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SPOTLIGHT ON... VELAN

Velan has had a rich history of innovation, since its founding by A.K. Velan in 1950. Celebrating its 70th anniversary, the Montreal, Canada-based firm is no stranger to turbulence in the industry. As a world leader in the design and production of cast and forged severe service valves across all major industrial applications, Velan has maintained stability and continued to offer new technology driven products that allow them to persevere in the face of uncertainty.

Pages 2-3

SPOTLIGHT ON... CARRIBEAN

CARRIBEAN: CB&I Storage Solutions has won a contract to build four liquefied petroleum gas (LPG) spheres for an energy infrastructure project in the Caribbean. McDermott stated the project scope includes engineering, procurement, fabrication and construction (EPC). Each sphere will have 63,100 barrels nominal capacity and 290 pounds per square inch design pressure. Fabrication and procurement will take place at the company’s Fairbanks facility in Houston while its Plainfield, Ill., office will handle engineering. McDermott classifies the award as “sizable,” which ranges in value from USD$1 million to USD$50 million.

Pages 4-9

SPOTLIGHT ON... CURTISS-WRIGHT

Curtiss-Wright Corporation announced that it has been awarded contracts valued more than USD$220 million to provide propulsion valves, pumps, and advanced instrumentation and control systems for the U.S. Navy’s Virginia-class nuclear-powered attack submarine, Columbia-class submarine, and Ford-class aircraft carrier programs. The awards were received from Bechtel Plant Machinery, Inc. (BPMI)

Pages 10-11

SPOTLIGHT ON... UNITED STATES

UNITED STATES: According to the U.S. Energy Information Administration (EIA), 121 coal-fired power plants were repurposed to burn other fuels between 2011 and 2019, 103 were converted to or replaced by natural gas due to stricter emission standards, low natural gas prices, and knowledge working with various vendors, clients, and engineering components. Curtiss-Wright has ensured safe, reliable operations by supplying innovative, high-performance products for every nuclear submarine and aircraft carrier commissioned by the U.S. Navy.

Pages 12-13

SPOTLIGHT ON... EMERSON

Emerson and Mitsubishi Hi-tachi Power Systems Americas (MHPS) are joining forces again to develop digital technologies, software and services to help utility customers drive operational excellence in North America. The companies will collaborate on digital solutions to optimize performance and reliability, enable predictive and AI-driven maintenance strategies, and automate operational decision-making.

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SPOTLIGHT ON... ASIA

SPOTLIGHT ON... OIL & GAS

The global oil industry is facing its biggest crisis in peacetime in 100 years, as the toxic combination of the Covid-19 pandemic and oversupply drive prices to record lows.

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Meeting Point

2020 Awards

Curtiss-Wright

EPC Interview

After almost two decades in the oil and gas industry, Expeditor for S&B Engineers & Constructors, Jay Humphrey has gained valuable expertise and knowledge working with various vendors, clients, and engineering components.

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“Over our 70 year history, we have lived through many changes in the market-place. One constant has been custom-ers with applications where technology, design and performance are critical to the process. We have developed many products designed for these critical services; from the U.S. Navy, CERN (the European Organization for Nuclear Research), the ITER project in France – the world’s largest experimental fusion reactor – to many tough processes in oil & gas extraction, refining and petrochemicals, and mining,” said Tom Velan, Chairman of the Board. “We have been, and will continue to be, in cutting-edge technology areas while still serving the MRO replacement market.”

The company’s longevity has been attributed to their commitment to technology and innovation, while also recognizing the varied needs of their customers worldwide. Combined with the streamlined processes necessary to meet or exceed customers’ needs in a timely manner, Velan has positioned itself as a world leader in industrial valves.

Streamlining with Strategic Business Units

As the market began changing with a collapse in oil prices, the advent of Asian competition for commodity valves, and customers’ increased demand for short delivery schedules, Velan made the decision to implement a restructuring plan to significantly improve the way they did business that pivoted on five key strategic levers.

The first lever was a reorganization along five global business segments. Two were already operating as such, namely Velan’s France operations, focused on nuclear valves and highly specialized applications; and Velan ABV in Italy, focused on upstream oil and gas. The three others resulted from reorganizing the North American operations into MRO and Aftermarket, Severe Service, and Project Manufacturing business units.

The MRO and Aftermarket business unit, managed by Rob Velan, focuses on leveraging the installed base through Velan’s channel of global distributors. The Severe Service business unit, overseen by Duke Tran, focuses on highly engineered valves and solutions for severe industrial applications. Project Manufacturing maintains all project-based manufacturing, relying on fast turnaround for quoting, with a supply chain able to deliver under short lead times and respond to customers’ specific designs in RFPs.

