Emerson to Invest USD $100 Million to Create New Innovation Center and Expand Manufacturing Operations in Colorado

Emerson’s Flow Innovation Center and expanded manufacturing space will feature an 85,000-square-foot laboratory and hands-on Interactive Plant Environment.

Emerson’s 10th Innovation Center will significantly expand its manufacturing, research and development capabilities, with the goal of driving new product innovation. The new facility will also serve as a hub for Emerson’s research capabilities, particularly in the area of digital transformation capabilities, including the development of new industrial IoT (IIoT) technologies.

Longtime Board Chairman of Crane Co. to Retire After 47 Years with the Company

R.S. Evans, Crane Co. Chairman since 1998, announced his retirement last week.

Evans has been a key figure in the company’s growth and development, serving in various leadership roles over his 47-year tenure. He has played a crucial role in shaping the company’s strategy and vision, and has been instrumental in driving the company’s success in the valve industry.

Emerson is one of the world’s leading manufacturers of valves, pumps, and other industrial products, and has a long history of innovation and growth.

In other news, Emerson has announced the opening of a new facility in Boulder, Colorado, which will feature an 85,000-square-foot laboratory and hands-on Interactive Plant Environment.

The expanded Boulder facility will offer a hands-on Interactive Plant Environment that simulates real-world industrial manufacturing conditions for worker training and upskilling to help reshape the future workforce. The experiential training facility will provide Emerson customers with hands-on access to the most advanced products and technologies, including flow, temperature, level, pressure and wireless instrumentation, as well as Emerson’s leading control systems and Plantweb™ digital ecosystem.

Emerson will add charging stations for electric vehicles, launch green landscaping, energy efficiency and water conservation programs, and provide bicycle parking at the new facility. Emerson expects to break ground in the spring of 2020.

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Located in the high-tech district of Suzhou City, Neway Valve is one of the leading valve manufacturers in China. Dedicated to developing and making industrial valves, Neway is skilled in offering a full set of valve solutions to satisfy continual demand from the market. Largely applied in the oil & gas, refining, petrochemical, chemical, offshore, power plant, nuclear power, mining, oil & gas transmission pipelines, and air separation industries, Neway’s products cover a wide range of valve types including: gate, globe, check, ball, butterfly, nuclear, subsea, control, safety & wellhead valves, as well as associated equipment. It is also noteworthy that Neway sets very stringent management standards for its whole manufacturing process, of R&D, casting/forging, machining, assembly, painting, and testing.

After 20 years of hard work in the European, American, and Middle Eastern markets, Neway now enjoys an outstanding reputation and has become a model company among global valve producers. Mr. Elvin Feng has worked at Neway Suzhou for ten years and is now in charge of the company’s overseas operation. When asked about what he considers to be Neway’s most valued quality, he answers without any hesitation “innovation.”

“It is, moreover, a fundamental strength to be able to keep an enterprise in a vigorous and competitive state,” he says. As a matter of fact, innovation perfectly implies the core spirit contained in its name (Neway) and this quality has penetrated all aspects of Neway’s management and development.

**Transformation to Clean and Renewable Energy**

In 2019, at the Valve World Asia Conference and Exhibition, Mr. Feng expressed that Neway was going to develop more high-end products for the clean energy market, including cryogenic valves and oxygen valves. “We can see that there is an ongoing transformation from traditional energy to clean and renewable energy simply because there is an obvious increase in the demand for clean energy valves. Amongst these, cryogenic valves show the most visible growth factor.”

The considerable investments that Neway has put into high-end valves for the clean energy industry has led it to achieve a number of accomplishments. With regard to a LNG project in North America, Neway provided large-scale 3”–24” CL150-CL600 triple offset butterfly valves with both laminated and solid seal rings. For another project in China, Neway produced 1/2” class 300 cryogenic bellow globe valves for liquid hydrogen tanks. In addition, Neway’s high-pressure top-entry cryogenic ball valves have successfully passed strenuous project requirements and inspection tests. Valves were supplied in sizes up to 12” maximum diameter and pressure classes up to 1500 lb. This project shows Neway’s ongoing successful production of on-off ball valves in the gasification transformation applications of an LNG terminal.

Furthermore, Neway plays an active role in the nuclear power market. In the nuclear fission industry, Neway has made significant breakthroughs in the European market by supplying 2”-2,500 lb bellow seal globe valves of nuclear class 2 and 3. Moreover, as the first Chinese valve manufacturer to join a nuclear fission project outside China, Neway has provided diamagnetic and anti-seismic ball and globe valves for the reactor cooling system of a European ITER (International Thermonuclear Experimental Reactor) project.

Mr. Feng emphasized that there will be changes to the trends in the energy market in the future. “European end users, such as Shell, Total, BP, and Equinor (originally named Statoil), have actually undergone a huge transition by beginning to explore clean energy (which includes natural gas, solar energy, wind energy, hydrogen and nuclear power), after originally starting out in oil exploration. This transition became more apparent when Shell acquired BG (British Gas). The use of oil and coal is decreasing, and I think end users from other regions of the world will follow this line.”

The products offered by manufacturers are paramount in capturing the market. To keep products competitive, Neway places great importance on its R&D investments. With a technical team of over 200, Neway has established R&D centers in China, the U.S., and Italy. “Each year we invest about USD $13 million into R&D and Neway continually develops new products to meet the market demand; as is the case with eccentric ball, emergency shutdown, cryogenic triple offset butterfly, and subsea valves,” continues Mr. Feng.
Neway’s main production line now consists of 60 pipeline, cryogenic, fully welded, and actuated valves. Among these products, the demand for pipeline and cryogenic valves shows a significant rise. “60 pipeline valves, including ball, slab & expanded gate, and full open piggable check valves (which are used in pipeline applications in the midstream industry), are the company’s fastest growing products for the American market. With techniques continuously maturing, we are especially proficient in producing soft-seat, metal seated and fully welded technology for pipeline valves,” says Mr. Feng.

When it comes to smart technology, Mr. Feng admits that Neway is putting in a lot of effort. Neway manufactures intelligent products, for instance, on-off valves and sequence valves. “Our on-off valves find a good market in the Middle-East and Europe, having an annual growth of 50%. Only by precisely controlling the magnitude of the torque of the on-off valve can its competitiveness be strengthened. Neway is now carrying out research as to how we can monitor the state of on-off valves online. In this way we can analyze the valve function by examining the data transmitted to a central computer,” concludes Mr. Feng.

He further points out that Neway has always placed an emphasis on combining new technologies into products. “We have also realized that the valve industry is going through a lot of changes at present. In the past we carried out a lot of work improving valve hardware and now it is time for a change. Our primary choice for the future will be to increasingly look to combine valve hardware to system software and to provide more value-added services to our customers,” adds Mr. Feng.

Working Towards Optimal Solutions

As a response to ever-changing market demands, the pre-sale and post-sale services provided by quality manufacturers have become more detailed and professional. For Neway, both services are of equal importance. Professional pre-sale services help to avoid many problems that customers might come across in practice. As such, Neway has established a team of application engineers, whose aim is to offer timely and professional technical backup for customers.

“This team of application engineers provides technical support, helps clients in connection with valve selection, technical specifications, and shares their on-site experiences with clients during the pre-sale stage. In general, they offer optimized and reliable valve solutions to our customers,” elaborates Mr. Feng.

“Sometimes we discover that a previous valve selection made for a client might not still be the best choice due to ever improving technology and innovation at Neway. To ensure that we are therefore able to provide the client with the best possible solution, we need to thoroughly understand their operating conditions. By doing this our experienced engineers will provide them with an economical and reliable solution. The engineers on our team have considerable knowledge about valve applications and an excellent insight into our customers’ needs and challenges. If our customers come across any problems with their on-site operation, then the engineering team will solve these problems, gathering data where necessary for further research and ongoing improvements. For our clients, this is truly a value-added service,” adds Mr. Feng.

Anti-risk Capability

The COVID-19 pandemic sweeping the world has put tremendous pressure on the survival of all professions and trades. Neway has fortunately been carrying out its automation upgrades for years and these have paved the way for a smoother transition during this difficult time. Having benefited from this early preparation work, Mr. Feng says the impact of COVID-19 has been limited for Neway to date.

Neway was amongst the very first group of enterprises that were permitted by the Chinese government to restart production. “The automation upgrades we have done gave great support to our production recovery. Apart from upgrading our warehouse, we have also upgraded our production lines for welding, surface treatment, assembly, and painting. We have not undergone a 100% transformation to automation yet, but we have raised the automation level of our production processes significantly,” says Mr. Feng.

“Automation requires flexibility in both technical design and in the production lines because most of our clients ask for tailor-made products. Therefore, our operating staff also needs to be flexible. From 2018 onwards, Neway started to train staff to possess multiple skills. We have benefited considerably from this preparation work: multi-skilled employees can be allocated to different tasks to safeguard production. Another reason we were able to get back to full operational capacity as quickly as we did is because we manufacture in-house and control our own production as a vertically integrated manufacturer. We control all of our operations, from manufacturing to testing. Vertical integration allows Neway to quickly pick up production,” continues Mr. Feng.

In addition, remote inspection increasingly plays an important role at the current time. “This new form of inspection has been recognized and utilized by most of our customers. With the pace of procurement slowed down by the COVID-19 pandemic, remote inspection has been adopted to improve working efficiency but to ensure that we get and keep our business efficient, optimized and always on track,” Mr. Feng continues, “Neway started to conduct research on this topic with a world-renowned oil & gas company in 2019 and our aim was to provide a cost-effective plan for our customers and maximize efficiency for ourselves.”

“To put it simply, remote inspection is achieved through a pair of glasses worn by our operating staff. The glasses contain a camera connected to the customer’s PC. Based on the instructions given by the customer, the operator can show what the client wants to check synchronously. As a secondary form of verification, another camera provides an elevated overview view of the facility. It is as if the customer is controlling the situation behind the screen,” Mr. Feng explains. “Moreover, the flow curve of valve pressure testing is recorded by our software. It cannot be modified manually, so there is no need to send someone to recheck the situation if the record can be considered accurate.”

The Future

So how has Neway managed to successfully establish a foothold outside China? “First of all, we set up a self-contained supply chain from raw material processing right through to assembly and final testing so all the key processes within valve manufacturing are managed by Neway itself. Second, Neway values talent, especially global talent. Third, we encourage innovation,” he says. “As for the future challenges confronting the valve industry, Neway needs to create more opportunities to demonstrate its strength and competitiveness. The biggest challenge lies in setting Neway apart from the competition through our research competences, product quality, and services.”

“Neway positions itself as a full-fledged valve solution provider and we will continue to invest more on the high-end products. Our aim is to provide standard products with higher efficiency, better quality, and stronger competitiveness through continuous improvement and automation upgrading. For high-end products, Neway continues to advance valve performance with ever increasing technological maturity and stability.” Summing up, Mr. Feng says: “Our high-end products are quite competitive in the Americas. We are open to everyone and warmly welcome customers from America and throughout the world to pay us a visit!”

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The views and opinions expressed in this article are those of the profiled company and do not reflect the position of Valve World Americas.
A Fresh Perspective on the Use of Valve Repair Processes

The Drill & Tap (D&T) repair process has been used commonly in the Refinery, Petrochemical and Chemical plant sectors (Downstream) for more than 60 years. D&T repairs have been performed effectively and safely to repack valves of various types. One of the unique characteristics of a D&T repair is that it is performed under pressure with the line still in service, allowing the valve owner/end user to continue normal plant operations. Additionally, when performed properly while using an injectable packing, the valve remains operable and basic maintenance of the valve (tightening of Gland Flange Studs) can be continued as with traditional packing. The use of the D&T method for packing valves to complete repairs is required by most LDAR programs and Consent Decrees within the 5 to 15 day repair rule before the valve can be placed on the Delay of Repair (DOR) list. Part of LDAR programs or Consent Decree compliance is currently a major topic of discussion. The use of the Drill & Tap repair process has been used commonly in the midsteam sector for decades and D&T repairs have been performed effectively and safely to repack valves of various types. One of the unique characteristics of a D&T repair is that it is performed under pressure with the line still in service, allowing the valve owner/end user to continue normal plant operations.

With more focus now being placed on the midstream market relative to fugitive emissions, the discussion regarding the use of the D&T procedure for leakage control in valves has become a prominent topic of discussion. Even with the long history of D&T repairs in the downstream sector, there is a tremendous amount of push back on its use in the midstream sector. As a result of the concerns raised by many in the midstream sector regarding the potential required use of the D&T repair method as part of negotiated Consent Decrees, industry experts have met on several occasions to discuss the methodology and how to properly implement the process with regard to safety and continual usage. Additionally, it was discussed what the advantages and disadvantages of using D&T as a repair method for use in the non-traditional valve types used in the midstream market. The U.S. Environmental Protection Agency (EPA) has been involved in some of the discussions, playing a role in helping to identify some key questions that needed to be answered.

Through the various discussions with users, suppliers, service companies and the U.S. EPA, the one topic of discussion that continually came up, was that as long as the D&T process has been used there has not been a true Low Emission injectable packing offered. The injectable products that have been used for the past 60 years were merely designed to offer an immediate fix to gain compliance with either LDAR program guidelines or Consent Decree rules as seen below.

