example, recently Millsap installed about 9 or 10 water meters and re-wired some controllers for a manufacturing company in California.

Problem Solving Expertise
Millsap described one kind of problem that he might be asked to tackle.

“One customer had a staining issue with their product,” he said. “Their product is white, but had steam and cooling water that would regularly touch the product so they would randomly have small stains—a yellow staining area. It was very small and difficult to see at times, but it was ongoing for about 15 years. Through a combined effort and after several visits, we discovered that the staining was a result of an incompatibility between some chemical water treatment from the previous vendor. We made some changes and found that the stain got worse. This helped us to isolate the problem. Prior to 2012 it was completely random. They could not increase or decrease the amount of staining, nor could they affect it adversely or positively. We

Jody Millsap. Image courtesy of Jody Millsap.
were able to adversely affect it, which helps us identify the incompatibility issue with some of the chemicals they were adding to their water. We removed the chemical and now the stain has not resurfaced for the past 4-plus years.”

Millsap’s process for solving problems is simple, but precise.

“First, we try to understand the whole process, not only the water, but what outside influences are impacting the problem area,” he explained. “Then we determine if there is direct or indirect contact. So the focus begins inward and then expands outward. We try to discover what the potential sources of impact are. One at a time, we try to make changes of the different components, and to see how it impacts the issue. If you make a change, you have to give it some time to take effect. Sometimes we wait 24 hours, for example. If we don’t get a change or response, we try something else. It’s important to not change more than one thing at a time, because then you can’t identify the problem. The key is isolating the problem.”

Problem Solving Valves

In the water treatment industry, Millsap said he mainly works with blowdown valves—which is a generic term for a need-for-water, or a blow-off valve. These valves are generally electronically actuated in contrast to a hand valve.

“A blowdown releases water from a cooling tower or a boiler system to let the old concentrated water out and let some other sort of city water or fresh water in,” he said. “We use these often in our industry. Cooling towers have very low pressure and let the water out of the basin or the recirculation line, which usually run around 60 psi. It’s typically a solenoid-activated ball valve with a diaphragm. We will ask the customer to identify what problems they have settled in the bottom. This can cause the diaphragm to fail. In 2005, we started seeing a lot of bleach (sodium hypochlorite) and sodium bromide (a halogen product) being used because of off-gassing. In these cases, peristaltic pumps are very reliable—if it runs dry it doesn’t matter or if it gets air in the line it doesn’t matter, that pump will continue to pump. They are not as precise, but we don’t need to be that precise. The standard tubes last a long time, and they are user-friendly as far as changing the pump head and tubes.”

For pumping water, Millsap prefers a basic centrifugal pump. “Sometimes we have customers who use diaphragm pumps for chemical injection, so of course we know them and understand them and can provide them. We can replace parts and perform rebuilds, if needed,” he said.

Maintenance Tips

Valves are fairly robust, Millsap said. “For general maintenance, I would suggest to check the operation of the valves monthly for cycling, closing operation, check for leaks at the seal, and make sure everything is working correctly,” he said. “For the pumps we use, general maintenance includes checking the pumps at least once a month. Check for functionality and leakage. Make sure they are mounted properly. If the pump head or tube ever leaks, the chemicals can get into the motor if it is not mounted properly. Mounting is key. These pumps are great for industrial settings, but if you have a lot of dust the pumps may need to be placed in a dust-proof box that provides good air flow. Motors need to be kept cool while running, so it’s a good idea to have good air flow.”

Safety Tips

The first rule of safety, Millsap said, is to always wear the proper PPE (personal protective equipment).

“We follow the customer’s PPE standards, and we even go one step further,” he said. “For example, they may not require safety shoes, but we still wear safety shoes. We use steel-toed shoes, safety glasses, ear plugs, and gloves. We are typically handling chemicals or equipment that contain chemicals. So the gloves, though not required, are something we use most of the time. Follow the safety guidelines of the facility. Be aware of your surroundings and the location of the exits. Many customers require annual safety training. We are fortunate that in 10 years we’ve had nothing more than minor incidents that required first aid.”

Millsap’s team enters up to 90 different sites on a monthly basis. When people go into the same facility every day, they know all the hazards, he said. “We are going into a plant once a week or once a month, or once a quarter. There are constant changes at these facilities. We train our guys to be sure to walk slowly, look around, don’t be on your phones, and pay attention. Make sure you have the proper protection equipment. Any hazards we find, we bring to the maintenance team’s attention. Our philosophy is to be an extension of the customer’s maintenance team. Make sure the area you are working in is well lit. If you are doing extensive work, make sure someone knows where you are in case of emergency like electrocution, etc., especially when working in remote areas.”

The Water Solutions Engineering team works primarily in Tennessee, Virginia, North Carolina, and South Carolina. But they also service some customers in Maryland, Florida, and California.

Advice for End Users

First and foremost, Millsap advises other end users, especially young engineers just beginning their career to simply be happy and enjoy what they are doing. “If you don’t enjoy it, make a change,” he said. “Don’t make decisions based on money. If you love what you do, the money will come. If you don’t love what you do, you will be miserable. Find what you enjoy and give it 110%. And, be like a sponge. Listen and learn from others. Try to understand what others are doing because that could impact what you are doing. The more you learn, the more you know. This will always add value to what you do.”

Finding solutions to challenging problems is a daily activity for Jody Millsap. Image courtesy of Jody Millsap.

END USER INTERVIEW
A Radical New Innovation in Magnetic Valves

Then to Now

Valve packings have been employed for hundreds of years, and though modern high tech, low emissions gland packings bear little resemblance to the leather or jute gland seals of olden days, they do not alter the fundamental problem: Once a valve reaches the end user, the manufacturer cannot control the environment it will be subjected to – dirt, grit, salt, corrosion, and caustic working fluids all take their toll.