Velan continues to embrace the innovative and entrepreneurial spirit that has been the cornerstone of the company’s management from the beginning, while improving and updating the systems in place. “The internal restructuring is helping to better align with customers’ needs. We value building long-term personal relationships with our distributors, customers and end users, but to complement that we are bringing a data approach to better serve customers,” said Shane Velan, Vice President, Transformation and Information Technology.

The second lever in Velan’s strategy is consolidation of the valve manufacturing facilities in Quebec, from three to two plants. The consolidation is scheduled for completion over the next few months. Current production has been gradually integrated into Velan’s other facilities, which are focused on the production of specific valve lines to improve delivery and supply chain efficiency.

To increase agility, the consolidated Montreal plant will focus on quarter-turn valve production including coker and metal-seated ball valves, mainly in support of the severe service business unit. The Granby, Quebec facility will be the company’s multi-turn center of excellence. Williston, Vermont will be the center for nuclear and Navy orders in North America, as well as specialized multi-turn manufacturing to support US customers. The new concentrations will allow the plants to be more efficient and reduce cycle times with increased focus and streamlining of processes.

The third lever is an integral part of the first two and aims to significantly improve manufacturing responsiveness and cycle times. This improvement will stem from relying more on outsourced non-strategic pre-machining of castings and forgings, keeping strategic machining in-house, and forming lean production cells; a move made easier by the decision to specialize the three remaining North American plants.

The fourth strategic lever will be transferring the remaining commodity valve production to their state-of-the-art facility in India, and other Asian manufacturing plants. The Coimbatore, India facility will become the center for forged gate, globe and check valves, including lower complexity project manufacturing. This will reduce Velan’s plant footprint, allowing the company to be more competitive and better serve the Middle East and Southeast Asia market in ways that were not previously feasible.

The fifth strategic lever is the continued modernization of Velan’s systems and processes. To improve on-time delivery performance, the company has for example invested in robust Valve Project Management (VPM) systems, and in configured pricing and costing systems. “Our ability to deliver more than 2,000 metal-seated ball valves, globe valves and other critical service valves, to a project in Asia in 2019, highlights the benefit of instilling VPM systems into our ever evolving practices,” added Duke Tran.

Expanding Severe Service Capabilities

Velan continues to grow its capabilities for severe service industrial applications that are highly abrasive, corrosive, and/or with high temperatures and high pressures. These products can require highly-tailored designs where quality is of the utmost importance.
Years of Innovative Expertise

Duke Tran, witnessing the fire testing of five Velan valves including ball and triple-offset valves, resulting in a 100% pass rate.

Velan continues to be the world's largest supplier of critical valves to the delayed coker industry, including switching and isolation valves. It is crucial that each valve is operated correctly and in the proper sequence. “This is where the idea of the ‘Logic’ Control Panel came from,” said Duke Tran, General Manager, Severe Service Business Unit. “We created an entirely electronic control panel that links every critical valve within the delayed coker unit.”

Inside the Control Panel is Velan’s proprietary software controlling all critical valve operating sequences. Velan Control Panel hardware and software, working in unison, feature various safety mechanisms to prevent the operator from operating the wrong critical valve during a process switching sequence.

“Typically, any major accidents that occur in delayed coker units are caused by human error and the control panel cuts down that possibility.”

Ebullated Bed Valves

“With 70 years of experience from various critical applications, we have taken proven valve design features and incorporated them into the ebullated bed valve line,” stated Tran. In 2018, Velan was awarded licenses to manufacture severe service ball valves for two world-leading ebulliated bed processes. The resulting product has several features not presently seen in any other valve around the world. “For the first time we are designing a complete matrix of the product so that we can offer a size range from 1 inch all the way to 24 inches, with a pressure rating up to ANSI 4500. Although a stainless steel or graphite gasket is typically used in valve design, the ebulliated bed process conditions require a gold-plated pressure-energized gasket. Due to both the corrosive nature and the high temperature of the process, gold is the ideal metal for sealing,” continued Tran.

The valves also meet all relevant license specifications and testing standards, including two API standards and one ISO standard for fire-testing. Velan also developed new stem packing technology to meet the latest fugitive emission standards.

Additionally, Velan has developed unique technologies that will be integrated into the valve; patented cable drive actuators and a patent-pending 3D-printed thermal sleeve. “Unlike any other company, we have incorporated a cable drive pneumatic actuator to our valve while simultaneously accounting for the fact that the extreme process temperatures can cause a thermal shock that would split the valve’s body. Velan’s technology therefore provides a thermal barrier to defend against the risk,” explained Tran.