Excerpt from Paragraph 55 of the Flint Hills Consent Decree Regarding the Required Use of Drill and Tap: Drill and tap. Except as explicitly provided in Subparagraph 64.b.i, and except for control valves, commencing no later than 90 days after the Date of Entry, when other repair attempts have proven ineffective and/or FHR is not able to remove the leaking valve from service, FHR shall use the "drill-and-tap" or equivalent method for fixing valves leaking over 500 ppm, unless FHR can demonstrate that there is a safety, mechanical, product quality, or adverse environmental concern posed by attempting to repair the leak in this manner. FHR shall attempt at least one drill and tap repair (with a second injection of an appropriate sealing material). If the first injection is unsuccessful before placing the valve (other than provisionally) on the DOR list; however, FHR provisionally may place the valve on the DOR list pending drill and tap if repair efforts have not been successful within 15 days from the initial monitoring event. In no event may FHR take more than 30 days from initial monitoring to finalize its drill and tap repair efforts (with two injections, if necessary). After an unsuccessful drill and tap repair effort (including two injection attempts), FHR may place the leaking valve on its DOR list. If FHR plans to use a new valve repair method not currently in use by the refining and/or chemical industry, FHR will secure EPA’s approval prior to implementing such a method. This Paragraph applies only to the valve packing and/or stem and not to areas on or associated with the valve that cannot be drilled and tapped, such as the bonnet.

Sampling of Drill & Tap Forum Questions

1. Are end users/valve owners concerned with the valves operability once the Drill & Tap repair has been performed?
of the Drill and Tap Process

2. Is valve metallurgy or manufacturing type (Cast vs. Forged) a concern when drilling into potentially high-pressure applications commonly seen in the Midstream/Upstream processes?

3. Is there a concern that the injectable material being used could have petroleum-based lubricants added that could gas off causing false emission readings to occur?

5. Would there be a need to perform testing to API 622/API 624 on the injectable packing materials which would include leakage performance below 100 ppm?

6. Would the use of an injectable packing require the five-year warranty/guarantee commitment written into recent Consent Decree definitions for Low E packing, although not currently considered regarding the injectable products that have been used over the past 60 years?

7. Should valve manufacturers consider testing their new valves with injectable packing and fittings as an additional option for End Users to consider when purchasing valves to be used in applications to be monitored as part of LDAR programs or Consent Decrees?

9. Have any of the companies who provide Drill & Tap Repair services tested their injectable packing and injection fittings installed on valves as a leak control solution, to validate the ability of these materials to work as Fire Safe materials?

10. Do drill & Tap Repairs perform better on one valve type versus another? (Example: Gate or Globe Rising Stem valves in comparison to Ball or Butterfly Quarter Turn valves)

Conclusion

In early 2019 a product (EZY-Pak Extreme) was released after being tested pursuant to a portion the testing guidelines established as part of API 624 to identify the products ability to meet the Low E compliance requirements established as part of Consent Decrees and LDAR programs throughout the US. EZY-Pak Extreme performed extremely well and met the less than 100 ppm leak- age requirements set forth in API 624.

The use of Drill and Tap continues to be included in Consent Decree documents by the U.S. EPA as part of compliance requirements. Knowing this, it seems obvious that we should work to advance the products being used and the processes by which they are offered to the users to provide a comfort level with regard to the viability of the solution and its effectiveness, while remaining a safe option for all involved.

The goal for all is to meet the require- ments and mandates being doled out by the U.S. EPA and other state air quality groups. In addition to meeting the compliance requirements, valves must remain operable affording the users continual operation of their facilities. This is possible with a concerted effort to work together between valve manu- facturers, packing manufacturers and injectable manufacturers.

Compliance is an issue that we should all be working on to help our custom- ers. To do this well, all involved will need to find a way to work together to offer a solution going forward.

ABOUT THE AUTHOR

Rodney has over 25 years of experience in the manufactur- ing, design, R&D, engineering, sales and marketing of sta- tionary sealing solutions to include packing and gaskets. Rodney has extensive experience in the recommendation and design of engineered sealing solutions for use in all types of valve and flange applications with a focus on Low E sealing Technology for valves and large diameter critical flange sealing.

Rodney works very closely with valve manufacturers to help enhance their valve designs to ensure they are meeting EPA guidelines and definitions for “Certified Low Leaking Valve Technology” and “Certified Low Leaking Packing Technology” to meet Enhanced LDAR & Consent Decrees and compliance.
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.

Warren Controls Announces New ARIA Series Actuated Control Valves

Warren Controls, a leading manufacturer of control valves and specialty fluid handling products, announced its new ARIA Series electrically actuated, modulating, globe control valves. The valves are ideally suited for challenging, modulating, industrial processes that require electric actuation with the actuation speed and reliability of pneumatics.

Warren Controls launched the ARIA as an upgraded version of its AmurAct. The newly improved actuator is designed for 1.5 million cycles and can withstand ambient temperatures up to 150°F, with travel speeds at 12 seconds per inch (nine seconds for ¾-inch stroke valves). It is equipped with an electric spring fail safe (when opened or closed), robust enclosures with IP67 / NEMA 4X enclosure and water tight ½” NPT fittings, and has split range input capability for 1/3-2/3 high/low applications.

Four belt sizes are available with the ARIA actuator for customized use: the ARA is a three-way cast flanged steel valve for 1/2” – 2”; the ARB is a two-way or three-way threaded bronze or stainless steel valve for 1/2” – 2”; The ARC is a two-way or three-way flanged cast iron valve for 2-1/2” - 6”; and the ARD is a two-way or three-way cast flanged steel cage valve for 1/2” – 2”.

Customers in the district/campus energy sector, or those working with high energy HVAC systems, where high temperature, hot water applications are in use (like a colleges/universities or military bases), will benefit from the ARA or ARD. The ARB and ARC are ideal for those in the food and beverage industry to control steam and water applications.

Valv-Tech International 316 Stainless Steel 3 Way Automated Butterfly Valve Packages

Valv-Tech International USA manufacturing operations has announced the completion of their new High Performance 3-way 316 Stainless Steel butterfly valve tee linkage packages. These High performance 3 way butterfly valve packages, are being used in various industries worldwide. Chemical plant operations, Oil and Gas refineries, Food Processing plants, Water treatment facilities, and many other manufacturing plants worldwide. Valv-Tech is very proud of its engineering team, for the production and implementation, and fabrication of this high performance package. These packages are available in sizes from 2” to 24”, in all stainless steel material, carbon steel material, cast iron material, pvc, and cpvc material. All packages are available with Pneumatic or Electric automation or can be used manually if required.

Emerson’s New Virtual Valve Repair Service Offers Efficient, Immediate Support

Emerson announced its new Remote Assistance service capability to help plant operators immediately respond to industrial valve issues by using augmented reality (AR) technology. The AR technology uses a robust, secure channel certified as ISO 27001-compliant. Valve repairs are advised and guided by Emerson experts as part of the company’s expanding Connected Services portfolio in its Plantweb™ digital ecosystem.

Using a mobile device, plant personnel can securely share their field of view through the AR software as Emerson valve experts help troubleshoot and solve valve problems. Step-by-step instructions are overlaid in the field-user’s application to support installation, calibration or repair actions.

Valves play a key role in reducing variability and increasing reliability in production because they touch so many areas of the operations. In any given process facility, there could be hundreds to thousands of valves in operation. Depending on the criticality and the application, the maintenance plans could vary from daily monitoring to less-frequent inspections and repairs. Ensuring valves meet operational standards requires detailed record keeping and right-skilled talent to oversee the repair.

Real-time video communication enables users to resolve issues faster and minimize instruction errors that often occur with audio-only support while eliminating travel time and the cost of getting technicians to the work site. In addition, operators can expand their in-house knowledge base and staff skill-sets through on-the-job troubleshooting guidance and recommendations to remediate issues, up to and including oversight of the final repair.

The Remote Assistance service is available for Emerson valve, actuator, and regulator product portfolios, and in some instances, can cover non-Emerson products, as some Emerson technicians have extensive backgrounds in repairing products from other manufacturers.

Plantweb leverages IIoT technologies, software and services to expand digital intelligence throughout a workforce, enhancing processes to provide personal with the insights needed to accelerate performance improvement.
Conval Introduces New Line of Severe Service Valves

Conval’s clampseal throttling valves are appropriate for use in severe-service applications, requiring accurate repeatable flow control and dependable shutoff. The valve’s Venturi is a critical component of the removable seat. Both the seat and the stem assembly are easily changed inline in the event that modified flow characteristics are required or replacement is necessary due to excessive corrosion or erosion. The orifice size is designed to keep fluid velocity across the seat under damaging levels. Meanwhile, the exit orifice angle is designed to reduce downstream piping erosion and noise. The pressure-seal bonnet provides ready maintenance through several thermal cut or seal rings or gaskets to replace.

New Enhanced Digital Smart Positioner Available from Rotork

Suitable for all markets, the new digital smart positioner is appropriate for both control and on/off valve applications where enhanced diagnostics are required. It is ideal for highly critical applications in chemical/petrochemical processes. The YT3700 and YT3750 pneumatic smart positioners employ continuous monitoring and graphic display of valve position, set point target over time and internal circuit board temperature over time.

With single and double-acting configurations available, they provide reliable control of pneumatic valve systems for linear and rotary applications. Valve diagnostic information to NE107 standard is provided, with Hart® 7 communication protocol included as standard and a display for all settings and local device interaction. Commissioning can be handled locally without the need of an additional device, all indications are clear and simple to follow thanks to the clear visual identification on the local display and the four push buttons.

The enhanced diagnostic package offers position over time continuous monitoring, and graphical visualisation through Device Description (DD) and Device Type Manager (DTM) files. Additionally, valve signature, advanced step tests and Partial Stroke Testing (PST) can be operated from local or remote positions. Auto-tuning functionality and non-contact sensor are included for high frequency operating valves and an enhanced lifetime.

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To match Emergency Shutdown (ESD) systems for on-off applications, the YT-3700 range offers a full package of on-line diagnostic tests include both valve signature and partial stroke test. All information can be stored on the device or downloaded for customer records. The YT-3700 and YT-3750 are certified to ATEX/LEXIEX standards and can operate in temperatures as low as -65°C.

DynaQuip’s Pneumatic Wash-down Stainless Steel Actuator

The SP Series of stainless steel pneumatic actuators from DynaQuip Controls are a great solution for wash-down applications. The electro-polish finish offers excellent resistance to most corrosive chemicals and industrial atmospheres. The actuator features a dual piston rod and pinion design for compact construction, symmetric mounting position, high-cycle life and fast operation. They are also available in double acting or spring return (fail-open or fail-closed).

- Stainless steel fasteners for long-term corrosion resistance.
- ISO 5211 direct mounting, DIN 3337.
- NAMUR standard for mounting solenoids, limit switches and other accessories.
- Multiple bearings and guides on rack and pistons, low friction, high cycle life, and prevent shaft blowout.
- The two independent external travel stop adjustment bolts can adjust +5° at both open and close directions.

Cowan Dynamics AS Series, Spring-Return Pneumatic Valve Actuator

Cowan Dynamics has released the next generation AS Series, Spring-Return Pneumatic Valve Actuator. Based on the proven AS Series, the Compact version was designed specifically for applications where space is a premium. The AS Compact provides amazing reductions, up to 57% shorter and 42% lighter than other actuators compared to the standard model.

Safety Integrity Level

The AS Series has a SIL 3 Capable rating, designed to provide reliable actuation in critical applications without compromising the facilities Safety Instrumented Systems (SIS – compliant with IEC 61511/ISA 84).

Custom Orders no Longer Needed

Cowan Dynamics has developed a standardized, catalogue-based spring-return actuator solution. Customers can now simply refer to a dimension table and order their product according to the required dimensional size and thrust.

Innovative Factory-sealed Canister Design

The spring is installed within a factory-sealed canister, allowing safe in-field service of piston packing, rod seals and bushings without handling the spring. Welding Certified to CSA 47.1 Division 2

Key Features:

- SIL 3 Capable
- Thrust: up to 7,000 lbs
- Bore Size: 6”-42”
- Configuration: Single-Stage and Tandem
- Stroke Range: Up to 12”
- Pressure Rating: 150 psi
- Welding Certified to CSA 47.1 Division 2
- Fail-Close or Fail-Open.


Thankfully we have the largest inventory of Sambo gear actuators in the U.S. and Canada. And we can normally ship within 24-hours, keeping your downtime to a minimum. (Not to mention you looking like a hero!)

just sayin’...

IN STOCK! Worm Gear Sizes up to WG-09
Bevel Gear Sizes up to V-8

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**Curtiss-Wright Announces Retirement of CFO Glenn E. Tynan and Appoints K. Christopher Farkas New Chief Financial Officer**

Curtiss-Wright Corporation announced that Glenn E. Tynan, Vice President and Chief Financial Officer, plans to retire after a distinguished 20-year career with the company, with the past 18 years as CFO. Mr. Tynan will continue to serve as a Vice President of the company to assist the Executive Team with the transition until his retirement this fall.

As part of its formal succession plan, the Board of Directors announced that, effective immediately, K. Christopher Farkas has been promoted to Vice President and Chief Financial Officer. Mr. Farkas has served as the company’s Vice President of Finance and Corporate Controller since 2017. In his new role, Mr. Farkas will report directly to David C. Adams, Chairman and Chief Executive Officer.