Magnetically actuated pack-less valves go back 75 years, to Ralph Carlson’s work at Crane in the early 1940s. Yet despite the allure of a stemless valve operated solely by magnets, and the ideas being revisited in every decade since, magnetically actuated valves caught on only in a few niche applications, given the expense and delicate nature of suitable high-strength magnets prior to the late 90s/early 2000s. However, even since the advent of relatively inexpensive Neodymium Iron Boron magnets in the past 20 years, magnetic valves have not progressed as far as their proponents hoped.

Troubleshooting Limitations of Previous Magnetic Valves

There has always been a tradeoff with magnets between magnetic strength, temperature performance, corrosion resistance, robustness, and cost. It was not a game of being able to choose any 4 out of 5, because all the available choices involved severe compromise. A patented approach has been developed to get the magnets out of the valve body so they do not fail on the inside, whether from temperature, corrosion, or fluctuating magnetic fields. Magnets now can be selected on the basis of what they must accomplish magnetically, independent of compatibility with working fluids or operating temperatures.

Anyone experienced with valves in real-world environments knows they get stuck. With a straight mechanical linkage, such as a traditional valve stem, one can force a valve to unstick, though this can be ill-advised. Magnetically actuated valves that have a specified operating torque designed not to be exceeded, may overcome the problem of the overzealous operator who otherwise could damage a delicate valve seat or expanding gate or bend the valve stem by going Neanderthal on it. On the other hand, a set torque limit can spell disaster when faced with a corroded valve handling a sticky fluid that’s been closed for several months. The practical magnetic valve must offer asymmetric torque into, versus out of, a seated state, in order to overcome stuck valve conditions, typically 20% overtorque as a minimum, with perhaps an optional set of cheater handle approaches where customer applications allow.

As corrosion and material compatibility are always considerations in industrial, petrochemical, steam, and marine valve applications, removing the magnets from the enclosed valve body goes
Prototypes from 8 Years of Magnetic Valve Research.

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TECH TALK

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Removable Handle.

A long way towards alleviating corrosion issues too. It is easier to mitigate, monitor, and control corrosion if it only occurs in the actuator external to the valve body. In the event that an anti-corrosion coating or treatment is damaged, for example, it is much more evident when it occurs outside the sealed bonnet, where the external actuator can be repaired or replaced without disturbing the balance of the valve — often while the valve is still in operation and the bonnet remains sealed.

While demagnetization events may occur from a handful of causes, the most common involve exceeding the operating temperature of the magnets where degradation begins to occur (or worse, the Curie temperature where total demagnetization can happen), or because of coercivity issues, as for example, with AlNiCo magnets, whereby external magnetic fields degrade the magnet. Again, these situations can best be managed externally, and if they do occur, by repairing or replacing the actuator without impacting the rest of the system.

The three most likely candidate magnets for magnetic valves are Neodymium Iron Boron (the most powerful type of magnet currently available), Samarium Cobalt (a previous generation of rare earth magnet somewhat less powerful, and more expensive to produce, but with a higher operating temperature range), and AlNiCo magnets that can operate at extremely high temperatures, but with a higher operating temperature range, and AlNiCo magnets that can operate at extremely high temperatures, but have low coercivity and hence need special handling such as keeper bars to preserve their magnetism when not in use, and thus not practical for most applications out in the field. Either type of magnet needs to be coated for use inside the valve / fluid compatibility and is subject to internal corrosion (often severe) if the coating were to deteriorate or fail.

Magnetic chucks for machine tools do not really mind how hot the work piece gets during machining. The magnets are enclosed deep within the chuck and the clamping force is switched on and off like a circuit. Similarly, instrument and optical mounts contain the magnets — whereas the table they attach to does not and, these systems are quite strong. The completed magnetic circuits develop tremendous forces, and those forces can be released just by turning a dial and disconnecting the magnetic flux path."

Dr. Davis built an initial actuator prototype using a modified C-clamp and a couple of magnets and the initial prototype worked. US Patent Number 9,797,521, for a Rotary Magnetic Coupling Actuated Valve with External Magnets and Internal Magnetic Flux Path, was issued to Dr. Davis on October 24, 2017.

The Invention

The new magnetic valve actuator works by keeping magnets outside the sealed valve enclosure and providing a magnetic circuit through the inside of the valve enclosure. It can operate at far higher temperatures than previ-
ous approaches without employing AlNiCo magnets, the valve bonnet can be sealed (hermetically if desired), no internal valve maintenance is required (all internal components are inert), there is no more potential for corrosion of magnets inside the valve, no special handling of the magnets is required, the valve can be soldered or welded to the surrounding system, the actuator or its magnets are easy to replace without taking the valve out of service, and the external portion of the actuator can even function like a key and disconnect from the valve body when not in use.

Applications
Potential applications are innumerable. At the forefront today, we think of the complete elimination of fugitive emissions – zero – zero ppm – where not even a static seal is required anymore, if one isn’t wanted. This valve and the systems that employ it can be hermetically sealed. Lethal Service valves will be another critical application of the technology, and life-threatening leaks can be completely eliminated because the new type of hermetically sealed magnetic valve has no leakage paths. Steam valves are another obvious application, as this new technology can support high temperatures and steam leaks are notoriously dangerous and wasteful. The valve can enable arbitrarily high levels of reliability in an overall valve system or network of valves – higher reliability than any other approach out there, including bellows, whose welded seam fatigues over time. Long-term applications likely include semiconductor manufacturing and nuclear power. Marine and other harsh environments, or environments sensitive to contamination, such as food/pharmaceutical processing and medical systems are also strong potential applications. The valves can survive being run through an autoclave, in fact. Water, wastewater and even residential applications may well emerge, due to the lowered maintenance and zero leakage. Oil and gas pipelines stand to benefit twofold from the technology because it is both leakproof and tamper-resistant. The actuator can be removed once the valve is set, and only authorized personnel will be able to access it, like a key. Two pipelines in the same right-of-way could be keyed differently to avoid confusion/mistaken actuation.