IoT Solutions

In general, IoT systems are used in critical service to monitor and control applications. Recently, interest in monitoring not only the application itself but the area and conditions surrounding the application has grown in the industrial sector. For Velan, this interest lies primarily in monitoring the condition of their valves. “We monitor the valve performance, the actuators and the processes that are going through both,” explained Tran. “This way we are able to tell the end user how everything is working, if there are any process changes, or if there is a hiccup within their system that they need to fix before it becomes a serious and costly issue. For Velan, IoT is not just hype. We have been providing valve automation and monitoring since 1983. IoT is an additional technology to enhance Velan’s unique Complete Valve Solution Ecosystem (CVSE). In the past we could only monitor either the valve and/or the process conditions locally and on-site. With IloT, Velan can help our customers monitor their critical valves 24/7 live and from any location around the world. Based on our many decades of field experience, many of the very costly unscheduled shut-downs due to critical valve failure could have been prevented if live monitoring by valve experts were available. Today, IloT provides our valve experts and the customers the ability to proactively monitor and intervene to prevent upset process conditions that often cause the valves to fail. Multi-million dollar losses due to unscheduled shutdowns are common in the industry. Velan’s IoT solution, as part of our CVSE, will minimize the risk of unscheduled shutdowns, and opens up new possibilities in predictive and preventive maintenances to further increase operating profit margin to our end-users,” stated Tran.

VEL-B

As a result of 10 years of collaborative R&D, Velan has launched VEL-B, a patented coating technology applied between the ball and seats of a valve, specifically designed for improved service life in severe High Pressure Acid Leaching (HPAL) conditions. “Designing a valve is only half the story. For metal-seated ball valves, it is the coating that makes the valve work well,” Tran admits. “It is important to remember that each service requires a different coating to be used. We are a valve manufacturing company, but we do everything we can to make our product the best for our customers; this separates us from other companies.” In the mining industry for example, Velan has worked with the National Research Council of Canada and the University the Montreal to develop VEL-B, a coating specifically designed to increase service life in highly corrosive processes. For this reason, Velan continues to heavily invest in development of coating technology.

Transforming the Future

“The common denominator across all of the strategies we employ and the product we create is the focus of the end-user, while leveraging the strengths of Velan that we have always had. Namely the brand power, product quality and engineering depth,” said Yves Leduc, the CEO of the Company.

Today, Velan is more modernized in its ways of managing the business than it was just a few years ago. This has been an ongoing transformation to alter their plant footprint, restructure the businesses and plant organizations through consolidation and concentration of products, transfer of commodity products to more cost effective manufacturing, reducing lead times by reducing non-strategic machining and the continued modernization of all systems. “As we enter an incredibly volatile and uncertain economy caused by COVID-19, we are thankful for the progress made in the last year, as the company is in many ways already transformed. The combination of all these actions has made the company lighter and more agile, much more resilient to great shocks, but above all, customers are already getting the benefits of a vastly improved business model designed for meeting their needs faster and better,” said Yves.

“The 70th anniversary coincides with the year we will have significantly redesigned our business, readying it for the next decade. Velan is an enduring company because of our capacity to change and adapt, and all of our employees share this.” summarized Yves. “We have a strong global presence of manufacturing facilities and an excellent product reputation in terms of performance, quality and depth of engineering capabilities. We have a great brand that is the result of 70 years of hard work by many really dedicated and experienced people around the world,” concluded Tom.
How Can Subsea Valves Maintain Zero Leakage to the Environment Without the Implementation of Fugitive Emission Standards and Tests?

Subsea valves face the unique challenge of being designed for zero maintenance and leakage for a relatively long period of time; this can range from 20 years to 50 years of design life. The main reason to achieve zero leakage and maintenance for subsea valves is that many new subsea projects are located at water depths between 1 km to 3 km, far from shore where maintenance is not possible. In fact, the deeper subsea projects challenge is coupled with other difficulties such as increased distance from the shore and harsh environments like the icy arctic. It should be added that subsea valves are operated in very sensitive marine environments where the spillage of oil and gas has extremely negative consequences on the environment, its biological resources, human and animal life.