Mr. Farkas was named Vice President of Finance of Curtiss-Wright Corporation in December 2017. Previously, he held the positions of Vice President and Corporate Controller since 2014, and also served as Assistant Corporate Controller since 2014. Prior to joining Curtiss-Wright, he worked within the audit practice of Ernst & Young where he was responsible for advising senior management and the Board of Directors on accounting, disclosure and SEC reporting matters, while overseeing the Corporation’s internal and external financial reporting, accounting, government compliance, tax, treasury, and financial planning and analysis processes. Prior to joining Curtiss-Wright, he spent more than 17 years in financial, technical and operational roles of increasing responsibility within Fortune 50/250 industrial companies including United Technologies Corporation and Parker Hannifin.

In addition, the company announced that Gary Ogilby will be named Vice President and Corporate Controller, effective May 12. In his new role, he will be responsible for advising senior management and the Board of Directors on accounting, disclosure and SEC reporting matters, and also oversee the Corporation’s internal and external financial reporting, accounting policies, financial reporting systems, government compliance, and financial planning and analyses functions.

Mr. Ogilby most recently held the position of Vice President of Finance and Administration at the company’s Surface Technologies division since 2016. Previously, he served as Assistant Corporate Controller since 2014, and as Manager of External Reporting and Accounting Policy since 2010. Prior to joining Curtiss-Wright, he worked within the audit practice of Ernst & Young where he spent the majority of his time auditing public multi-national companies.

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**Emerson’s Plantweb Digital Ecosystem Wins 2020 Edison Award**

Emerson’s Plantweb™ digital ecosystem, which enables manufacturers to realize the benefits of digital transformation, has been named a 2020 Edison Awards winner in the Innovative Services category. The award recognizes Plantweb’s expertise, consulting and IoT-powered services capabilities that leverage decades of technology leadership, enabling Emerson to partner with companies to develop and implement effective digital transformation initiatives. The Edison Awards, named after inventor Thomas Alva Edison, recognize and honor the world’s best innovations that are at the forefront of new product and service development, marketing and human-centered design.

Emerson serves customers in life sciences, food and beverage, chemical, power, energy and other critical infrastructure industries that increasingly rely on digital transformation strategies to improve operations. Emerson’s Plantweb digital ecosystem is designed to help companies realize measurable performance improvements in production, reliability, safety and energy management so they can better meet their business needs around the world. Plantweb’s expanding portfolio of transformational technologies, software and services include smart sensors and measurement devices, the industry’s most comprehensive offering of operational analytics as well as consulting and remote monitoring services.

“As industrial manufacturers seek to realize the full potential of digital transformation initiatives, it is critical to deliver practical and scalable solutions that drive measurable business impact,” said Stuart Harris, group President for Emerson’s digital transformation business. “We are grateful for this recognition of our industry-leading technology, domain expertise and proven commitment to drive tangible value for our customers.”

Among over 400 nomination entries comprising the best products, services and businesses in innovation, Emerson’s Plantweb was chosen as a winner by a panel of more than 3,000 business executives from the fields of product development, design, engineering, science, marketing and education.

“After a thorough review, the Edison Awards judges recognize Emerson’s Plantweb digital ecosystem as a game-changing innovation, standing out among the best in its category,” said Frank Bonafilia, Executive Director of the Edison Awards.

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**Quadax Valves Inc. Announces the Hiring of Jeff Darcy**

Quadax Valves Inc., the North American leading butterfly valve manufacturing group announced the hiring of Jeff Darcy as newly appointed Western Regional Manager. In this role, Jeff will lead the sales and marketing efforts for the company’s North American team in the western half of the U.S.A. and Canada.

Jeff joins the QVI team with a strong history of valve experience on the U.S.A. West Coast market and before that in the Australian markets where he worked for industry leaders in severe service valve manufacturing companies. He comes on board with a strong sales engineering history for valves, acquisition and controls.

Scott Moreland, VP of Sales, said: “We are very excited to add someone of Jeff’s expertise and caliber to our sales team in North America. With our core business base and Jeff’s experience in engineering sales work, it makes for a great fit.”

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**Quadax Valves Inc.**

Quadax Valves Inc., 2503 Spring Grove Ave., Cincinnati, OH 45214

Powell Valves inventory is one of the greatest strengths to our distributors and end user customers. Powell inventories over 250,000 valves in various sizes, pressure classes and materials in our Manning SC, Houston, TX and Orangeburg SC distribution centers. Furthermore, we maintain over 10,000 valves in our international distribution center.

250,000 Valves In Stock, Ready For Delivery

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**Emerson’s Plantweb Digital Ecosystem Wins 2020 Edison Award**

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Over 80 Rotork CP, GP, and RC200 pneumatic actuators have been installed on well pads in Alberta, Canada, where they will be part of an in situ steam, assisted gravity drainage (SAGD) oil sand extraction project.

SAGD technology is used to extract bitumen oil from 800 metres below the surface of the earth. This process is a form of steam stimulation in which two horizontal wells drilled into an oil reservoir, one a few metres above the other. High-pressure steam is continuously injected into the upper wellbore to heat the oil and reduce its viscosity. The heated oil then drains into the lower wellbore where it can be pumped out. The water and oil are taken to a separation facility, where the water is then taken, recycled, and re-converted into steam so the process can begin again. This process significantly reduces the impact on the environment, when compared to historic methods.

The actuators control the flow of steam and bitumen oil in these two wells. The levels of precision offered by the CP, GP, and RC200 pneumatic actuators a critical as the exact temperature must be maintained at all times to ensure that the steam condenses at the right point and facilitate the flow to the separation facility. The pneumatic actuators were also favoured as they also perform vital Emergency Shutdown (ESD) function.

The well pads follow a new zero-base design (ZBD) and are located in Northern Alberta. It is expected that this project will create a 15% to 20% reduction in the surface footprint for the well pads and a 35% to 55% reduction in the overall well pad cost.
DHB Valves and CGIS Enter a New Partnership

In efforts to expand its brand further into Central and Eastern Canada, and with the end goal of giving customers that same, customer-centric service they see in the West, CGIS joined forces with the like-minded valve repair shop DHB Valves.

CGIS is a highly reputable valve distributor headquartered in Vancouver, BC that specializes in Severe Service Valves (SSVs). It has 40 years of experience working in major industries like oil and gas, mining, pulp & paper, and many more. The business is built on a customer-centric foundation that prioritizes getting the right valve for the application, ensuring the maximum possible return on investment for its customers.

DHB Valves is a valve repair, reconditioning, and sales organization based out of Montreal, QC. They have been fixing valves since 1982 and are coming up on 40 years in business. By building strong working relationships with several local and national brands DHB has established itself as a trusted name for valve repair and sales in eastern Canada, handling everything from marine and metric valves to severe service valves and safety valves.

The partnership between DHB and CGIS is designed to grow both brands’ market potential across the nation. With a combined 80 years of knowledge and experience, customers of DHB and CGIS will see highly tailored, quality solutions. The combination of resources will offer customers first-rate products and services without compromising on the quality of service.

Kitz Launches Package Unit Hydrogen Station Business

Kitz Corporation announced that it has decided to launch the packaging unit hydrogen station business and will begin sales and installation as follows.

In July 2012, Kitz entered the hydrogen station valves market, which supplies hydrogen gas as fuel to fuel cell vehicles. In particular, the performance of ultra-high-pressure ball valves for hydrogen stations developed with low-pressure loss, excellent sealing performance, and durability has been highly appreciated. As of the end of January 2020, most of the 112 commercial hydrogen stations in operation in Japan had adopted them.

METI’s roadmap calls for the installation of 160 hydrogen stations in 2020, 320 in 2025, and 900 in 2030, and further market expansion is expected in the future. Under such circumstances, Kitz constructed a hydrogen station using a small package unit at Nagasaka Plant in Japan.

After serving the U.S. market for 20+ years from abroad, YDF Valve International, Inc. has opened an office in the U.S. to be the U.S. entity for establishing and maintaining long-term commercial and technical relationships within the industrial valve market.

YDF Valve, a family-owned, fully integrated industrial valve manufacturer located in Yancheng, Jiangsu Province, China, has been making Cast Steel Gate, Globe, Check valves since 1978. The company has achieved many industry certificates for manufacturing and quality management and has successfully attained various End User approvals.

“Our initial strategy is to focus on filling current gaps in the API600/603 market as a premier manufacturer. Our goal is to provide ‘Premier Quality through Premier Performance’,” said Joe Braley, VP of Business Development.

YDF Valve International Opens Office in the Greater Houston Area

Besides commercial strategies, YDF Valve International, Inc. has established a strong technical emphasis with the hiring of Mr. James Pease, VP of Product/Quality Compliance. “It’s vitally important for our growth and ability to serve our customers to be able to provide technical expertise immediately when needed. Compliance to applicable standards and specifications are the basis by which good manufacturers become better manufacturers, however, rapid and accurate response along with accountability and compliance are cornerstones to a premier manufacturer. By working very closely with our manufacturing team we will make sure what we sell meets all the applicable standards and specifications our customers require.”
The Story of a Global Crisis and of New Opportunities

The demand for LNG is expected to grow in the coming years, with Asia being one of the main drivers. Bearing in mind the market volatility and the effects of the Coronavirus outbreak on the global economy, the LNG sector has to be cautious when it comes down to long cycle investments and long-term supply contracts.

By Lorenzo Talamona - Petrolvalves S.p.A.

These are trying times for the global economy and the energy outlook that is intrinsically coupled with the economy. A fast changing energy scenario with the current global crisis and volatility is posing a growing concern related to energy supply and demand in the world. A combination of factors are in play, including dropping oil prices, different national politics to secure energy with reduced transportation and economic slowdown; the imbalance between shale oil & gas and the OPEC response; and finally the lockdown measures applied internationally in the effort to control the outbreak of Covid-19.

The LNG sector, either liquefaction or regasification, like many others in the energy sector, is facing a market challenge driven by the long-term cycle of liquefaction train permits, the need to secure gas supply contracts, and spot price behaviors (particularly in Asia).

With such constrained boundary conditions, all oil & gas operators are extremely careful in selecting and proceeding in the execution of their CAPEX and long lead investments, with attention to cost, return on investment and time to first oil or gas. In such an environment, the criteria for the selection of the system technology is crucial, with emphasis on proven process configurations, reliability in the execution, proven track records and expertise in critical and severe applications and - finally - an efficient cost structure.

The triple-offset metal seated valve - a design which is probably one of the most appreciated by many LNG process engineers for its reliability and efficiency in critical operations - is going through intense and continuous development.

Since technology edge, reliability and ability to outperform in critical and severe applications are some of the qualities looked for from a TOV, a natural extension to similar challenging environments is logical, opening the ability to serve the industry effectively in similar complex applications. Close synergies with subsea applications has led the industry to study new applications in subsea shallow waters that proved to be a remarkable choice for customers.

Remote Technology

A major international customer selected a triple offset valve for the water-ballasting system of the Concrete Gravity Structure (CGS) of a fixed drilling platform. During the execution of the project, however, both PetrolValves and its client were forced to confront the totally unexpected challenge of the Covid-19 lockdown. This took place during the last and most delicate phases of the project execution: the final valve pressure tests to be conducted at the manufacturing plant in front of Lloyds Register’s personnel (the appointed third-party agency for the project), and of the client’s representatives.

Fortunately the cooperation between LR and PetrolValves meant the two companies were able to use LR’s remote app technology, LR Remote, permitting the inspection tests to be performed in full compliance with project requirements, and customer delivery dates to be respected.

LR Remote is customer operated and allows companies to conduct assessments and inspections remotely by recording and streaming audio, video, documents and images. This takes place via a secure communication link to LR technical experts who guide the user through the process. It also enables key stakeholders within an organization to co-witness and interact with inspections and audits.

This was exactly what happened in Piacenza plant, as David Dinelli Rainander, Quality Assurance Manager at PetrolValves for TOV product line, stated: “With the challenges presented by the Coronavirus COVID-19 pandemic, it was not possible for an external inspector to access the plant. Therefore, we decided to use remote inspection services. With LR directing us through the process, we recorded the inspection on-site in the morning, with our Italian inspection team witnessing remotely. In the afternoon, it was the turn for both the EPC and the constructing company to remotely connect, from another continent in the world, to view the recorded inspections for their own control purposes.”

The remote inspection alternative presented to the customer by PetrolValves and LR, only a few weeks ago, was welcomed as a real, consistent opportunity to support business despite the difficulties that were threatening the delivery integrity of the project: it was indeed recognized as a genuine plus. A circumstance that could have been potentially disruptive had been turned into a success for all parties involved and will most likely establish a trend for a new way to interpret the concept of “witnessed inspection.”

ABOUT THE AUTHOR

Lorenzo Talamona is the Inside Sales Area Manager for Triple Offset Valves, Petrolvalves S.p.A.
The Top 10 Issues to be Aware of in Aging Infrastructure

All industrial plants face numerous challenges to operate in a safe and profitable way: costs, competition, raw material quality, regular maintenance, and the list goes on. Aging plants have these very same challenges and a whole other burden - some being age-related and some that are variations of the ‘regular’ challenges. In this article, we will explore what makes a plant ‘aged’ and what problems tend to keep aging plants’ managers awake at night.

By Davi Sampaio Correia - Technical Consultant

Definition of Aging Plants

A government agency in the United Kingdom (U.K.), the Health and Safety Executive (HSE), has defined what makes a plant ‘aged’. It states, “Aging is not about how old your equipment is; it is about its condition, and how that condition is changing over time.”