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ABOUT THE AUTHOR
Ned Davis is the Chief Innovation Officer at Plexis Engineering and holds a PhD, MS, BS in Mechanical Engineering & Masters in Electrical Engineering all from Johns Hopkins University. With 20+ years of engineering and engineering management experience, he has been working on Magnetic Valves in particular for 7 years. He started at Westinghouse and then Northrop Grumman, which provided him with extensive experience with naval & marine machinery, and avionics, harsh operating environments, etc. His hobbies include woodworking, metal-working, cooking, and swimming in the ocean.
In this section you will find a listing of recent new Projects happening in the market & latest valve and valve related Tenders for the Americas.

Canada-Ontario:
Valve assembly (W8482-184035/A)
Description: Valve assembly (W8482-184035/A)
Contact point: shonna.keith@forces.gc.ca
Time limit for receipt of tenders or requests to participate: June 20, 2018
Language in which tenders or requests to participate may be drawn up: English, French

United States-Pennsylvania: Valves, various
Description: Valves, various
Contact point: Velma E. White, +1-717-605-7525
Time limit for receipt of tenders or requests to participate: June 18, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Pennsylvania: Valve, globe
Description: Valve, globe
Contact point: Mitchell Luse, +1-717-605-4078
Time limit for receipt of tenders or requests to participate: June 18, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Oklahoma:
Actuator, electro-mechanical
Description: Actuator, electro-mechanical
Contact point: scott.rountree@us.af.mil
Time limit for receipt of tenders or requests to participate: July 5, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Pennsylvania: Valve, ball
Description: Valve, ball
Contact point: Mitchell Luse, +1-717-605-4078
Time limit for receipt of tenders or requests to participate: June 18, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Virginia: Valve, gate
Description: Valve, gate
Contact point: Margaret Williams @ navy.mil
Time limit for receipt of tenders or requests to participate: June 18, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Pennsylvania: Supply of valve, globe
Description: Supply of valve, globe
Time limit for receipt of tenders or requests to participate: June 18, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Pennsylvania: Valve, butterfly
Description: Valve, butterfly
Time limit for receipt of tenders or requests to participate: June 15, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Pennsylvania: Valve, linear, direct
Description: Valve, linear, direct
Contact point: Royce Hoffman, +1 717-605-4048
Time limit for receipt of tenders or requests to participate: June 18, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Pennsylvania: Valve, regulating flow
Description: Valve, regulating flow
Contact point: Royce Hoffman, +1 717-605-4048
Time limit for receipt of tenders or requests to participate: July 3, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Ohio: Valve, globe
Description: Valve, globe
Contact point: Joseph Solomon @ dla.mil
Time limit for receipt of tenders or requests to participate: July 5, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Washington:
Valve, safety relief
Description: Valve, safety relief
Contact point: Lyndsay Hoke, +1-717-605-4506
Time limit for receipt of tenders or requests to participate: June 11, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Ohio: Actuator
Description: Actuator
Contact point: Michael Shirley @ dla.mil
Time limit for receipt of tenders or requests to participate: May 29, 2018
Language in which tenders or requests to participate may be drawn up: Spanish

Brazil-São Paulo: Acquisition of valves
Description: Acquisition of valves
Contact point: +55 (11) 33889379
Time limit for receipt of tenders or requests to participate: June 11, 2018
Language in which tenders or requests to participate may be drawn up: English, Portuguese

Guatemala-Zunil: Supply, installation, testing and commissioning of three (3) butterfly valves
Description: Supply, installation, testing and commissioning of three (3) butterfly valves
Contact point: +502 2422-1800, victor.saquin@inde.gob.gt
Time limit for receipt of tenders or requests to participate: September 11, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Pennsylvania:
Valve, regulating flow
Description: Valve, regulating flow
Contact point: michael.shirley@dla.mil
Time limit for receipt of tenders or requests to participate: June 29, 2018
Language in which tenders or requests to participate may be drawn up: English

Canada-Ontario:
Valve assembly (W8482-184035/A)
Description: Valve assembly (W8482-184035/A)
Contact point: shonna.keith@forces.gc.ca
Time limit for receipt of tenders or requests to participate: June 20, 2018
Language in which tenders or requests to participate may be drawn up: English, French

United States-Pennsylvania: Valves, various
Description: Valves, various
Contact point: anthea.gladkowski@dla.mil
Time limit for receipt of tenders or requests to participate: Sept. 7, 2018
Language in which tenders or requests to participate may be drawn up: English

United States-Virginia: Valve, regulating
Description: Valve, regulating
Contact point: James Artis@dla.mil
Time limit for receipt of tenders or requests to participate: June 19, 2018
Language in which tenders or requests to participate may be drawn up: English

Guatemala-Zunil: Supply, installation, testing and commissioning of three (3) butterfly valves
Description: Supply, installation, testing and commissioning of three (3) butterfly valves
Contact point: +502 2422-1800, victor.saquin@inde.gob.gt
Time limit for receipt of tenders or requests to participate: September 11, 2018
Language in which tenders or requests to participate may be drawn up: English

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For flow control industries.