As an example, one of the largest oil spillage disasters occurred on April 20th, 2010 in the Gulf of Mexico on a British Petroleum (BP) operated platform. This spill was caused by various factors, including the failure of a subsea safety valve located on the sea floor at the wellhead; this valve, also called a blowout preventor, was designed to prevent shutting down the wellbore. The disaster killed approximately 82,000 birds of 162 species, approximately 6,165 sea turtles and up to 25,950 marine mammals such as whales and dolphins. Figures 1A & B illustrate the catastrophic explosion of the platform and the death of a whale caused by this disaster.

The other adverse effects of oil spillage are increasing operational costs due to the loss of assets and decreased production. Figure 2 summarizes the challenges confronting subsea valves addressed in this article.

Existing Standards for Valves
Subsea valves are designed and tested based on the following American Petroleum Institute (API) and International Organization for Standardization (ISO) standards as well as clients’ requirements:

1. API Spec. 17D, Design and Operation of Subsea Production Systems-Subsea Wellhead and Tree Equipment, identical to ISO 13628-4
2. API Spec. 6DSS, Specification for Subsea Pipeline Valves, identical to ISO 14723
3. API Spec. 6A, Wellhead and Tree Equipment, identical to ISO 10423

Valves can emit hydrocarbons into the atmosphere due to different factors such as improper fit, wear and tear and corrosion. Fugitive emission is defined as unintentional leakage from sealed surfaces such as packing and gaskets resulting from a faulty or corroded connection. Packing in the valve industry refers to ring-shaped components made of resilient material such as graphite or Teflon (PTFE) installed between the valve stem and the bonnet or stuffing box to prevent leakage from the valve stem to the environment. Figure 3 shows the replacement of packing rings from a wedge gate valve.

Many standards and specifications have been established to maintain a very low level of fugitive emissions from valves; these include:

- ISO 15848: Industrial valves fugitive emissions measurement test and qualification procedure
- Shell MESC SPE 77/312: Industrial valves fugitive emission (FE) measurement, classification system, qualification procedures and prototype and production tests of valves
- API 622: Type testing of process valve packing for fugitive emissions
- API 624: Type testing of process valves leak performance for fugitive emissions and seat leakage applicable for rising stem valves such as wedge gate valves with graphite packing
- API 641: Type testing of quarter-turn valve for fugitive emissions applicable for ball valves

The main technical issue addressed in this paper is that none of the fugitive emission standards are used for subsea valves. And, looking at the subsea valves standards mentioned above, there is no single sentence about fugitive emission tests and standards. The main technical question, then, is how can subsea valves achieve zero leakage over a long period of design life and in a harsh environment? The aim of this paper is to provide a detailed discussion of the parameters to improve the safety and reliability of safety valves in regard to the zero-leakage requirement.

Reliability of Subsea Valves
This section provides a detailed discussion of the parameters that improve the safety and reliability of subsea valves. In general, three unique factors of the design, manufacturing and testing of subsea valves lead to zero leakage of maintenance of these valves.
Design and Engineering

1. Robust Stem Sealing

Design and Selection

The discussion in this section addresses the stem sealing that is applicable for subsea ball and gate valves. Other types of subsea valves, such as axial or nozzle check, choke and pressure-relief or safety valves do not have any stem or stem sealing. In general, the stem sealing arrangement in a subsea valve is complicated, and includes different sets of stem seals such as metallic, V-pack or Vee pack and lip seal as primary, secondary and tertiary barriers against the leakage of fluid such as hydrocarbons to the sea water in a ball valve (see Figure 4A/B/C).

It is essential to understand that subsea valves also have different sets of stem sealing to prevent the leakage of seawater or other external fluid into the valve internals; this is outside the scope of this paper.

2. Material Selection

Different exotic materials with high corrosion and mechanical (e.g. load and fatigue) resistance such as alloy 725, alloy 625, Elgiloy, super duplex, etc. are used for subsea valves’ sealing and stem. A V-pack, as shown in Figure 5A, contains different layers of PTFE, PEEK, and metallic rings such as Elgiloy. Elgiloy UNS R30003 is a non-magnetic cobalt alloy that contains other alloys such as chromium, nickel, and molybdenum; it offers a unique combination of properties such as mechanical strength, fatigue resistance and corrosion resistance. Lip seal (see Figure 5B) is a robust sealing to a metallic part made of Elgiloy, for example, and a soft part made of Elgiloy. For example, and a soft part made of Elgiloy.

Figure 5A: V-pack stem sealing.

Figure 5B: Lip seal stem sealing.

Manufacturing

Valve components such as the stem, bonnet, etc. are made with the most advanced machining tools to achieve dimensional accuracy as well as tight tolerances.