Aging is the effect whereby a component suffers some form of material deterioration and damage (usually, but not necessarily, associated with time in service) with an increasing likelihood of failure over the lifetime” [1]. Another way to express this concept is to relate aging with fitness for purpose. That is, a plant where deterioration or obsolescence has compromised its capacity to operate in a safe and reliable way.

Deterioration may be caused by several mechanisms that may either act in an isolated or combined manner. In fact, plants may have a combination of these mechanisms in a specific location but not in others. According to the HSE, the three most dangerous aging mechanisms are erosion, corrosion and fatigue:

“Recent research shows that 50% of European major hazard ‘loss of containment’ events arising from technical plant failures were primarily due to aging plant mechanisms such as erosion, corrosion and fatigue. These ‘aging’ events equate to an overall loss of 11 lives, 183 injuries and over EU €170 million of economic loss. This demonstrates the significant extent and impact of aging plant-related failures on safety and business performance”[2].

The International Atomic Energy Agency (IAEA) has other important definitions related to aging: one originally linked to nuclear plants but also useful for other companies. According to the IAEA, aging management is defined as the coordination of existing programs in order to understand, monitor, and control the aging effects on structures, systems and components of a plant[3]. The IAEA’s programs, refer to: maintenance, in-service inspection and surveillance, as well as operations, technical support programs (including analysis of any aging mechanisms) and external programs such as research and development.

The top 10 issues we will explore in this article are not aging effects, such as corrosion or fatigue, as they are specific of each plant. Instead, we will investigate aging management issues, as they are pertinent to any industry.

1. Workforce – Senior Employees, Newcomers, and Training

When senior employees retire, they take with them part of the plant’s history, which may contain subtleties not formally recorded or, if recorded, difficult to retrieve. Many problems tend to repeat themselves and if proper care is not taken to train a new generation before the senior employee retires, there is the risk of ‘reinventing the wheel’ many times over.

In theory, this could be mitigated by an adequate ‘overlap’ with a young employee. In practice, there are two problems. First, recruiting bright young men and women to work in the industrial field has its own challenges. Even more if they perceive the plant as less than modern (to use a euphemism) and lacking the allure of some technology companies. Second, management must come up with a very well-structured training program in order for the expected knowledge to be passed along. If simply left to wander together through the plant, it is less likely for the knowledge to flow from the more experienced to the newcomer, as in an osmosis process. The most probable outcome is that both will carry on their regular duties and exchange no more than pleasantries.

In short, a successful training program requires time and effort to provide adequate mentoring, goals and feedback. What is the content that should be learned? What is the time available for learning? What are the tools required? How will this knowledge intake be measured? These are some of the questions that need to be answered for a training program to succeed.

2. Operational Procedures

As a plant ages, practices allowed in earlier life may now stress components beyond safety. Repeated training is required for all operators to adapt to the new procedures. This is particularly hard for senior operators as some respond

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• Modulating pilot only relieves required capacity, reducing fugitive emissions
• Soft seat with metal seat backup ensures optimum main valve seat tightness up to 100% of set pressure
to the new procedure with a mental at- titude of, “But I have been working the other way my whole career!”.

Combining new and old equipment may also be another cause of change in operational procedures. For example, “in a system with a new and an old electric generator connected in parallel, the higher failure rate of the old genera- tor may lead to repeated overloads and a faster degradation of the new one”[28]. Therefore, a proper operational proce- dure needs to be written to combine the various pieces of equipment.

Procedures related to the recognition of aging mechanisms and their warn- ing signs should be regularly reviewed. Vibration in a new piece of equipment may require immediate attention. In older equipment, it may be normal and under the acceptable value. A new piece of equipment’s given corrosion rate may be high but acceptable, short- term. An older piece of equipment with the same rate may be unacceptable due to the accumulated reduction in wall thickness since operation began. Equip- ment training for operators must ad- dress these issues, or risk failure due to insufficient skill to discern between the ‘old abnormal’ and the ‘new abnormal’.

3. Changes in Standards and Regulations

Concerns about occupational health, safety, and environmental issues have led to more stringent standards and regulations worldwide. They may not be at the same point in the road, but they are all heading the same way. Do you re- member coal-fired plants? The light rain of black dust that covers everything; the smell; the smoke - a bleak scene straight from a Dickens novel. While coal is still being used, it is clear that its importance is only diminishing. In New York State, for example, the last coal-fired power plant closed its doors in March 2019[28].

Workplace safety is another critical con- cern. According to the United nations (UN), “toxic exposures kill workers once every 30 seconds, while a worker dies from workplace hazards more generally every 15 seconds”[28]. Toxic exposure is particularly harmful due to possible cu- mulative effects – although it may not be immediately lethal, it will eventually lead to negative health impacts. For many aged plants with the inabil- ity to cope with the regulatory wind, shutdown and decommissioning are the common fate, but this result is avoidable. Many companies are not only complying with the regulations but sometimes go above and beyond them. Siemens, for example, is pledg- ing to have carbon neutral operations and under the acceptable value. A new piece of equipment’s given corrosion rate may be high but acceptable, short-term. An older piece of equipment with the same rate may be unacceptable due to the accumulated reduction in wall thickness since operation began. Equipment training for operators must address these issues, or risk failure due to insufficient skill to discern between the ‘old abnormal’ and the ‘new abnormal’.

4. Adequate Information

Information is the very foundation upon which a successful aging management program is built. Essentially, there are four streams of information required throughout a plant’s life. One or more information systems are generally used to keep track of them:

- **Plant Condition (Including Structures)**: This is often understood as the mainte- nance records and the results of the fre- quent inspections of the various com- ponents used in the plant. However, it should also include records related to the instrumentation history, such as actuator performance and chang- es in raw materials.

- **Deteriorating Mechanisms**

The information in the previous para- graph fuel the analysis of which deta- riating mechanisms are the cause of aging, what measures can be taken to mitigate or lessen their effect, and what rate is expected for them to progress. "However, there are significant differ- ences. On one hand, the main objective of aging, the following steps of monitor- ing and mitigation are severely compro- 

- **Management of Change (MOC)**

Repairs, overhauls and retrofitting are routine tasks that may not leave a plant in the original condition. All the modi- fications that cannot be classified as ‘replacement in kind’ must be recorded as MOC and the related documentation must be updated.

- **Codes and Related Documents**

Design codes are reviewed frequently, as the knowledge on certain subjects is refined and updated by science. Some old assumptions may no longer be per- mitted under the revised code, which re- quires an analysis determining whether the original design is outdated but still valid or if a previously unknown mecha- nism now requires review. Changes in design codes may also trigger a review of the original hazard and operability study (HAZOP). Are the original assump- tions still valid? Has any process modi- fication invalidated them? What aging mechanisms were overlooked? The his- tory of breakdowns, MOC, turnaround and accidents (both local and simi- lar plants) must feed this review.

In 2019, there was an explosion fol- lowed by a fire at the Silver Eagle Refin- ery in Woods Cross, Utah, where several homes were damaged. The cause was a rupture in a pipe, severely damaged by corrosion (sulfidation). In a report com- missioned by the U.S. Chemical Safety Board (CSB) [28], the pipe’s wall thickness ranged from 0.570 to 0.032 inches, as measured tests progressed near the fracture surface. The metal loss was es- timated to have occurred undetected in the course of 14 years. This is just one example of how the lack of adequate information can lead to a negative out- come. Figure 1 shows the metal loss in the piping.

5. Understand the Aging Mechanisms – Multidisciplinary Approach

Industrial plants are complex environ- ments, not only because of the sheer number of components, but also because of the various ways these components can interact and influence each other.
and to optimize equipment availability. On the other hand, aging management is focused on assessing and handling the aging and degradation of the plant, and on developing a plan to extend its lifetime in a safe way. Therefore, it seems logical to consider the management of aging as an additional factor that should be included in the general maintenance management of the facility. A key issue for a successful integration requires finding out how the new requirements will affect and modify the existing maintenance management.

7. Mergers and Acquisitions

Mergers and acquisitions involving old plants may require the harmonization of different business cultures and AIM practices. Additionally, other various aspects can differ including the information systems, as well as the maintenance software that records and schedules tasks. This is a huge problem, and one with no simple recipe to solve. The only guidance for this type of situation is to have resources (time, people, tools) set aside to delve into the differences, and create a detailed plan stating how the two strategies will be merged or the reasons why it would be best to separate them. It is crucial to remember that some equipment may have insufficient documentations or records about maintenance, aging mechanisms, MOC, etc., which will require an initial screening with several inspections techniques, and will need to be reviewed before discussing the possibility of a merger.

8. Finding Replacements

Some companies had theirs plants built with such efficient designs and high-quality materials that the service life can easily reach 30 years without major modifications to the original equipment. This is often the case in nuclear power plants. As time passes, however, many of the original suppliers may no longer be available, or most likely, have major modifications to the original equipment. Additionally, some of the more specialized equipment can only be provided by a few suppliers, and these suppliers have an international clientele, which may cause severe backlogs. The risk in these cases is to succumb to the operational pressure and accept ill-fitted adaptations – ones that were not adequately vetted by a multidisciplinary committee in a thorough MOC process.

9. Cybersecurity

Since the Stuxnet discovery in 2010, more and more companies became aware of the possibility of cyberattacks. The Stuxnet is “a malicious computer worm, first uncovered in 2010, thought to have been in development since at least 2005. Stuxnet targets supervisory control and data acquisition (SCADA) systems and is believed to be responsible for causing substantial damage to the nuclear program of Iran.” In a plot apt for a science fiction movie, Stuxnet reportedly compromised the plant’s programmable logic controllers (PLCs) and caused fast-spinning centrifuges to tear themselves apart. Yes, a computer virus interfered with process parameters and caused the destruction of important equipment. In a less sophisticated attack, a substation in Ukraine was targeted in 2016 and Kiev experienced an hour-long blackout.

Companies should take such possibilities seriously and search for reliable partners that can help “design, test, certify, and secure their internet-connected devices, networks, and control systems.”

10. Disruptive Technologies

In the recent past, technologies took a long time to be adopted and reach consumers (see Figure 2). Telephone lines (do you remember them?) took 50 years to reach 50 million users. Mobile phones reached the same level in 12 years. What was once a staple of any home, is barely recognized by many children today. This kind of disruption occurs in the industrial world as well. Kodak, for example, once a powerhouse in the film industry, filed for bankruptcy in 2012. Keeping your business relevant has never been more challenging. Surviving in the 21st century requires a constant education and diligence to be aware of what is being researched and likely to impact your particular industry. Attendance to trade shows and conferences, reading your industry’s magazines, and curating the right network of knowledgeable people, is the least one can do.

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ABOUT THE AUTHOR

Davi Correia is a Senior Mechanical Engineer who has worked at a major Brazil-based oil company for the last 15 years. Correia is part of multi-disciplinary team that provides technical support for topside piping and equipment of production platforms. During this period, he began to work with materials and corrosion, and later moved to piping and accessories technology, where he has become one of the lead technical advisors on valve issues. Correia was part of the task force that revised the IGPS-5-632 standard, and wrote the S-611 standard. Correia has a master’s and a doctor’s degree in welding by the Universidade Federal de Uberlandia.
AIME – Asset Integrity Management Systems (AIMS)

Drag Reducing Agents for Liquid Pipelines and Equipment Selection

In general, pipelines can be classified into three categories, depending on their purpose:

Gathering Pipelines: A group of smaller, interconnected pipelines forming complex networks with the purpose of bringing crude oil or natural gas from several nearby wells to a treatment plant or processing facility. In this group, pipelines are usually short—a couple of hundred meters—and with small diameters. Also subsurface pipelines for collecting product from deep water production platforms are considered gathering systems.

Transportation Pipelines: Mainly long pipes with large diameters, moving products (oil, gas, refined products) between cities, countries, and even continents. These transportation networks include several compressor stations in gas lines or pump stations for crude and multi-product pipelines.

Distribution Pipelines: Composed of several interconnected pipelines with small diameters, used to take the products to the final consumer. Feeder lines to distribute gas to homes and businesses downstream. Pipelines at terminals for distributing products to tanks and storage facilities are included in this group. Oil pipelines are made from carbon steel pipes with an inner diameter typically from four to 60 inches. Most pipelines are typically buried at a depth of about three to ten feet.

The oil is kept in motion by pump stations along the pipeline where gas is pushed by compressors to maintain a continuous flow. Multi-product pipelines are used to transport two or more different products in sequence in the same pipeline. Usually in multi-product pipelines there is no physical separation between the different products. Some mixing of adjacent products occurs, producing interface, also known in the industry as “transmix.” At the receiving facilities, this interface is usually absorbed in one of the products based on precalculated absorption rates. Alternately, transmix may be diverted and shipped to facilities for separation of the comingled products. Crude oil contains varying amounts of paraffin and, in colder climates, wax buildup may occur within a pipeline.

Often these pipelines are inspected and cleaned using methods such as scraping/pigging. It is the practice of using devices known as “scrapers/pigs” to perform various maintenance operations on a pipeline. The devices are also known as “scrapers” or “Godevils.” “Smart pigs” (also known as “intelligent” or “intelligence” scrapers/pigs) are used to detect anomalies in the pipe such as dents, metal loss caused by corrosion, cracking or other mechanical damage. These devices are launched from scraper/pig-launcher stations and travel through the pipeline to be received at any other station downstream, cleaning both wax deposits and material that may have accumulated inside the line and inspecting and recording the condition of the line.