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To subscribe to the Projects & Tenders newsletter please contact Josh Gillen (j.gillen@kci-world.com). To submit a project or tender please contact Jody Hewitt (j.hewitt@kci-world.com).
7 Sales Hacks To Hit Your Sales Quo

In a time of economic uncertainty and turmoil, large companies are having to be creative with cost cutting measures to improve their bottom line. Decision makers are being challenged to reach goals with shrinking resources causing undo pressure and time restraints.

By Jill Schoenhofer - WellConnected

“One trend we’re already seeing, as a result, is the spread of cross-functional, ad hoc, and steering teams—which in many cases replace or supplement the work of a traditional, full-time team of people.”

Source: Fast Company – The Top Five HR Trends For 2017

As a salesperson looking to gain a new client, stop for a moment and think about your decision maker. You will understand that their days are filled with challenges. So, why would they spend time away from dealing with them, to speak with you? This should be your number one focus and quest to overcome, if you want to make your sales quotas.

Hack #1

Know Your Client Better Than They Know Themselves. When reaching out to key decision makers start with research: uncover primary business issues and current obstacles their company is facing. Your research online includes you getting an understanding of their big picture mission and vision. Reach out to people in different departments to understand the culture. If available talk with suppliers and their clients. You can often time find this on their website.

Keys to success: Before you can begin to offer your products and services, make a sale and gain a new client — get to know the world your prospect is living right now.

Hack #2

Know Someone On The Inside. As you probably have experienced, meeting key decision makers in large companies is getting more and more difficult. One of the challenges is they do not often attend networking events or trade shows for long periods of time or at all. So the next best thing is to receive a referral. Attend tradeshows and conferences where your prospect exhibits. Go to their booth and spend time learning about what they do.

Keys to success: Build relationships. Referrals from someone inside the company brings value to your meeting with a decision maker.

Hack #3

Know Your 2nd, 3rd, 4th and 5th Move. The likelihood of you meeting with the decision maker in your first attempt is slim. You need a follow up strategy. One simple strategy would be to call numerous times. For some that may work. For others it may be a waste of time. Your success will come when you are able to mix up the approach to your touch points. First understand that by having a follow up plan you are better than half of the sales people in the marketplace vying for your same prospect’s attention.

48% of salespeople never even make a single follow up attempt. *

Source: Hubspot

Keys to success: Layout a multi-touch point plan that has you using a variety of methods. Combine phone calls, direct mail, email, on-site visits and attend functions. This will immediately make you memorable with your prospect.

Hack #4

Know How To Stand Out. How do you stand out when there is so much competition today? Get creative. When you use emails as your means of communication keep correspondence short and to the point by using bullet points. When writing a letter or a note, handwrite on the envelope rather than typing on it. We are curious in nature and most will open an envelope which is hand written. When making phone calls be sure to call early in the morning before their hours of operation commence, or after 5:00PM. People in management often come in early and work late to optimize their time.

Keys to success: The more you can use tactics that help you stand out as someone who cares about them, the more likely they will notice you.

Hack #5

Make It About Them. If you leave voice-mails, write letters or send e-mails your success rate increases when your focus is put on them not on why they should buy your services. Your touch point strategies need content. When you do your research, use your findings as content. For example, in a recent social media post your prospect mentioned their company expansion. Your next email could be congratulating them on their success.

Keys to success: People begin the buying process in their mind as they get to know you, like and trust you. Then they will be open to hear from you how you solve their problems.

Hack #6

Know What To Say Before You Say It. Most sales people are so eager to speak about their products and services before they ask the prospect one question. If you want to show how your company can be of value, you need to become curious. The more you find out about their business, the better you can serve them. In order to do that you need to have questions ready. Explore their challenges. Ask open ended questions:

“What are your most pressing problems today?*

“What improvements are needed to increase your operational efficiency?”

“What makes a company an ideal supplier for you?”

Planning Ahead So You’re Not Left Behind.

OUR COMPLETE LINE OF FORGED AND CAST STEEL VALVES MEET THE NEW EMISSIONS STANDARDS ... AND HAVE FOR YEARS.

Planning ahead. As a leading manufacturer of forged and cast steel valves, we are proud of the advancements in valve emissions technology that we have made. Our standard valves meet the latest API 624 fugitive emission requirements, which are incorporated into the 2016 edition of API 600 and API 602. We’ve stayed ahead of the curve by inventing Low Emissions (Low E) valves beginning in 2012 which comply and are marked “Low Emissions”. We have inventory to service your needs ready to ship immediately out of our Mount Union, PA warehouse! Don’t just take our word for it. Our complete line of forged and cast steel valves have been certified by 3rd party testing to both API 622 (packing type test) and API 624 (valve type test). Our valves feature Bonney Forge Eco-Seal® packing, which meets API 622 2nd Edition requirements with average leakage below 50 ppmv for both packing and valves with no packing adjustments. You can count on Bonney Forge to ensure compliance to the latest fugitive emissions standards, resulting in uninterrupted supply of your valves as the industry transitions to Low E. To learn more, visit us at www.bonneyforge.com.

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Quality. Service. 2015.
Sales Hacks To Hit Your Sales Quota During Economic Ups and Downs

Once you have a clear flow of a conversation you have a clear mind to listen to your prospect.

Keys to success: When the opportunity arises to have the first meeting, you want to demonstrate that their best interest is of the utmost importance. Like an athlete you must practice in order to deliver when the game is on.

Hack #7

Keep Track Of Your Performance. It is one thing to have the strategy in place, it is another to know what works and what doesn’t. Once you engage your follow up plan you must keep track of what is going on. The easiest is by using your Customer Relationship Management (CRM) system. If your company does not have one, you can create your own with an automated spreadsheet or a simple sheet of paper. It is really important to track how and where you met the key contact. Key Performance Indicators (KPI) allow you to identify the sales journey. Performance is the key word here. Calling, emailing, visits and mailing are all action words that you do. Your actions (performance) are what you track. These are when, how and what you did over time. This process will then show you patterns, trends and any anomalies of your work.