Testing

More stringent tests in the form of Factory Acceptance Tests (FAT) and qualification tests are conducted on subsea valves to ensure their reliability and achieve the zero-maintenance expectancy.

REFERENCES


An Introduction to Offshore Decommissioning

“The Stone Age did not end for lack of stone, and the oil age will end long before the world runs out of oil.” This is a quote often attributed to former Saudi oil minister Sheik Ahmed Zaki Yamani, with some sources pointing out that he first said it in the 70’s. His prophecy has not been fulfilled yet, as the world continues to rely on oil as fuel due to its combination of price, storage, transportability, safety, and energy density.

However, it can be argued that an oil-based economy no longer fits the needs of our current society, due to environmental impact and climate change. Public opinion in many countries are demanding policies addressing these two themes and this has brought forth legislation in many fields – for example, incentives to alternative sources of energy, emissions control, and the fate of obsolete oil facilities, especially offshore. In this article, we will learn about offshore decommissioning, which encompasses activities related to the removal and disposal of chemicals, structures, and equipment previously employed in oil & gas production in marine areas.

Environmental Damages and Decommissioning

An offshore production platform has an estimated lifespan of 20 to 30 years, sometimes reaching the 40 year mark. Figure 1 illustrates a typical life cycle for an oil offshore platform: during this period, the environment may be damaged in three ways: accidental, continuous, and ex-post.

Accidental damages happen during unforeseen events in daily operations, such as blowouts or accidental spillages. Continuous damages are the inherent environmental damages caused by normal operation, such as emissions and discharge of pollutants, generation of solid waste, interference with humans, fisheries and other users, etc.

When production ends, the environment near the platform can still be adversely affected, in what are known as ex-post damages. Hazardous chemicals can continue to be released and even the structure itself can pose risks, such as navigational hazards. In order to mitigate such risks, the no longer profitable platform must go through a process called decommissioning, which basically relates to:

1. Wells – flushing, plugging, and cementing before abandonment.
2. Platforms and Subsea equipment – Removal and disposal.

In the United States, two federal agencies are directly involved with platform decommissioning: the Bureau of Ocean

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Figure 1 - Oil platform life cycle and environmental damages

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Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE). The BOEM has a role related to research and management and the BSEE is involved with regulatory enforcement. Some examples of activities carried by the agencies are given below:

**BOEM:** Leasing & plans, environment studies, economic and reserves analysis, and geologic risk analysis.

**BSEE:** Permitting, environmental compliance, engineering standards and regulations, oil spill response planning, inspections, and enforcement and investigations.

Decommissioning activities in the U.S. are organized on a federal and state level. In addition to the federal decommissioning regulatory framework, each of the major oil producing states (Gulf of Mexico, California and Alaska) has an agency tasked with regulation of certain oil and gas upstream activities. For a comprehensive review of decommissioning regulations worldwide, please see reference [4].

### Decommissioning Alternatives

![Figure 2 – A typical oil/gas production fixed platform.](image)

- **Total Removal**
  - This option requires the structure to be entirely removed by lifting either in one piece or in sections, depending on the size of the jacket and the capacity of the lift vessel. The foundation piles are left in place from about 5 meters below the seabed. Structures totally removed and brought to shore are typically recycled where possible.

- **Partial Removal**
  - The structure must be partially removed in such a way that an unobstructed water column exists to allow safe navigation. The jacket is cut to the required depth leaving the bottom portion on the seabed. The top part may be taken to a deep water disposal site, transported ashore for recycling or onshore disposal, or placed next to the bottom portion of the jacket on the seabed. For partial removal, there is also the possibility of toppling the upper portion of the jacket in-situ (Figure 4), to leave an unobstructed water column. Explosive charges are used to sever designated critical members in a controlled sequence of cuts, allowing the jacket to collapse under its own weight. A pull barge may be used to provide forward momentum to the collapsing structure. This option can be achieved without the need for heavy equipment.

![Figure 4 – Jacket or substructure toppling.](image)
The Gulf of Mexico.

As of April 15th, 2018, 532 platforms have been reeled in the Gulf of Mexico.

Leave in Place

Decommissioned facilities left in place have found new uses as research centres, eco-tourism sites, aquaculture and general tourism activities.

Decommissioning Challenges

The decommissioning of an obsolete offshore platform is a complex endeavor. For every project, a cost/benefit analysis must be made to study the options permitted by regulations, in the light of safety risks and other effects.

A typical study has the following major components:

- Engineering and Project Management
- Well Plugging and Abandonment
- Pipeline Abandonment
- Umbilical Decommissioning
- Conductor Decommissioning
- Platform Decommissioning

A major part of offshore installation removal costs is mobilizing and demobilizing costs for specialized vessels; the day rates can be up to USD$550,000.