For natural gas, pipelines are constructed of steel and vary in size from two to 60 inches in diameter, depending on the type of pipeline. The gas is pressurized by compressors and is odorless unless mixed with a mercaptan odorant they are required by a regulating authority.

Pipeline companies install a series of equipment to ensure that their pipeline systems operate in an efficient, reliable and safe manner. One of those components is above ground mainline valves. Above ground valve sites are installed along our pipeline systems to provide an additional way of controlling flow. The valves are normally open, but when a section of pipeline requires maintenance, operational engineers close the valves to isolate that section of the pipeline.

Occasionally when heavy oil is moved in these lines, companies use Drag reducing agents. Drag reducing agents (DRA) are chemicals that are injected into liquid pipelines to enhance the flowing capacity. DRA are used to increase pipeline capacity or reduce the pressure/pumping power required to flow the same capacity without DRA. DRAs are made of long chain, high molecular weight polymers, with an individual hydrocarbon chain possibly repeating a 100,000 times leading to compounds with molecular weights in the order of hundreds of millions.

\[
(\text{CH}_2 - \text{CH} - \text{CH}_2 -)_n \times R
\]

(DRA work by reducing the turbulence in the flowing fluid, which in turn reduces the drag forces in the pipeline. A common misconception about DRA is that it reduces drag forces in the pipeline by sticking to or adhering to the wall of the pipeline like a coating. In reality, the DRA polymer strips work by being suspended in the flowing liquid. The first observed cases of drag reduction in pipelines was actually in the 1930s during the flow of paper pulp (cellulose fibers) suspended in water as a mode transportation. When liquids flow within the turbulent flow regime (Reynolds number > 4,000), their molecules are subjected to a rotational turbulent motion (eddy currents) in addition to moving in the direction of flow. It is the interaction of these circu-
lar-moving molecules with the pipe wall and the laminar sub-layer that enhances the drag forces or frictional pressure loss during liquid flow. To reduce these drag forces, the DRA polymer strips act as little shock absorbers that dampen the rotational motion of the liquid molecules, thereby reducing the turbulence within the flowing fluid. It should be noted that as a result of this that DRA is not useful for liquids flowing in the laminar regime due to a lack of turbulence in such systems (Figure 1).

How is DRA Applied?
Only minute quantities of DRA are required to reduce drag forces within a pipeline flowing liquid. The injected DRA is typically in the order of parts per million (ppm) of the flowing liquid and injected after the discharge of the mainline pumps. As DRA is prone to degrade, it is required to be re-injected after each pump station along the pipeline route (or after a certain distance for relatively long pipelines) to maintain the capacity. Before injection, the DRA polymer strips are produced in coils or in rolls and suspended in a non-dissolving liquid solution. Upon injection, the polymer strips unfold and stretch out in the flowing liquid where they become suspended. The effectiveness of applied DRA in reducing turbulence is determined by the percent drag reduction (%DR). The %DR is defined as the ratio of the frictional pressure drop before and after DRA injection for the same flow rate.

\[
\%DR = \frac{\Delta P - \Delta P_{DRA}}{\Delta P} \times 100
\]

where m and b are constants related to the performance of the DRA in the particular liquid (Figure 2).

What are DRA Uses?
As already mentioned, the primary use of DRA is to increase the capacity of a liquid pipeline by reducing the flow drag forces. Related to this is the use of DRA to reduce pipeline operating pressure for the same capacity, which also reduces the pumping power consumption. Alternatively, it may be required to shut down an intermediate pump station due to routine or non-routine maintenance without shutting down the entire pipeline. In this case, DRA could be applied at the upstream station to still maintain the same capacity while bypassing the intermediate pump station. In pipeline design, an analysis of a particular system might show that it is cheaper to have DRA injection as part of regular operations to reduce the pipeline size, wall thickness, design pressure or number of required pump stations. For cases where DRA has been applied to increase the capacity of a system, it is highly recommended that the transient surge analysis for such a system is updated.

DRA is not typically used within pipeline terminals, refineries or short gathering lines because it is more prone to degradation as a result of the numerous shear points that can be found in these kinds of systems. However, some DRA vendors have recently been marketing what they call “Specialty” DRA products, which can supposedly be used to improve capacity in shorter non-traditional lines (Figure 3).

Valve Selection
The manual valve sites are physically closed by pipeline operators at the valve site location, hence manual valves are installed in urban areas where the access to valve and pipeline is adequate. Automated valves are designed to be opened and closed remotely from central control rooms in various locations. These valves require no human intervention and are set to respond to pressure or flow rate changes. Valve sites are approximately 150ft x 100ft in area and typically remain within the pipeline right-of-way corridor. All valve sites are designed and built to meet or exceed provincial, federal and national safety regulations, environmental and emission requirements and fire safety codes. All valve site locations are secured with fencing and locked entry.

ESD Station Design and Valve Selection
An ESD (Emergency Shut Down) station is a section of the pipeline which is above ground. The station may be simply the ESD valve or may also function as a tie-in point and/or line heater station. Two types of valves are typically used by pipelines for ESDV service: ball valves and through conduit gate valves. Ball valves are the most common. Two styles of ball valves could be used, regular or full port. A regular port ball valve has an opening that is less than the internal diameter of the pipe, whereas a full port valve has an opening the same size as the internal diameter of the pipe. If the pipeline is to be designed for pigging/scraping capability, a full port valve is used.

The most common actuator for use with a ball valve is a quarter turn, single acting spring return actuator. This style of actuator requires an instrument gas supply to compress the spring and maintain the valve in the open position. Removal of the instrument gas supply (due to the pressure pilot being tripped or failure of supply) allows the spring to expand to its normal position and, in the process, rotates the valve to the closed position.

The actuator can be specified for different instrument gas pressures. Normally the pressure will be between 50 to 150psig. It is important to speci-
To damage from excessive pressures, pressurized equipment that are subject to relieve pressure, boilers and other valves do not affect outlet pressure for fluctuations of inlet pressure to a regulator, it at the point desired. Reasonable fluctuations of inlet pressure to a regulator can reduce incoming pressure, but maintain it at the point desired. A control valve for a given application, it may be desirable to install block valves around an ESD valve. If it is suspected that the control valve may require removal for maintenance, then block valves would be the key to ease of removal. To prevent back flow, check valves perform the single function of checking or preventing reversal of flow in piping. They come in a few types such as swing, lift, ball, dual plate, non-slam, etc. Flow keeps these valves open, and gravity and reversal of flow close them automatically.

Control Valves or Regulating Valves for pressure, i.e., pressure regulators are used in lines where it is necessary to reduce incoming pressure, but maintain it at the point desired. Reasonable fluctuations of inlet pressure to a regulator valve do not affect outlet pressure for which it is set. To relieve pressure, boilers and other pressurized equipment that are subject to damage from excessive pressures

The article is written by the author to best of his/her knowledge including enough references provided at the time of writing this, in order to meet best industry practice.

REFERENCES:
- Industry colleagues namely Ahmed Mammad Nafis’s -Saudi Aramco, Hamid Bidmus – DNV Inc
- Pipeline Research Council International
- Industry codes such as API, ASME, MSS, IS0, NACE and PIP
- Pictures and graphical representation courtesy NZX Process Solutions Inc and Driver Pipelines Inc

ABOUT THE AUTHOR
Gobind Khiani, M.Eng., P.Eng. has served in engineering management roles for both operating and EPC companies and has received Fellowship in Engineering. He has a bachelor’s degree from the University of Pune in India and a Master of Engineering from the University of Calgary in Alberta, Canada. He is the past chairman of Calgary Branch Executive Committee at the Association of Professional Engineers and Geoscientists of Alberta and Valve Users Group. Currently he is Secretary of CPGE, Vice Chairman of International Standards Organization, Volunteer at YPAC, GPS, API, PRCI, ASME, IS0 and NACE representing Canada.
Mediating Fugitive Emissions
An Interview with Carl Anderson – Environmental Engineer

Environmental engineers are essential to the protection of the environment as well as the health and safety of vital industry workers. Their careers are dedicated to ensuring that the integrity of equipment used in industrial processes are up to global standards, and are performing on the frontline against leakage and fugitive emissions. Valve World Americas was thrilled to speak with Environmental Engineer Carl Anderson, about his experience managing leak detection & repair programs, handling consent decrees, inspecting valve components and ensuring safety during operations and turnarounds.

By Stephanie Matas, Angelica Pajkovic & Sarah Bradley

Leak Detection & Repair
As an Environmental Engineer, Anderson’s role consists of controlling and managing the fugitive emissions program at refineries. Within a refinery, each environmental engineer has a specific function. “We wake up, come to work, warm up the detection machine and map out the route for the day: we often find ourselves in different areas of the plant, depending on the work to be done,” stated Anderson.

The leak detection and repair (LDAR) program is generally built into a facility’s Title V permit. Title V of the Environmental Protection Agency (EPA) Clean Air Act requires major sources of air pollutants, like refineries, and certain other sources to: obtain an operating permit, operate in compliance with that permit, and certify their compliance annually with permit requirements. “Title V includes all of the permits that are applicable to a facility in one neat, condensed package. The Clean Air Act drives all of our leak detection programs with the exception of the consent decree requirements, and those are all funneled into the Title V permit. The consent decree forces us to upgrade chronically leaking valves to meet the standards for certified low leak technology (CLLT) which is no more than 100 ppm for five years,” Anderson explained.

The LDAR program mandates a quarterly monitoring schedule for all of the plant’s covered valves. “We monitor every valve at minimum, four times a year and we monitor pumps monthly, 12 times a year. This schedule is driven by the EPA VVa/GGGa regulation, but we try to monitor more frequently than is required by law, in order to identify trends and remain conservative within the program.”

Managing Safety & Turnarounds
Anderson advocates that the Clean Air Act is designed to both reduce emissions and protect communities and workers alike. “I always tell my technicians to get more enhanced medical screenings, as they are often in the plant all day long. Nine hours in the refinery and then five or six hours in the field in a day is a lot of exposure, so it is important to protect yourself.” Although he does not handle the safety aspects at the refinery directly, it is always a primary focus of his. “The refinery’s safety procedures are driven from the top down by a Health, Safety & Environmental (HSE) Director, but I try to enforce those procedures as much as possible.”

Many facilities similarly follow a routine turnaround program, on average every three to five years depending on throughput and other operational considerations. “If we are planning a turnaround, we will look at the units that are going to shut down and try to be proactive with maintenance. We cannot always mitigate a leak within the 5/15 day window, and leaks become apparent right after the turnaround,” said Anderson. “If you take a more proactive approach and figure out the work that has to be done prior to the shutdown, you can usually isolate a line, valve or other piece of equipment since the entire unit is shut down.”

The biggest challenge with turnarounds in most facilities is the intense pressure on the team to keep the project on time and within budget. “Time is always a factor because every hour that you go over schedule it delays the next project,” explained Anderson. Many plants therefore schedule large turnarounds more than a year in advance, so the team can adequately prepare in order to mitigate the risk of unforeseen complications.

Turnarounds provide an opportunity to make mandatory repairs under Title V guidelines. There is a 15-day repair window for valves and pumps. If, for some reason, the equipment cannot be repaired during that timeframe, there is a “delay of repair” option. This option allows the operators to keep using the equipment, as long as they agree to repair it during the next process unit shutdown. Turnarounds provide the outage necessary to make those repairs.
Leak Detection Technologies

Most refineries employ several leak detection technologies to help maintain the safety and integrity of their assets. A team will often use thermal imaging cameras by FLIR both for safety and leak detection applications. “We might use the FLIR camera to examine, for example, a heat exchanger for leakage,” Anderson. The FLIR camera is also often used for monitoring equipment after the start-up of a process unit. “We can take a picture using a very wide view of the field or process area so you can zoom in on a bad leak remotely, thereby reducing risk to the worker.”

When out in the field Anderson uses two brands of toxic vapor analyzers (TVAs) for leak detection: the phx42 by LDARtools and the Thermo Scientific TVA2020. “These two pieces of equipment are essentially industry standard now; both have their pros and cons, but they quickly and accurately detect fugitive emissions of organic and inorganic compounds for Method 21 compliance, LDAR applications, and site remediation projects.”

As previously stated, the most common piece of equipment to experience emission leaks are valves. Valves are used throughout refineries in a variety of applications, such as process units. “I see valves in every size from 36 inches, down to a 1/4-inch in the LDAR program,” stated Anderson. “We also use a lot of ball valves for isolation, rising stem/gate valves as well as a number of globe and ball valves. Each type has a unique function and all need to be monitored on a constant basis.”

Liquid transfer pumps, such as centrifugal and propeller pumps, are similarly closely monitored. As they are typically located in high volatile areas, these applications have an odorant added to the gas that will omit a distinct odor if there are any emissions. If the odor or leak from a valve is detected, Anderson’s team will assess the leak and determine the most suitable course of action to minimize the amount of emissions entering the atmosphere.

Final Thoughts

Although the practice of monitoring emissions can be seen as relatively new age, there is a lot to learn from the more experienced engineers. “We have a lot of older engineers moving towards retirement, so I try to absorb as much information from them as possible while I can,” said Anderson. Based on the expertise they have gained, Anderson calculates that senior engineers have conducted every test and procedure at least three times each in their lifetimes. “Engineers’ practical, hands-on knowledge is so valuable. Unless you are super smart or very lucky, chances are you are never going to get it right the first time. That is why I find it is important to talk through scenarios with engineers to gain different perspectives.”