Make a prediction of how much business, in dollar amounts, you could earn from each prospect.

Keys to success: Your tracking is important. Be sure to make periodic reviews of the data. You will begin to enhance your skillset and gain new clients. Mastering sales is a journey.

ABOUT THE AUTHOR

Jill Schoenhofer, MBA is the founder of WellConnected. She provides unique, interactive training and consulting services for business professionals to generate ongoing referrals that result in revenue growth. To learn more visit: http://www.wellconnectedtoday.com/

To learn more about networking and marketing, attend the “Grow Your Referrals, Grow Your Business” course at the Fugitive Emissions Summit Americas on June 25th in Houston Texas.
David’s interest in the industry initially emerged in the way that many new discoveries do: opportunities presented after graduating. Since then, however, the work to follow has been anything but linear. “Everything is different,” says David. “Whether working with a heat exchanger, valve, pump or a pressure fit, everything is a unique challenge.” Across his experiences, David notes that what he enjoys most is the diversity. “It is not necessary to have the same calculation or boilerplate item repeated time and time again.” The rewards of the work do not come without their challenges, of course. The personal research involved in catching up to speed on a particular sub-issue related item. The goal would be to minimize the inconvenience to the operator, and doing a design change would make sure fit, everything is a unique challenge. “At other times, I would deal with an operator-related item. The goal would be to minimize the inconvenience to the operator, and doing a design change would make their life easier.”

“When it comes to David’s profession—journ—y, he is backed by a resume packed with variety. Having begun his work as a project engineer at Nuclear Logistics, which involved writing test plans and overseeing test equipment for the nuclear-related quality assurance program, he moved to design work and site modifications. This work encompassed anything from replacing pumps affected by chemical corrosion to reviewing the heat exchangers in cooling water systems. From there, he moved into providing consulting expertise on the performance limitations and failure analysis of clients' products, employing strain gages and oscilloscopes to isolate a given product's particular stresses. The scope of David's valve-specific troubleshooting has ranged from seismic testing to entire system redesigns. He notes that earthquake testing of the valves is a particularly big item — though most are fairly resilient, sometimes a weak spring on a valve might cause a chatter. “The design modifications that I was applying were focused on siting and verifying, as well as dealing with the site problems with valves. In some cases, the valve was old, not performing correctly or leaking, and they wanted to redesign the entire system around that problem,” David explains. “At other times, I would deal with an operator-related item. The goal would be to minimize the inconvenience to the operator, and doing a design change would make their life easier.”

The most common challenge, according to David, is the use of valves under normal actuation, which is the most common place in which the packing begins to leak. “If it is a small, typical item, you might be able to schedule the next maintenance window. But once it starts leaking, you have to watch and monitor it much more frequently to make sure that it remains acceptable. Depending upon the location and application, some low internal leakage can be allowed. External leakage on the floor makes a mess and decreases system performance.”

David provides the example of how butterfly valves do not always seal smoothly due to the additional seal present inside of the disc. However, within larger piping systems, people often attempt to use a butterfly valve to throttle the flow. Says David: “That was one of the biggest lessons learned, because if you throttle it more than 45 degrees or so, the flow hits the side of the pipe so significantly that it causes other transients in the pipe to become uneven, resulting in other complications.” The threat of flow-accelerated corrosion (FAC) has also caused its fair share of concerns. David mentions the cases in which an Alloy 800 cracking required weld overlay repairs on a number of pressurizers. Alongside technical challenges, however, the looming theme of obsolescence is one that cannot be ignored. “It is something that we are constantly encountering in the industry,” David expresses. He explains that most nuclear power plants were constructed in the 1970s and 1980s, and that the original plants were given a 40-year life. Those plants that could prove that they were well-maintained over those 40 years were allowed to apply for a 20-year extension, which would provide 60 years of life — and, to be granted those extra 20 years, major pieces of the plant would often have to be replaced entirely. However, many manufacturers did
turning Challenges of the Past

Mechanical Systems Engineer

David Wilhite

An Interview with

into the Solutions of the Future

Not support that obsolescence over the 60-year timeframe. Many times, equipment had to be reengineered, reverse-engineered or redesigned.

Regarding the standards at play in such a process, David indicates that the nuclear industry has a unique Quality Assurance (QA) regulatory program executed by the Nuclear Regulatory Commission (NRC), similar to ISO. However, the one specific to the nuclear industry has included several unique elements for purposes of traceability, manufacturing oversight and QA testing that have different expectations than a traditional ISO program. David notes that many of the manufacturers no longer maintain the nuclear industry QA program, so they would “run the matter through Nuclear Logic in Germany. Nevertheless, new designs and plant openings have persisted despite the publicity. “I still believe that the designs are completely safe within the nuclear industry,” David affirms. “It is an excellent technology. Economic challenges are faced because it takes large amounts of capital to construct the plants in the first place, and that has been a downfall to many construction-related projects.” David emphasizes his desire to clarify that the nuclear-based energy technology is not a safety problem; noting that the massive capital investment is the true culprit. He adds that once the plants are up and running, the day-to-day maintenance on them is typically very low, and the amount of power and electricity within a small footprint is tremendous.