If there is a long transport distance related to deep water disposal, the savings compared to land disposal are not large.

In terms of overall cost, reference estimates that the cost to remove to shore an eight pile, four-well, fixed platform in the Central Gulf of Mexico in 210 feet water depth with a total structure weight of 980 tons and two pipeline connections is estimated to be USD$1.1 million. If the structure is donated to a reef program, the expected cost would be USD$831,000.

Public opinion, along with political climate, can also have a huge impact on decommissioning costs. The most famous example of this is the Brent Spar incident, which happened in the North Sea in 1995. The Brent Spar was a large floating oil storage tank that was taken out of operation in 1991, after 15 years of service. After extensive decommissioning studies, approval was received from the U.K. Government in 1995 for deep water disposal. However, well-publicized action by Greenpeace forced Shell, the operator, to pursue an alternative disposal option.

In 1999, following a lengthy consultative process, the buoy's hull was cut and cleaned and section of it was placed on the seabed at Mekjarvik, near Stavanger, in Norway to form new harbor facilities.

Costs were much higher than what was estimated. Unexpected technical, environmental and safety challenges helped to bring the dismantling project figure to £41 million from an original estimate of £21.5 million. Including the cost of the original aborted deep sea disposal project, the total cost of decommissioning Brent Spar was £60 million.

Before the Brent Spar incident, a robust decommissioning strategy was thought to require only good science, adherence to regulations, and technology. All three of them are still required, but now oil companies are aware that they also must pay close attention to public opinion. As we have seen above, a well orchestrated marketing campaign was able to triple the cost of the decommissioning project; time-wise, from the moment the first study was commissioned to the end in the harbor, the Brent saga took 8 years to be completed.

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ABOUT THE AUTHOR

Davi Correa is a Senior Mechanical Engineer who has worked at a major Brazil-based oil company for the last 15 years. Correa 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. Correa was part of the task force that revised the IOGP S-662 standard, and wrote the S-611 standard. Correa has a master’s and a doctor’s degree in welding by the Universidade Federal de Uberlandia.
The global oil industry is facing its biggest crisis in peacetime in 100 years, as the toxic combination of the Covid-19 pandemic and oversupply drive prices to record lows.

- Restructuring or insolvency inevitable without bank support
- Corrosion risk for buyers of distressed assets
- JV partners insolvency may jeopardise licences
- Creditor engagement important in pre-empting disputes

By George Booth & Akshai Fofaria – Pinsent Masons

While some producers will have hedged against falling prices, those arrangements will come to an end over the next few months, with the potential for serious impairment to both equity and bond valuations if conditions do not improve.

Hedging arrangements will buy management teams time to implement cost-cutting measures, but restructuring or insolvency may be inevitable for a significant number of businesses unless relationship banks are willing to provide forbearance. Even then, the weight of the debt burden may prove overwhelming and management teams will be under scrutiny from their shareholders, lenders and regulators.

Pinsent Masons acted on one of the industry’s largest cross-border collapses arising out of the 2014-15 price crash, giving insight into what might happen next. The longer the crisis, the more damage is done to underlying assets.

An oil price crash to USD$20 or USD$30 a barrel, or less, is likely to be damaging to a large variety of exploration and production (E&P) businesses. In such circumstances, a small minority of managers may make rash decisions to protect their business, rather than doing the right thing.

Restructuring or insolvency may be inevitable for a large minority of businesses unless relationship banks are willing to provide forbearance. This may involve cutting budgets which cause the breach of fundamental license obligations, compromise the safety of operations or generate environmental risks. Managers may also be tempted to take credit from suppliers knowing they cannot be repaid, or to misstate financials to obtain forbearance from creditors.

Stronger E&P companies bidding their time before picking off cheap assets should be alert to the potential ‘corrosion’ risks to target assets if they leave it too long before making an offer. One cannot escape the possibility that there may be increasing incentives to hide damaging issues from potential buyers the longer this crisis continues.

Host states have been known to terminate hydrocarbons licence arrangements on grounds of economic distress despite the relevant legal and commercial documentation. Ultimately, parties will need to apprise the relevant legal and commercial analysis to calculate where the various competing interests align.

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Sellers will be considering whether one of the trigger points for a price redetermination can be relied on for the price to be reopened and, if so, the process to be followed and the basis for any price change. Parties should follow the precise terms of the contract as to how such a price redetermination right can be exercised and on what basis. Failure to do so can result in the loss of rights, as demonstrated by several recently reported court decisions.