Anderson’s biggest piece of advice for young engineers is to benefit from other’s experiences, “Give people the opportunity to share their experiences, ask them how did they did the project, then personally apply your own set of experiences to further add to your skillset. The Internet of Things (IoT) and rapid digitization has added another layer of difficulty to knowledge transfer. It is fantastic how far we have come with technology, but we cannot forget the benefit of working hands-on, with real world applications.”

“Give people the opportunity to share their experiences, ask them how did they did the project, then personally apply your own set of experiences to further add to your skillset.”

Images courtesy of RFS Compliance Solutions.

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Quality that lasts.
Harnessing Fugitive
An Interview with Mike Shorts –

Mike Shorts has developed a wealth of knowledge surrounding industrial processes and emission control throughout his 23 years in the industry. Appointed President of Triangle Fluid Controls in 2008 after Durabla Canada’s restructuring, Shorts continues to cultivate and motivate his team of experts to harness and disseminate the latest technologies and product advancements for the purpose of fugitive emission control.

By Stephanie Matas

With a humble beginning as an engineer, he steadily rose through ranks of management, epitomizing the essential qualities of a leader. Shorts is welcomed as one of the Steering Committee members for the Fugitive Emissions Summit Americas Conference this year.

Completing his degree in Geological Engineering with a major in Environmental Engineering at Queen’s University, “My initial jump into the fluid sealing space was lucrative as there were so many opportunities available.” Shorts was almost immediately hired by Durabla Canada after completing a two-week contract, which quickly turned into over 23 years. “The timing was right and allowed me to be involved in the evolution taking place in the gasket industry from the very start. It has been an important transition for me leading our business through these changes.”

In his career, Shorts has witnessed the transition from asbestos to non-asbestos products in the fugitive emission space. “In the beginning our company was heavily invested in gaskets for asbestos applications. Back then, asbestos gaskets were considered a great universal fix for everything but that soon began to fizzle out with the increased focus on health and safety.”

He reflected how the shift to non-asbestos products shifted the global sealing environment as, “gasket replacements were no longer ‘one-size-fits-all’.” Shorts says there has not necessarily been new gaskets created in recent years, but there has been a huge outpouring of different configurations of existing products, and improved assembly methods to get tighter sealing compositions. He also noted advancements in testing technologies, as many have increased the safety of workers exponentially by eliminating the need for an operator to be physically present in volatile situations. “The ability to prove the quality and practicality of the gaskets in real life situations, without direct involvement, has been quite impressive.”

When asked what keeps him excited about fluid sealing, he says it is the constant change. “Each product and application is different, and every client has a new question to ask. From an engineering perspective, it forces you to think creatively about how you can come up with a solution and apply your knowledge differently. That is the key, something different everyday!” Shorts is also inspired by his team of professionals, who are empowered to be highly creative directly as a result of fugitive emissions. “The company’s direction and focus on sustainability has allowed several people to be a lot more creative than they would be contemplating general situations. We have also internally designed and developed tests that give us pre-qualification on how a new product, blend or configuration might work in certain high temperature or high-pressure applications.” In addition, the company has enacted several protocols to reduce its overall waste and energy consumption. “I think a manufacturer’s position on sustainability needs to be twofold. It’s not just about the years of product design and improvement, it is also about what they are doing on the frontline to reduce their own environmental impact.”
Harnessing Fugitive Emissions Technology
An Interview with Mike Shorts – President, Triangle Fluid Controls

Shorts says the continual improvement of gasket product offerings available to the market is on the horizon. “I do not think we need new inventions right now as we have adequate base materials; moving forward we need reconfigurations of current products with tighter, more efficient sealing attributes. The aim is to improve components for better final products.” Shorts believes in the importance of education and training. “Like most manufacturers, we actively try to promote and educate end users on how to best install and use the products we offer, which gives them a better chance to meet fugitive emission criteria and regulations without it costing a fortune. It is exciting that this technology exists solely to reduce fugitive emissions and is not prohibitive based on location.”

This ideal is a foothold for Shorts participation on the panel of committee experts for the 2020 Fugitive Emissions Summit Americas Conference. The Fugitive Emissions Summit Americas Conference aims to keep the world’s industrial environmental initiatives in the limelight, distributing useful and detailed technical information to EPCs, end users, distributors and manufacturers alike. “The fact that fugitive emissions are being highlighted to the world as something that needs to be talked about is worthy of a discussion alone.” Shorts says there are several manufacturers in the Low-E space that have the critical technology to solve the problems that industry needs help with, and to be able to have all those experts together under one roof to share, engage and network is an incredible opportunity. “Being a part of the Steering Committee means I can help guide the topics and point of discussion based on what the industry is talking about. It is amazing to see this completely diverse and competing set of players in the industry in an environment like this. Everyone is working together for the same common goal, and we ultimately are.”

Shorts encourages visitors to attend the event, share their knowledge and experience and learn more about the viable options and applications for fugitive emission control.

“The fact that fugitive emissions are being highlighted to the world as something that needs to be talked about is worthy of a discussion alone.”

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Conference Coordinator
Stephanie Matas
s.matas@kci-world.com
Tel: +1-905-926-3482

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s.matas@kci-world.com
Tel: +1-905-926-3482

Exhibition Coordinator
Josh Gillen
j.gillen@kci-world.com
Tel: +1-647-983-7030

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**Contact Us**

Conference Coordinator
Stephanie Matas
s.matas@kci-world.com
Tel: +1-905-926-3482

Exhibition Coordinator
Josh Gillen
j.gillen@kci-world.com
Tel: +1-647-983-7030

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Procuring valves individually in one-off contracts is a repetitive task; and one that the procurement and related engineering support team can become quite good at it. However, is this the best use of such resources? One of the ways to alleviate the burden of procurement is the establishment of framework agreements. By understanding the processes and function of a procurement strategy it becomes easy to see why it could be the better option for obtaining valves.

**Definition of Framework Agreement**

The definition of a Framework Agreement (FA), varies substantially according to the type of industry using it. Most commonly, it is established as an “Umbrella” arrangement, and its purpose is to set some broad terms for the future supply of goods or services during a given period. An FA does not necessarily imply that any goods or services will be ordered. Rather, individual contracts containing purchase orders will be made in accordance with the rules defined in the FA. The goal of the FA is to establish a long-term relationship with one or more partners in order to secure a minimum set of conditions for the supply. In this capacity, the FA has no desire to define all the details since demand in uncertain. There is often a fine balance to be reached between the partners in order to establish a minimum workable scope.

The graph presented in Figure 1 shows the relation between cost and definition (level of detail in quantity, delivery time and specification). The more open the FA is, the more uncertainty the supplier needs to incorporate in its price, so the cost is high. If all the details are set, then the FA is basically a purchase in bulk, and in this case the cost is high because you are spending money on goods that you are not sure will be needed. For each industry, there is a compromise point where buyer and supplier should meet.

There are several ways of reaching the mid-point. For example, setting different FAs with more than one supplier of the same product gives the buyer a better chance of receiving it in a reasonable timeframe, even if the delivery time is left open. As the raw materials used in the goods may fluctuate wildly during the FA, a common countermeasure is to not to define price in advance. Instead a pricing structure (a formula defining the price during the period of the framework) is established. This way, the supplier will not risk losing money by setting the price too low or losing the client by setting it too high.

Below is a summary of the advantages of establishing framework agreements:

- **Cost savings in time and procurement resources** are achieved by allowing a simplified buying process;
- **For large companies**: the framework helps the buyer avoid the risk of emitting two orders for the same demand, as the orders should be now centralized in the FA;
- **For a future project which has not fully specified a product**: the framework may secure a pricing structure while postponing the final specification to the individual contract phase.

As for disadvantages, there is the risk of spending time and resources and not reaching suitable conditions for both supplier and buyer.

Due to a lack of proper understanding, the conditions may be met only on paper, giving place to strenuous arguing once the phase of individual contracts begin. Even when conditions are met and there is proper understanding, individual contracts with suppliers outside the FA may be necessary due to time or cost constraints; time and monetary constraints greatly undermine an FA strategy in the eyes of higher management. There is also the risk for professionals involved in the FA about how the market will absorb such arrangements. When large companies establish FAs with two or three suppliers, the volume of business taken from the market as a whole may result in an undesirable reduction in competition.

A typical Framework Agreement includes provisions for the following items:

- **Scope**: description of the arrangement and what it accomplishes. It must be clear whether the buyer will be obliged to make a minimum purchase during the FA period.
- **Duration of the FA**.

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**Figure 1: Relationship between detail level and cost for an FA.**
### Typical valve procurement

1. Indication of need
2. Contact the suppliers in the AML, either for standard procurement or tender
3. Clarify supplier’s doubts on the specification (it may take some meetings)
4. Evaluate technically supplier’s proposal and endorse or reject deviations
5. Negotiation of final price, delivery and payment conditions
6. Seek internal approval for the price being quoted
7. Emission of purchase order

### Valve procurement under an FA

1. Indication of need
2. Contact supplier(s) in FA and ask for quotes
3. Negotiation of final price, delivery and payment conditions
4. Seek internal approval for the price being quoted
5. Emission of purchase order

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<table>
<thead>
<tr>
<th>Exceptions: when the buyer is allowed to procure goods included in the FA with other suppliers.</th>
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<tbody>
<tr>
<td>Procedures regarding how the individual contracts will be dealt with.</td>
</tr>
<tr>
<td>Pricing structure and delivery times.</td>
</tr>
<tr>
<td>Standards, design codes, specifications, additional requirements, inspections and shipping procedures.</td>
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<tr>
<td>If possible, estimates of the volume of goods to be provided.</td>
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#### Framework Agreement for Valves

Valves are a particularly well suited application to be considered in a Frame Agreement. Valves are a complex equipment which often require both specific design codes and a number of additional requirements. The amount additional requirements can sometimes resemble a little book, with chapters for design, materials, painting, etc. A supplier in an AML (Approved Manufacturer List) may be familiar with the whole content, but a supplier in an FA is much more inclined to dedicate the adequate resources to the proper understanding of the complete specification.

Valves with many different specifications are procured in large numbers for new projects and turnarounds. In some cases, the final quantity of the valves fluctuates due to last minute modifications or cancelled tasks. Based on the level of uncertainty associated with the procurement of valve, in terms of flexible quantities, FAs are a smart choice.

It is also important to consider how a valve manufacturer treats a Request For Quotation (RFQ) when contemplating an FA. A seller will take the specifications they receive to the supplier engineering team, which have the tasks of reading, understanding, proposing any technical deviations, estimating the cost of any necessary outsourcing and providing overall cost and fabrication time. With this information, the seller goes to the production meeting. All the sellers, along with management and engineering departments, take part in this meeting, which decides the production schedule and considers elements such as the complexity of the RFQs, how they can be fit into the upcoming time slots, and what extra shifts may be employed. In this meeting, every seller presents his/her RFQs. For the ones deemed most profitable, a negotiating price will be decided, along with an estimate for the delivery time.

In short, a manufacturer spends a considerable amount of resources (read: money) to produce a quote. As considerable time and effort is put into this process, the manufacturer tends to quote for the RFQs that will most likely become purchase orders. As an FA is typically run by a centralized unit which aggregates orders, the related RFQs tend to involve large numbers of valves (which improves the odds of the supplier producing a quote).

As the supplier is considered a preferable supplier, when working with FAs, RFQs will be sent to the suppliers who are part of an FA for consideration first. Only after the possibilities of purchasing with the FA suppliers are explored is the buyer allowed to send the RFQs to other suppliers. This privilege is another incentive for the supplier to give special attention for RFQs under an FA.

Table 1 presents a comparison between a typical valve procurement and the process under an FA. There are two major differences. First, as the specifications were thoroughly discussed before (and any deviation agreed), there are no doubts to be clarified and the engineering team is not repeatedly called to evaluate proposals when there is an FA. Second, the negotiation phase in the FA case tends to be faster, as the conditions and price structure was previously defined.

#### Final Thoughts

Unfortunately, to be able to profit from the benefits offered by an FA, a business has to invest considerable time and resources in seeking and establishing the FA. The first, and perhaps most important, step is to contact the suppliers in the AML and present a general draft of the agreement. Many meetings may be required, involving personnel from procurement, legal and engineering teams. As in any other kind of business negotiation, trust is fundamental for success. Implicit in a framework agreement is the intention of creating long-term relationships with preferred suppliers. After signing the FA, one step that must not be overlooked is the communication of the existence of the FA to all the branches and departments deemed possible users of the FA. It is also a good practice to establish some sort of blocking mechanism for ordering valves outside the FA. This can only be done with written justification and subsequent authorization from the management. It is not in the best interest of the buyer to have orders placed outside of the established FA.
Projects & Tenders!

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.