The clean energy involved certainly makes a case for itself, as well. “There are zero emissions to a nuclear power plant. It heats up water and provides electricity. That is all it really is: another water heater, just on a very large scale. The nuclear safety is still paramount, and there have been significant improvements over the years.” With regards to Fukushima, David mentions that the entirety of the USA, and especially the NRC, evaluated all emergency safety plans and rolled out additional safety infrastructures (FLEX). “They have auxiliary emergency equipment in centralized locations throughout the USA. They can dispatch from a remote location. In the event that local assets and resources are damaged from some type of storm, they have the capacity to deploy these remote assets,” he explains. David poses another question to take into consideration when evaluating the plant-radiation dynamic. “Nobody died in Fukushima due to radiation,” David says. “Fukushima was a terrible accident involving a lot of recovery and clean-up, but there were zero deaths due to radiation from the plant.”

Furthering his point, David provides the example of the Three Mile Island accident, the well-known comparison in the U.S., alleging that no one died from radiation at that site, either. “There was barely measurable radiation at the property boundary. It was actually a huge success of the power plant design,” David shares. “The operators made various mistakes, so it was a tremendous warning lesson for all the operators as to how to run a power plant. Yes, the core melted upon itself, but nobody got hurt because all of the safety systems were designed in such a way that it would fail to a safe state. So, these should be considered successes, not failures.”

Looking toward the future, David considers how far the industry has come within the nuclear renaissance of the past ten years. Regarding this shift with optimism, he says: “There is a lot of hype and staffing for those opportunities, as well as construction challenges for trying to build a lot of the nuclear power plants. But I think the technology is very solid for what is there.” The reach of these developments resonates globally, as well, with countries like China teeming on the verge of starting up their next new nuclear power plant by the end of this year, according to David’s estimations. “Keep your eyes peeled. The developments to come are going to help prove that these new technologies are viable and working.”

All things considered, it is palpably apparent that David’s belief in the industry is rooted in nothing short of steadfast conviction. Having stood in the center of the changing tides, David knows that though the industry has seen its ebbs and flows, what matters most is that it has seen them through.

END USER INTERVIEW
16 Years Without any Failures

For many years now, the products of Bayer Division Crop Science have been contributing to good yields and bigger harvests in more than 120 countries around the world: they are thus helping to ensure that world populations receive adequate supplies of high quality foods.

By Thomas Bertsch – Global Industry Segment Management
Process Industries, Festo AG & Co. KG

The R&D process for a new crop protection product takes 10 to 15 years. To enable fast and individual production, Bayer created a new multi-purpose system in 2002 which places huge demands on safety and reliability.

In 2002, Bayer invested around €110 million in the construction of a multi-purpose system at its site in Dormagen, Germany. This houses everything under a single roof, from the development and manufacture of new active ingredients for crop protection, as well as laboratory processing, sampling and piloting, right up to the production processes.

The system is designed so that subsystems and equipment such as dryers, centrifuges, distillers, stirrer tanks and other reactors can be flexibly connected and operated. An in-house pipeline with adaptable piping takes care of the material flows, while the decentralised process control system is distributed over to 67 automation systems, thus enabling the process controls to be flexibly adjusted.

As the process development requires the use of flammable operating fluids, frequent process changeovers and numerous interfaces and intervention points, the entire system has been classified as potentially explosive zones 1 and zone 2 according to the explosion prevention and protection measures.

Minimizing Safety Risks for People and the Environment

The probability of an incident occurring at a chemical plant depends largely on the reliability of the system components and the individual processes. This includes, for example, the availability of coolant water, electricity, emergency stop devices, stress-relief devices, pumps, mixers and process valves.

Processes can be reliably controlled when all the important elements operate correctly, from system operation to the safety functions for instrumentation and control technology. Safeguarding process facilities in the chemical and petrochemical industry using instrumentation and control technology is thus very important. Not only does this prevent dangerous plant conditions (e.g. overpressure), but it also detects future trends at an early stage and initiates – in part automatically – suitable measures (e.g. detecting runaway reaction by calculating the temperature gradient).

Optimizing the Economic Efficiency of Processes

The economic efficiency of a process also depends largely on the reliability of the individual system components, and thus also on instrumentation and control technology. As modern process engineering systems are highly optimised, increased levels of output can only be achieved with a reliably functioning, highly productive system without downtimes. This means reducing inspection cycles and inspection times, as well as avoiding idle times or downtimes caused by repairs carried out outside of the maintenance schedule. One way of achieving this is by using reliable instrumentation and control technology components that are certified in accordance with IEC 61508.

Solenoid Valves – Instrumentation and Control Technology Components with High Levels of Responsibility

The Bayer Crop Science's multi-purpose system uses numerous instrumentation and control technology devices in order to switch dosing valves, exhaust valves, steam valves etc. to failsafe positions. The solenoid valves that activate the actuators must, at a very minimum, have the same SIL classification as the entire safety loop (with single-channel architecture). A solenoid valve in a safety loop is generally placed between the positioner and the actuator and is used to quickly exhaust the actuator and close the process valve in case of an emergency.

Solenoid valves VOFC and VOFD, which Festo added to its own product range at the end of 2012 as part of a takeover of the process automation division of Eugen Seitz AG, can be supplied with TÜV certification up to SIL 3. These valves, in accordance with the latest SIL classification from TÜV Rheinland, will guarantee a failure probability rate and a safe failure fraction on best in class level. In other words, if used properly, a maximum of one faulty operation will occur 10 to 15 times caused by repairs carried out outside of the maintenance schedule. One way of achieving this is by using reliable instrumentation and control technology components that are certified in accordance with IEC 61508.

The multi-purpose operation of Bayer Division Crop Science at Dormagen, which was built in 2002.
in 2,410 switching cycles. Assuming that such safety loops under- go a fail-safe inspection once a year, this means that a faulty operation will occur once in 2,410 years; so it is virtually impossible for a valve not to switch when it should. These solenoid valves are available with ignition protection types “Ex em” and “Ex ia” with various international explosion protection certifications like IEC Ex, ATEX, Inmet- ro and are thus especially well-suited for use in safety loops. However, IEC 61511, “Safety instrumented systems for the process industry sector” specifies that the operating company must implement the necessary precautions for avoiding and controlling faults throughout the entire lifecycle of the SIS (Safety Integrated System).