Ultimately, parties will need to apply the relevant legal and commercial analysis to calculate where the various competing interests align.

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To learn more about our complete portfolio of valves, actuators and controls, visit us online at BRAY.COM
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.brady@kcit-world.com.

Flange Washers Engineered for Flange Applications

Certain industries that utilize piping flange joint assemblies, such as petrochemical, dictate a low tolerance for fugitive emissions. Live loading, which is a process imperative to controlling gasket leaks in piping and refining operations, depends on the mission-critical performance. It is estimated that up to 92% of all flange leaks are caused by insufficient or loss of bolt preload.

Solon® Flange Washers are designed to maintain sufficient bolt tension and resultant gasket stresses in high-temperature and high-pressure applications where safety and emission containment take priority.

Solon Flange Washers are simply Belleville washers that are designed to be used in flange applications. The springs are engineered to fit into flange designs and the loads are typically higher than standard Belleville washers.

Designed and manufactured by Solon Manufacturing Co., Solon Flange Washers withstand extreme temperatures as well as corrosive environments. Whether you have a custom material specification or unique application challenges, Solon’s full-service design engineering and production teams can help you with your requirements.

Features & Benefits of Solon Flange Washers:
- Once installed, they do not have to be retorqued
- Eliminate the effects of differential thermal expansion
- Increase the elasticity of the bolting system by a factor of 7 to 15 times
- Economical alternative to costly system enhancements
- Maintain bolt integrity by maintaining the contact pressure between the flange and gasket surfaces

Siemens Presents New Actuator Line for Small Valves

The new SSA actuators for small valves have been added to the Acvatix valve and actuator line from Siemens Smart Infrastructure. They feature new functionalities that transform the existing product portfolio and support hydronic room applications with superior control accuracy, energy efficiency as well as reliability. The Acvatix product line meets all control and hydronic requirements associated with the generation, distribution, and use of heating and cooling. The SSA actuators feature quiet and fault-free operation and manual override for flexible valve and actuator testing, regardless of system availability. New features offer a variety of installation options as well as a choice of installation direction. With new functionalities such as feedback signal for safety-critical applications and a modular, compact, and IGPS-compatible design, the new actuators can be used for more applications than ever.

All new actuators are delivered pre-configured and are ready for immediate installation. The newly introduced IGPS protection rating accommodates all installation directions, including overhead installations, for even greater versatility. Besides, the new products offer automatic hub adaptation, ensuring that every valve-actuator combination is perfectly matched. Increased comfort and additional energy-saving potential are achieved in combination with pressure-independent control valves (PICVs). PICVs prevent oversupply and reciprocal hydronic interference, ensuring a balanced hydronic system under all load conditions.

The new LED status display on the SSA actuators ensures fast and error-free commissioning. It shows the position of the valve and different operating states and helps users with various functions, such as self-calibration.

The actuators are particularly cost-efficient because they accommodate the needs of users, allowing them to buy actuators with just the functions required for their projects.

Paladon Americas SCHY-Series

Paladon Americas announced immediate availability of their newest valve actuator series, the SCHY. Enabling O&G operators to add Emergency Shutdown Capability in a fully self-contained package without the need for electrical power or plant air.

The Self-Contained Hydraulic Controller provides reliable emergency valve shutdown capability when external power is unavailable. Essentially, it provides the energy needed to actuate an automated valve. The controller can be supplied alone for retrofit applications or in conjunction with a high/low pressure pilot, solenoid, actuator, and valve to round out a complete emergency shutdown system.

Features:
- Temperature range: 50°F to 180°F (-46°C to 82°C)
- Standard reservoir usable volume: 183 in³ (3.0L)
- Extended reservoir usable volume: 330 in³ (5.4L)
- SCADA compatible, for remote operation
- Modular design, compatible with existing installations
- Readily available spares/support
- Environmentally friendly: zero emissions, recyclable oil
- Self-contained; requires no outside power
- Available in 1/4 turn or linear actuators
- 1/4 Turn to 1.4M in/lbs. Linear to 65,000 lb/ft.
- Easy field installation

Proudly assembled and tested in Houston, Texas. Paladon Americas expects lead times of 2-3 weeks.

Pratt® Rotary Cone Valves

Pratt® Rotary Cone Valves help applications with high velocity and pressure by maintaining constant pressure downstream and regulating flow. The anti-cavitation trim is a new added feature that protects the valve when there is a high-pressure differential by modulating the flow to sustain the pressure and prevent cavitation damage. All this comes with minimal maintenance due to its high strength design, metal seats and long service life. These features allow for a low yearly operating cost. Available in sizes 8” to 48”.