**United States – Virginia: Valve Check**
Description: Valve Check
Contact point: DibbsBSM@dla.mil
Time limit for receipt of tenders or requests to participate: June 15, 2020
Language in which tenders or requests to participate may be drawn up: English

**United States – Pennsylvania: Cap Valve**
Description: Cap Valve
Contact point: candice.benjamin@dla.mil
Time limit for receipt of tenders or requests to participate: June 15, 2020
Language in which tenders or requests to participate may be drawn up: English

**United States – Oklahoma: Valve Regulating Temperature**
Description: Valve Regulating Temperature
Contact point: robert.westerman.4@us.af.mil
Time limit for receipt of tenders or requests to participate: June 22, 2020
Language in which tenders or requests to participate may be drawn up: English

**United States – Pennsylvania: Cap Valve**
Description: Cap Valve
Contact point: brianna.l.walker@navy.mil
Time limit for receipt of tenders or requests to participate: June 17, 2020
Language in which tenders or requests to participate may be drawn up: English

**United States – Pennsylvania: Valve Solenoid In Repair/Modification Of**
Description: Valve Solenoid
Contact point: michael.pitone@navy.mil
Time limit for receipt of tenders or requests to participate: June 22, 2020
Language in which tenders or requests to participate may be drawn up: English

**Ecuador – Cuenca: Egu: Acquisition Of Wall Gate Valves For The Trinitaria Plant, Includes Installation-prd**
Description: Egu: Acquisition Of Wall Gate Valves For The Trinitaria Plant, Includes Installation-prd
Contact point: mayra.solorzano@celec.gob.ec
Time limit for receipt of tenders or requests to participate: June 22, 2020
Language in which tenders or requests to participate may be drawn up: English

**United States – Pennsylvania: Valve Butterfly**
Description: Valve Butterfly
Contact point: joshua.pomraning@navy.mil
Time limit for receipt of tenders or requests to participate: June 18, 2020
Language in which tenders or requests to participate may be drawn up: English

**United States – Pennsylvania: Parts Kit Valve In Repair/Modification Of**
Description: Parts Kit Valve
Contact point: vincent.molesky@navy.mil
Time limit for receipt of tenders or requests to participate: June 30, 2020
Language in which tenders or requests to participate may be drawn up: English
United States – Oklahoma: Valve Solenoid

4810-00-314-9989 Hs (amec 3d)

Description: Valve Solenoid

4810-00-314-9989 Hs (amec 3d)

Contact point: +1-4058535922,
breann.irving@us.af.mil

Time limit for receipt of tenders or requests to participate: July 8, 2020

Language in which tenders or requests to participate may be drawn up: English

Mexico – Mexico City: Service For The Acquisition And Delivery Of Plumbing Material, Tube And Valves

Description: Service For The Acquisition And Delivery Of Plumbing Material, Tube And Valves

Contact point: Lrfa.alvareza@ims.gob.mx

Time limit for receipt of tenders or requests to participate: September 29, 2020

Language in which tenders or requests to participate may be drawn up: English

United States – Pennsylvania: Start Valve

Contact point: +1 (215)697-2217,
marty.cole@navy.mil

Time limit for receipt of tenders or requests to participate: June 29, 2020

Language in which tenders or requests to participate may be drawn up: English

United States – Virginia: Valve Fuel Cutoff

Contact point: +1-8042793379,
renee.griffin@dla.mil

Time limit for receipt of tenders or requests to participate: June 29, 2020

Language in which tenders or requests to participate may be drawn up: English

United States – Virginia: Thermal Valve; F-16 Aircraft

Contact point: +1-8042793540,
dorothea.ferebee@dia.mil

Time limit for receipt of tenders or requests to participate: June 30, 2020

Language in which tenders or requests to participate may be drawn up: English

United States – Oklahoma: Supply Of Hydraulic Servo Valve Applicable To The E-3 Aircraft

Contact point: +1-4057399071,
tracy.clenndennen@us.af.mil

Time limit for receipt of tenders or requests to participate: July 6, 2020

Language in which tenders or requests to participate may be drawn up: English

United States – Pennsylvania: Valve Bty Assy

Contact point: emily.seratch@navy.mil

Time limit for receipt of tenders or requests to participate: June 16, 2020

Language in which tenders or requests to participate may be drawn up: English

Baker Hughes Awarded Turbine Bypass for Exxon Mobil Golden Pass LNG

Baker Hughes has been awarded the contract to supply turbine bypass valves and condenser back-pressure dump tubes to Exxon Mobil’s Golden Pass LNG site through the new expanded combined cycle power plant procured through Chiyoda Corporation of Japan.

The Exxon Mobil Golden Pass LNG project is adding liquefaction and export capabilities to its existing facility in Sabine Pass, and will increase overall export capacity to approximately 16 million tons of LNG per year. The current Golden Pass LNG terminal campus include five 155,000 cubic meter LNG storage tanks, two marine berths capable of offloading various sized ocean-going LNG carriers and process facilities capable of re-gasifying LNG to produce approximately 2 billion standard cubic feet of natural gas per day. To support this complex, Exxon Mobil is expanding the site infrastructure with a combined cycle power plant to locally integrate powering of the site. With many years of excellent service to the Sabine Pass facility, Baker Hughes Masoneilan has the honor to supply critical turbine bypass valves to protect the utilities unit of the plant. This award comprises of three 18” x 36” 84000 Series SteamForm, turbine bypass valves, with integral steam conditioning technology. This steam conditioning system provides control of steam flow, pressure, and temperature in a single unit. The customized design solution also includes downstream back-pressure dump tubes, also referred to as a spargers, to create a full steam system solution to handle high pressure drops, steam temperature control and system generated noise reduction. A separate spray water supply valve using Masoneilan LinclonLog anti-cavitation trim technology is used to manage a high-pressure water source for downstream desuperheating. These features combine to provide the site with tightly managed steam parameters, ensuring the power station works at minimal effort.

Coordinated efforts of the Baker Hughes Masoneilan teams in Japan, Kuala Lumpur, France and United States working with Chiyoda Japan were able to provide this state-of-the-art solution, meeting all of the stringent requirements Chiyoda and ExxonMobil proposed for this project.
Coronavirus and U.S. Valve Industry Revenues

There has never been more difficulty in predicting the future of the valve industry in the U.S. The coronavirus has already claimed 100,000 lives. There have been a reported 1.6 million cases. This would imply a death rate of six percent. However the real death rate could be well less than one percent. This means that as many as 16 million Americans have been infected. The total population is 320 million people. Therefore only five percent of the population has been infected.

By Robert McIlvaine, President & Founder, The McIlvaine Company

With the Administration’s push to re-open business and resume normal life, there is the tacit admission that herd immunity may be the ultimate solution for the disease. This is one of four potential solutions.

- **Herd Immunity**: This would dictate that 192 million people will contract the disease and that the death toll will be 1.2 million people. The impact of this path for the U.S. and for the valve industry will be shaped by:
  - The number of people who are hospitalized but then recover. This could be more than 10 million.
  - The attitude toward work and risk of illness and death. Will people consider themselves to be the soldiers in the battle against the virus or will they elect to be noncombatants? The meat processing industry is an example where the risks of working are being questioned.

There is the potential for many to take a non-combatant strategy. In this case economic output could be down by 20 percent and the valve industry revenues would be similarly depressed.

- **Vaccine**: The McIlvaine Company is tracking every potential promising vaccine and analyzing the steps including manufacturing needed to make a vaccine victorious. If successful it would be necessary to at least temporarily double the U.S. vaccine production. There has been mixed success in creating vaccines for viruses, so there is no assurance a successful one will be created. It is hard to see where a successful vaccine would have impact prior to June 2021.

- **Therapies**: The McIlvaine Company is tracking each therapeutic development and the cleanrooms which will be constructed to produce the drugs. There is no likely game changer on the horizon. Some therapies may save lives but will not persuade many people to change their noncombatant status.

- **Technology Solution**: There is optimism that social distancing, partitions, and certain other products and procedures will keep the virus from spreading. It is based on the assumption that the virus travels only six feet in large cough or sneeze droplets. In the McIlvaine Coronavirus Technology Solutions daily alerts this assumption is being thoroughly investigated and found wanting.

New evidence shows that a significant transmission source of COVID-19 is through aerosols which are 5 microns and smaller diameter. A virus cloud will move around partitions and will penetrate a mask less efficient than an N95.

Meat processors have received guidance from the CDC to install partitions and to wear some type of cloth mask, but not one with high efficiency on small particulates. Based on the latest evidence this is not good advice.

If a cloud moves from one meat packer under or around a partition to another worker, the partition has no positive effect and in fact may create turbulence and longer suspension. In the diagram below envision each worker in a cavity area caused by the partition where the virus keeps circulating.

There is no effort to create sufficient quantities of the highly efficient N95 masks so that everyone will have them. If the virus does move in a cloud of fine aerosols it will penetrate a surgical mask as easily as if it were a window screen. If you have a mask which does not capture cigarette smoke it is not going to protect you from viruses.

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**MARKET REPORT**

Valve World Americas | June 2020 • www.valve-world-americas.net
An analysis leads McIlvaine to believe that there are technology solutions, but they are not understood or implemented appropriately. This view is not widely shared and therefore can be considered as just one more variable. If it does turn out to be correct the consequences for the U.S. economy and the valve industry will be substantial.

The technology package which would allow safe return to near normal activity includes high efficiency filters and air flow away from individuals. It includes high efficiency masks, foot sanitizers, anti-microbial coatings and other PPE and hardware. It will not only result in increased valve purchases, but increased safety for those working for valve companies.

Given the uncertainties, valve forecasts in the next few years should be viewed as a broad range. This is evident in general economic forecasts.

In early February, the spread among economic growth forecasts for the second quarter in the U.S. was 3.5 percentage points according to FocusEconomics data. By April 29th, the most optimistic forecast among the 28 institutions in the weekly coronavirus survey saw the U.S. economy contracting 8.2 percent. The most pessimistic projected a huge 65.0 percent contraction — a spread of 56.8 percentage points — with an average of -31.4 percent. While most institutions expected a rebound in Q3, some saw further declines. In Q4, although all economists projected growth of some form, forecasts ranged from a minimum of +1.1 percent and a maximum of +70.0 percent.

The U.S. output of autos and parts was down 70 percent in April. At the beginning of the year manufacturers expected to sell 17 million cars. They are now hoping to sell 11 million.

U.S. steel production through May 16th, 2020 was 32,040,000 net tons, at a capability utilization rate of 71.2 percent. That is down 13.6 percent from the 37,098,000 net tons during the same period last year, when the capability utilization rate was 81.4 percent.

EIA expects that the steepest declines in U.S. crude oil production will be in the second quarter of 2020, with forecast month-over-month declines averaging 0.5 million b/d during those three months. Of the 450 available hydraulic fracturing fleets in the United States and Canada, only 70 are deployed in the field. In mid-March, the Permian region had 405 rigs in operation. By May 12, that number had fallen by 57 percent to 175. The Eagle Ford and Bakken regions saw similar declines of 64 percent and 69 percent, respectively, during the same period.

The future of the economy and the valve industry depend greatly on the four drivers of herd immunity, vaccines, therapies, and technology solutions. The status of each must be continually reviewed.
An Interview with Andre Gafford

Stepping Outside the Comfort Zone

By Britttani Schneider

Andre Gafford has gained more than 20 years of work experience in the oil and gas and construction industry. After graduating from the University of Houston Downtown (B.B.A.), he worked for several oilfield service companies, such as Statoil, BP, Shell and Marathon Oil Company. Not only was he an employee for various top-tier companies, he also owned his own businesses and has gained expertise in numerous positions.

Gafford is now the Commercial Procurement Manager at APTIM, a construction and project management company. As the Commercial Procurement Manager, he travels between the company’s Houston, Texas (TX) office and its Baton Rouge, Louisiana (LA) office every other week. “I am based out of Houston, but when Baton Rouge calls, I answer,” Gafford explained. “I do not have a typically working day. Right now, for example, I am working on the biggest project in the company’s history, while also watching our other, smaller projects. Every day brings something new,” he said.

Large Projects

Gafford’s team is currently working on constructing an ethane cracker facility in Plaquemine, LA. “The facility is huge. We are talking about 6,000 tons of installed steel, 400,000 linear feet of pipe, and so many pieces of equipment that need to be brought in,” said Gafford. “I am in charge of commercial procurement and subcontracting. This includes every piece of pipe that goes into the facility, every fabricated spool, the hundreds of thousands of valve parts, the labor and logistics, the transportation to the facility, the cranes that are needed, the power, the fiber optics – and the list goes on. ‘All of this comes through my group, and it will take at least 16 months to complete.”

Andre’s team is also tasked with the installation of the pumps in the facility. Depending on where the pumps are located, the installation process will differ. For example, if the pumps are located in a major piece of equipment, a large number of bolts need to be used, and welding is required to ensure the flanges and other components fit together properly. “For our current project at the ethane cracking facility, there are over 300 pumps being installed and used. There is a combination of diaphragm pumps, ranging in size from 3/8” to 1 1/4”, and piston pumps, 2½” or 1½” with discharge pressure ranges of 0 to 1000 psig,” Gafford relayed.

To source materials globally, Gafford’s team will test pressure and temperature of the pumps in the facility. Depending on where the pumps are located, the installation process will differ. For example, if the pumps are located in a major piece of equipment, a large number of bolts need to be used, and welding is required to ensure the flanges and other components fit together properly. “For our current project at the ethane cracking facility, there are over 300 pumps being installed and used. There is a combination of diaphragm pumps, ranging in size from 3/8” to 1 1/4”, and piston pumps, 2½” or 1½” with discharge pressure ranges of 0 to 1000 psig,” Gafford relayed.

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our people are going to be safe on the job," Andre relayed. "The most frequent type of injuries are hand injuries, because it is so natural to just reach out and grab stuff with your hands. But if you grab the wrong thing at the job site, you could lose that hand." Safety protocols require wearing all necessary PPE, including gloves, glasses, hats and steel-toed boots. "You are welding pipes, tightening bolts, and moving material — you are using your hands for all of that, and you need to protect them."