In the case of a solenoid valve which is used in a safety loop and is only switched in case of an emergency, this is called a “low demand mode” application. This low demand mode represents a special challenge for the design and the materials of a solenoid valve, which is usually built for several million switching cycles. On the one hand the solenoid coil is always energised – for periods spanning decades – and on the other hand the solenoid valve has extremely long periods of idle time, and must nevertheless be able to shut down reliably in the event of an emergency.

One for all Applications

The ability to use Festo solenoid valves universally and their adherence to strict safety requirements were all convincing arguments for the decision makers at Bayer. More than 1,900 solenoid valves VOFC were installed in safety-related as well as non-safety-related circuits in the multi-purpose system. A large number of these valves is used to actuate ball valve units at tank systems, reactors, media supply systems and other applications. The customer also wanted a solenoid valve that could be used across the board and would be suitable for many different applications. Everything needed to be covered by a single solenoid valve, regardless of whether they would be used in indoor or outdoor applications and whether large or small actuators needed to be controlled. Last but not least, they also had to be compatible with the requirements for actuation in intrinsically safe circuits (Exi) in zone 1.

The VOFC range was developed specifically to meet these process industry criteria and requirements, a solenoid valve with piston poppet valve technology and no dynamic seals which can be switched by a diaphragm without any friction. By avoiding dynamic sealing elements, the switching operations were free of friction force, which might otherwise have had a negative impact on switching performance. Using this technology also had other advantages. With a comparably low solenoid coil power rating of just 1.8 W (or less than 200 mW with the intrinsically safe variant), the solenoid valve has outstanding flow characteristics, which in turn has a positive effect on the safety valve’s closing time.

The system’s harsh ambient conditions were of course also taken into account, and the solenoid valves have top quality Emmatal corrosion protection which has proven its worth for many years. As the solenoid valves are designed primarily for use outdoors, they don’t have any venting holes and the exhaust ports are equipped with special non-return devices. This prevents rainwater and outdoor air from penetrating the solenoid valves and the downstream actuators.

Zero-leakage Compressed Air Supply

The compressed air supply lines for the solenoid valves, too, have been made of polyurethane tubing together with NPQH push-in fittings for years. The benefits of this tubing can mainly be seen in its flexible, simple as well as time-saving installation. The tubing clip mechanism of the push-in fitting guar- antees excellent tightness thanks to the integrated sealing ring, but still enables the connection to be quickly loosened when needed. Alongside the high resis- tance to UV radiation, the chemical re- sistance of the tubing was also crucial. As both nitrogen and compressed air are used as a pressure medium, the avail- ability of plastic tubes in different colours is another advantage. This meant that additional identification for tubing was not needed. The use of bulk packs meant...
CASE STUDY

ABOUT THE AUTHOR

Thomas Bertsch is the Global Industry Segment Manager, Chemicals, at Festo AG & Co. KG. Starting with Festo in 1997 and based at Festo headquarters in Esslingen, Germany, Thomas has spent the last 10 years focused on product and business development within the Chemicals segment, which includes Oil & Gas and Petrochemicals. For this reason SIL and explosion protection are topics on which he has great expertise.

Thomas has a Dipl. Eng. in Industrial Engineering from Albstadt-Sigmaringen University in Germany.

Tried and Tested since 2002 – New Certificate with Extended Proof Test Interval of up to 7 Years

Because of this innovative technology, these pilot-actuated solenoid valves were the first in the world to receive TÜV certification in 1999 for applications up to AK 7, and subsequently up to SIL 4. Since then they are used by many large, renowned chemical companies all over the world and have also been included in their standard equipment specifications.

So far none of the 1,500 or so intrinsically safe solenoid valves with TÜV certification up to SIL 3 installed in Bayer’s multi-purpose system has malfunctioned during 16 years of operation. In 2015, 14 solenoid valves were removed from this reference application and subjected to extensive testing in the climatic chamber at Festo. The results of these tests were very positive. Festo was now able to match the results of the laboratory tests carried out in 1998 with 20 test objects in collaboration with the German Technical Control Board TÜV-Rheinland with results obtained from solenoid valves in actual applications.

Thanks to these follow-up tests and the FMEA conducted in parallel, the TÜV has issued a new certificate with an extended proof test interval of 7 years. The operating company is therefore responsible for correct installation, operation and maintenance, and is thus able to specify the service life of the solenoid valves itself, which may vary depending on ambient conditions.

EXPERT KNOWLEDGE OF SIL – SAFETY INTEGRITY LEVEL

Two important aspects that are taken into account for SIL are safety and reliability. However, there is a fundamental difference between the two:

In terms of safety, process technology systems have been extensively modernized in the last 20 years and now boast a very high standard of technology in Europe. On the one hand, the probability of explosions has been substantially reduced thanks to current Ex certifications and Ex zone classifications. The introduction of ATEX directives at EU level standardized the various Ex regulations of the individual European countries, thus ensuring that safety standards are on a par in all member states.

Another step towards enhanced system safety was the introduction of the Pressure Equipment Directive. Air reservoirs as per this directive include containers (unfired air reservoirs), boil- ers, tubing, pressure-maintaining equipment parts, unified equipment parts with safety function with an internal overpressure of more than 0.5 bar. All EU directives are continuously harmonized by the European Commission and adapted to new circumstances.

For systems subject to the Hazardous Incident Ordinance, concrete PIC architectures such as the one out of two (1oo2) philosophy have been used. Increasing the safety-oriented reliability is the requirement for extending the test intervals. This means that large amounts of money can be saved. In oil refineries, it has long been common for shut-downs to take place only every five years. The high level of reliability is primarily achieved thanks to the two out of three (2oo3) philosophy and supported by redundant systems and devices. This more expensive option pays off thanks to the high capacity of these systems. This does not always apply to chemical plants. Nowadays, plants are trying to achieve a level of reliability similar to that of redundant components by using certified, highly reliable devices (electric motors, transmitters, controllers, solenoid valves or even process valves) and suitable diagnostic methods.

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- Special alloy valves
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Latest success story 2017

GOING THE EXTRA MILE FOR OUR CUSTOMERS

In October 2017, there was an accident at the Eastman facility in Kingsport Tennessee where a coal gas line interrupted the plant service.

As Willie Frye (Global Sourcing Manager for Eastman Chemical Company) said, “This could have cost millions of dollars more”, but Xanik was contacted by eastman to supply 144 valves (50,000 lbs) that would have required more than 40 weeks to be supplied by any other manufacturer.

Xanik manufactured and delivered all the valves to the plant service within the programmed 6 – 8 weeks. This helped reduce the enormous cost of recovery of the plant and was possible with the combined effort of Xanik’s team together with it’s suppliers and great communication with the Eastman team.

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Employment Bifurcation

At this point, most people have seen a variation of the Income Inequality graph below. This time, however, let’s set our focus on the mechanism that impacts this graph — your job.

By Anthony Caridi – Alex & Red

I have evaluated a number of industries over the years and this same image continues to pop into my head. It does not matter if I am speaking with a large, startup, or mid-sized company — the message is always the same. “We simultaneously struggle to find senior technical leadership and hands-on technicians.” There is little appetite to add headcount in the middle - staff level. Most of these mid-level roles are being filled with technology creating a hard line of demarcation. Consequently this is forcing many wrong-skilled, mid-level employees out, especially if they are a part of the old ‘hierarchical company’ and had been promoted to people managers. Although I have written in the past (ad nauseam) about the importance of people leadership — we have some time before ‘Big Data’ is commoditized and the leadership skill-set is valued appropriately.

So, What Do You Do?

If you are part of an organization that is interested in utilizing this brokerage-type business model then be prepared to over-spend on both senior technical leadership and hands-on technicians. There is entirely too much demand on them for salaries to remain relatively low. To hedge your future employee cost-risk it is important to maintain your succession planning and hire teachers (of some kind). Otherwise, it will cost even more the next time you need to hire outside expertise. One major hurdle is, as I am sure you have read in every article about Millennials ever (mine included), the next generation of the workforce does not typically focus on one skill-set long enough to develop expertise.

1) Get pigeonholed. I have spoken with thousands of Millennials and the one thing they have in common is that they do not want to get pigeonholed. Unfortunately, being a specialist is one of the only ways to get to the top. “Being a team player” and “learning a little bit about everything” will not work.
2) Start your own business. The odds are against you but you can do it.
3) Learn a trade. Welders, electricians, and mechanics will likely make more than engineers (if they do not already). In this case, you may not reach the top but you will have tons of security and likely make a good living.

As companies slowly copy this business model do not be surprised to see even fewer staff level opportunities emerge. Focus on becoming an expert as quickly as possible.

ABOUT THE AUTHOR

Anthony Caridi is an ex-professional athlete turned executive search consultant who continues to pursue excellence by matching top candidates to the organizations he represents. He began his executive search career in 2010 as Executive Recruiting Manager with a firm specializing in the energy industry. Throughout his career, Mr. Caridi has won numerous awards through the Houston Area Association of Personnel Consultants (HAAPC). His first book was published in 2016, and he has contributed as an author and speaker for numerous industry events.

Distribution of Household Income

Source: Congressional Budget Office | Graphics: High Road

Percentage change in income since 1979, adjusted for inflation

1979

1981

1983

1985

1987

1991

1993

1995

1997

1999

2001

2003

2005

2007

2012

2014

2016

2018

Top 1 Percent

50th Percentile

25th Percentile

15th Percentile

10th Percentile

5th Percentile

1st Percentile

Source: Congressional Budget Office | Graphics: High Road

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The American Petroleum Institute (API) has reported that, despite higher prices, the first four months of 2018 saw US petroleum demand average 750, 000 bpd above the same period in 2017 – a sign of solid economic activity. April also saw the US produce a record 10.5 million bpd of oil.

“Iranian oil supply uncertainty has recently dominated global oil market news, but a key figure from the US should trump that concern: two million barrels per day of US production,” said API Chief Economist, Dean Foreman. “The strong supply figure was also backed by strong petroleum demand of over 20.3 million bpd last month, more than 9.1 million bpd above the same period in 2017.”

API: US Petroleum Demand Highest in 11 years

The Royal Sonesta Houston Galleryia Hotel in Houston, Texas. Mr. Kenneth Kirkham, a Principal Engineer with E.G | The Equity Engineering Group, Inc. in their Materials and Corrosion Group, has been named Conference Chairman. The inaugural Hose + Coupling World Expo & Conference will be held at the George R. Brown Convention Center in Houston, Texas, on October 16-17. Presentations will be made at the event on a wide variety of topics related to industrial and hydraulic hoses, couplings, fittings and accessories and other relevant topics to the flow control industry.

Last but certainly not least, the Valve World Expo & Conference will be held in Dusseldorf, Germany on November 27th – 29th.

For more information on any of our upcoming events and how to get involved with our educational programs, please feel free to contact me at s.adams@kci-world.com.

Sarah Adams
Editor-in-Chief, Valve World Americas