Multiple Projects
Gafford's team handles a variety of projects, and usually more than one at a time. His team is in charge of procuring a large amount of equipment and services for those projects. The materials that complete the project are essential, but so are the sub-contractors that perform the fabrication, testing, painting, and other tasks that make these projects happen. "Bidding, awarding and negotiating those contracts are a game within a game. Making sure the contractor knows how to do a task, follows the correct process and does it for the price agreed to is a byproduct of having a solid contract in place," Andre explained.

While Andre focuses a large portion of his time on the ethane cracking facility project, he is still looking after the smaller projects as a whole. "I juggle a lot on the commercial side, which is anything that is not government-related. We have projects in Texas and Louisiana, among others, so we are all over the place. But I have a lot of help," Gafford admitted.

Gafford has created his own system to keep his projects organized. His team consists of expediters to help make sure materials arrive on time, inspectors in the shops to monitor progress, quality control workers to ensure any errors are reported and handled, buyers who place the orders for the materials, subcontractors who help with the labor-intensive contracts, and more. "It can get pretty busy, but I have a lot of assistance and we manage it all," Andre said.

Managing Expectations
Handling extended lead times is a frequent task in Gafford's position. "Extended lead times are inevitable, but we try to mitigate the problem by monitoring data," Gafford explained. "Our expediters use data that is pulled out of expediting data, " Gafford explained. "Our expeditors use data that is pulled out of expediting data, which is common with structural steel. In this case, the problem must be fixed. Oftentimes we will send back the material and ask for a replacement to be sent to us, but if we are working close to the deadline, we may get one of our subcontractors to fix the issue, and then bill the original supplier for the labor. We have to hold people accountable," Gafford stressed.

A Mentor for Life
Mentoring younger supply chain professionals is one of Andre's passions, and closing the knowledge gap is another. Therefore, Andre will only work where mentorship opportunities are available. "Sharing my knowledge and experience is a part of who I am, so I will always need that aspect in my job," he explained. "Most of the people on the procurement side of things are older, experienced people, but they do not leave room for younger people to come in and learn." For this reason, Andre is constantly bringing in new people and hiring new talent to work on his team. He also works closely with schools in Texas and Louisiana to find new talent for his team. "I scout and bring in new people whenever I can."

Communication has always been something Andre enjoys. "Talking to younger people in the industry, encouraging them to step outside the box and take risks — these are the things I am doing quite often. I do not like playing it safe," he admitted. "I stress the importance of trying new things because you do not want to be pigeonholed and put into a small box forever. You need to do something that scares you, come up with new ideas and innovate, and then share your knowledge and experiences with others. The things you do in your career are part of who you are, but they are not all you are. Take those experiences, the wins and the losses. Learn from them and share them with others so that we are all made better."

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Design Validation and Prototype Cycling for Valves

Production losses associated with valve failures have made many companies become more stringent on product qualification. At first, this meant only the review of the valve design and related assumptions, gauging if the engineering behind them was sound. Today, this has been taken to the next level with prototype cycling, where mechanical and temperature cycling are combined to test a prototype valve to its design limit.

As different companies set different procedures for this testing, the need for a universal standard became more pronounced. In this article some concepts of design validation will be explored, along with common steps for prototype cycling, that will probably be addressed in a new ISO standard currently being drafted.

Concept of Design Validation
Supplier appraisal (or evaluation) is the process of assessing a potential supplier’s capability of consistently delivering the accorded amount of goods, with proper quality, at a reasonable cost and in a timely and sustainable manner. In order to do that, there are several competences that the potential supplier must perfect, such as financial, ethical, environmental, quality management system, human resources, output capacity and product technology. It is in this last competence, product technology, that design validation is tackled. There basically four methods to validate a design:

1. Rely on field proven experiences in similar applications;
2. Review of design and related assumptions (paper and computer-based analysis);
3. Type testing* a prototype in a laboratory with conditions similar to the application;
4. Type testing in actual conditions, often at the buyer’s premises;

* Type testing in this article follows the definition of the British Standard EN 736 part three: This is carried out on one or more valves representative of the design and the manufacturing process to confirm performance of the product with specified requirements.

There is no “right” way for design validation. All four of them may be applicable, depending on the specific situation. For example, a ball valve according to API 6D may be classified from 1 to 4 in the QSL (Quality Specification Level). As the number increases, so do the level of requirements for NDE, production testing, and documentation. A QSL1 valve to be used for water service at ambient temperature may rely only on the checking of field experiences, maybe even in different companies. But a QSL4 valve, to be used in a safety application, may require a prototype testing, if not a controlled field test in actual conditions. Supplier qualification is an expensive process, requiring vast amounts of time of knowledgeable and experienced professionals. Type testing makes this even more, so there is a bal-
As a company grows, it generally finds it easier to allocate more resources to ensure valve capability. For applications offshore, the cost of logistics and field work to install the valve is frequently superior to the valve cost. In cases like this, even for valves used in non-critical applications, the end user may be interested in type testing almost every valve model from new suppliers. Or new designs from suppliers already in the AML (Approved Manufacturers List). When type testing is done, it is not unusual to discover excessive wear in stems, melted bearings or seat extrusion (See Figure 1). Even old valve designs, considered field proven, may fail prematurely when cycled in low and high temperatures, as the previous applications often were at ambient temperature or required opening or closing of the valve only when the line cooled.

Today, there is no international standard for type testing. Table 1 shows a standard compilation of some common valve standards (1) and when it comes to testing, there are basically rules for production testing (FAT) and some special performance requirements, as fire testing and Fugitive Emissions (FE) testing. This situation led many companies to develop their own procedures for type testing, such as Shell (MESC SPE 77/300) and Petrobras (the internal procedure eventually became the Brazilian standard NBR 11827). The FE standard is the closest example of a widely known standard which has a procedure for cycling valves, but it is only concerned with exterior leakage from the sealings. A standard that took the basic approach of the ISO 15848-1 and added procedures for checking seat sealing and operating torque capability would be a great advance. That is exactly the intention of the ISO 23632 (Industrial valves - Type testing of valves). The new standard, currently being drafted, is expected to bring a test procedure based on ISO 18488-1 test protocol (3). This new standard will hopefully provide a common base for end users to validate and compare valve designs, reducing manufacturer’s costs (only one standard to qualify) and avoiding the installation of valves with inherent design problems.

Design Validation – Project Review

In many cases, the first step for the project review phase is the signing of a confidentiality agreement between the company performing the review and the manufacturer. That is because the manufacturer will have to deliver information to the end user that any competitor would be very “enthusiastic” to put its hands on. Past this formality, the manufacturer typically sends copies of drawings (cross-sectional, manufacturing with tolerances and surface finish, etc.), selection reasoning for non-metallic materials, list of all components and specifications, torque calculation sheets and design code calculation sheets. For some valves the end user may also require a fluid dynamics analysis, showing flow coefficients and pressure drops inside the valve.

A valve is a pressure vessel, but with moving parts that interact with each other. For this reason, the calculation sheets must include stress-strain analysis in relation to the rating, but also for critical interactions happening inside the valve, such as obturator and seat, for the allowable range of temperatures. A ball valve, for example, may elastically deform (become oval) and leak when closed in a certain combination of pressure-temperature. It is not always possible to detect this kind of deformation during a production test, but an accurate project review or a type testing procedure most likely will.

Some companies employ engineers with background in valve design to specifically review the designs of new suppliers. The process to remake all the calculations and revise all the assumptions used in the design can take around a year. Also, the end user may have a more stringent design criteria for allowable stresses than the design code. This may result in the manufacturer having to perform an intermediary revision of the design before it is acceptable.

The valve is taken to the testing equipment and properly installed. All the specification of the monitoring devices in the test equipment, as well as their quantities and location must be covered by the testing procedure. The valve is normally mounted stem-up, but if its future application requires a different position, that must be agreed upon with the manufacturer before the test.

Pressure, temperature and number of cycles are the main variables of this kind of testing and as seen before, there is no consensus yet at what they should be. Also, any new standard will also have to define the intervals and pressures at which the measurements of seat leakage must be made and what instrumentation must be used for recording the torque values throughout the test. The test itself consists basically of recording repeated cycles of opening and closing of the valve, during which the temperature follows a curve between the minimum and the maximum operating temperature for the valve. As mentioned before, periodic breaks are taken in order to assess seat leakage.

Once the test is done, the valve is disassembled and thoroughly examined (See Figure 2). Even if the predetermined targets of leakage are met, it may still be possible to reprove the design on account of some unusual wear. There are usually some criteria to extend the qualification of a given diameter pressure class to a higher or lower combination. For example, testing of a given diameter may qualify the immediate higher API diameter and the immediate lower. Regarding pressure, it may be possible that the testing of a pressure rating #300 qualifies the pressure rating #150.

Table 1 – Compilation of some common valve standards (1)

<table>
<thead>
<tr>
<th>Categories</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>• Terminology (EN 736-1 to 3), • Definitions and selection guides (API RP 85)</td>
</tr>
<tr>
<td>Design (and some performance requirements)</td>
<td>• ISO 10434 / API 600, • ISO 17292 / API 688, • ISO 10631 / API 609, • ISO 10432 / API 6A</td>
</tr>
<tr>
<td>Production testing</td>
<td>• ISO 5208 / API EN1226-1</td>
</tr>
<tr>
<td>Performance</td>
<td>• ISO 10497 / API 607 –Fire Test, • ISO 18548 or API 624 and API 641 –FE Test</td>
</tr>
<tr>
<td>Accessories</td>
<td>• Actuators: ISO 5210 and 5211, • Gear box NWW II in ISO 5210</td>
</tr>
</tbody>
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REFERENCE

Networking and Maintaining Relationships

The Hose + Coupling World Americas Conference & Expo provides an important platform for the development of company and client relationships. In this space, industry professionals have the opportunity to meet, while learning about new technologies and market trends. We saw solid attendance by manufacturers, distributors and end users representing various hose styles and equipment types. The 2018 event was a great opportunity to get our value proposition out to audiences from all levels of the industry, including key end user contacts that we might not otherwise have had the chance to meet,” said Frank Caprio, Corporate Trainer and Major Market Specialist at Hose Master.

The event also welcomed industry-leading companies, including: RYCO, Flex-aust, Proco Products and Continental, who were looking to develop new business relationships by exhibiting their products. “Continental had the opportunity to meet several of our local distributors, industry supply partners, and meet new customers during the conference and tradeshows,” said Randi Kish, Manager Distributor of Marketing for Indus- try Hose North America at Continental.

“Gaining new business is something we expect from the exhibition, but the networking and relationship-building are just as important,” stated Caprio. “The Hose + Coupling World Americas 2018 show gave us the ability to meet many new people, while simultaneously reaffirming old friendships, which is seldom accomplished at a single event. We would not be successful if it were not for our current customers, and this event gave us a wonderful venue to show how we do better by helping them do better.”

Sharing Technical Expertise

While the exhibition gave vendors the chance to showcase their latest products, technologies and services, some exhibitors also took the opportunity to share their technical expertise during the conference workshop sessions. “We saw a lot of activity at our booth as a direct result of our presentations during the conference workshop ses- sions,” Caprio explained. “The many technical presentations given by repre- sentatives from different sectors of the industry provided great informa- tion for everyone.”

The Hose + Coupling World Americas Conference 2020 will feature keynote presentations given by industry lead- ers, such as event Chairman, Kerry Milien, Piping Systems Engineer. The conference will also feature a number of workshop sessions that will highlight the hottest topics in the industry includ- ing Hose Safety, Hose Technologies, Materials Selection, Best Practices, and more. By addressing these important topics, presenters and attendees have the chance to discuss some of the most common issues being experienced in the industry today, and begin working together to try and solve these issues. “This year, for example, it will be important to discuss economic forecast in- formation, as we are hopefully coming out of the COVID-19 crisis,” Kiss com- mented. For this reason, it is important to have the involvement of manufactur- ers, distributors and end users; to share the different ideas and perspectives on issues that are being experienced across various sectors of the industry.

The Hose + Coupling World Ameri- cas Conference & Expo 2020 will once again be a meeting point for all hose and hose-related applications manufac- turers, distributors and end users that are connected to the oil and gas, chemi- cal and petrochemical, pulp and paper and food and beverage industries. By involving such a wide audience, the Hose + Coupling World Americas event aims to grow the hose and coupling community as a whole. “While there are other conferences and tradeshows focused on specific industries or applications, this show provides a level of diversity that cannot be matched. If you want to speak to the widest audience during a single event, the Hose + Cou- pling World Americas Conference & Expo 2020 is a great show,” said Caprio. “We are pleased to be a sponsor of this event; it is a great opportunity for us to promote better quality and safety in our industry.”

Expand Your Business’ Opportunities at the Hose + Coupling World Americas Conference & Expo 2020

The Hose + Coupling World Americas Conference & Expo is fast approaching and will deliver a high-quality, informat- ive networking event for all attendees. Taking place on October 6th and 7th, 2020, at the George K. Brown Convention Center in Houston, TX, the highly anticip- ated event will act as a meeting point for industrial hose and coupling profes- sionals to develop business relationships with both new and past participants.

Sponsors for the upcoming event, hose manufacturers Continental and Hose Master, spoke with Hose + Coupling World magazine about their positive experienc- es as exhibitors at the 2018 event, and shared their hopes for the 2020 show.

By Catarina Muia -