Valve World Americas | September 2020 • www.valve-world-americas.net
Kelso Technologies New Top Ball Valve Approved by AAR

Kelso Technologies Inc. has announced that the Association of American Railroads (AAR) has approved Kelso’s new top ball valve (KTBV) for commercial field service trial testing. The KTBV joins the low-profile bottom outlet valve and the standard-profile bottom outlet valve (KBOV) in field service trial testing as a prerequisite for final AAR approvals.

The underlying design research for the KTBV has been through direct cooperation and co-engineering advice from several motivated customers. The design objectives are to significantly diminish the expensive chronic performance and supply problems that are persistent with the current top ball valves widely used today.

The key proprietary design elements for the KTBV include the use of a more reliable, longer wearing, scratch-resistant, and non-corrosive ceramic ball. It has a seat protecting ceramic wiper which allows for seats to remain clear of any debris and impurities collecting in the commodity, therefore, extending the service life of the valve seats and the prevention of valve seat leaks.

The KTBV is utilized on general service rail tank cars for the primary purpose of loading and unloading the contents of the tank. It is positioned on top of general service tank cars with a standard configuration consisting of either two or three top ball valves per tank car. They are widely used in the transport of hazardous commodities such as crude oil, ethanol, chemicals, petrochemicals, and minerals. The new AAR field service trial will involve at least two customers with service in a variety of commodities.

Orbinox Launches Pinch Valves for Abrasive Slurries

Global manufacturer, Orbinox, has introduced a new pinch valve range to meet customer needs for heavy corrosive-abrasive slurry applications. The PA model pinch valve has been designed to offer excellent performance and low maintenance costs for abrasive, corrosive, and aggressive slurry applications.

The PA model pinch valve is a heavy-duty enclosed construction full bore valve that employs elastomer sleeves for flow shut-off and control in applications with abrasive and corrosive slurries. The sleeve is the only part in contact with the media, no other mechanical parts are required, and it is a maintenance-free part. The PA pinch valve is mainly used in industries such as mining, wastewater treatment, pulp and paper, chemical plants, power plants, cement, and ceramic.

The ORBINOX PA pinch valve is available in sizes ranging from 1” (DN25) up to 12” (DN300). It is suitable for working pressures up to 10 bar with either handwheel, gearbox, or pneumatic cylinder actuators. Electric and hydraulic actuators are available upon request. This model will be initially marketed in North America, Chile, Peru, and China.

Thomson’s Compact Electromechanical Linear Actuators

Thomson Industries, Inc., a manufacturer of mechanical motion control solutions, recently announced the availability of their new Electrak® MD, a more compact electromechanical actuator that retains all of the intelligence built into its larger counterparts. Mobile off-highway, material handling, and factory automation applications can benefit from the compact actuator with up to two kilowatts (kW) of four-phase advanced onboard electronics, and J1939 CAN Bus support.

The new Electrak MD also comes with onboard intelligence, which enhances the overall performance and eliminates space consumption by keeping any external equipment like encoders and switches within the actuator housing. As with its predecessor, the Electrak HD, this functionality provides a simpler method of control and communication, which minimizes operating costs and simplifies setup and installation.

In addition to the above benefits, the Electrak MD also features extensive automation and maintenance enablers such as feedback on position, J1939 CAN bus communication, low-current switching (PLC compatibility), and end-of-stroke indication output.

Indelac’s Compact Quarter-Turn Electric Actuator

The R Series compact quarter-turn electric actuator from Indelac Controls was specifically designed for small ball valves and dampers. This heavy-duty reversing actuator develops 100 lb/in (13.30 Nm) torque and rotates from 0 to 90 in 2.5 seconds.

Standard equipment includes 115Vac-1ph motor with thermal overload protection, stainless steel fasteners, captive screw covers and 300 series stainless steel output drive, spring friction brake, non-declutching manual override and position indicator. The spur gear drive train has been designed for severe applications and as in all ICI actuators can withstand stall conditions without suffering gear failure.
MICROMAZZA Receives INMETRO Seal for Series of Valves

The INMETRO NBR 15827 standard was created to meet the demands of the oil and gas sector in Brazil for valve designs suitable for extreme working conditions, with operational premises, minimum scope of Basic Engineering, certification tests and registration. The standard had its first edition in 2002, and was revised in 2011, 2013 and 2018.

Along with the standard, the idea of creating a voluntary INMETRO certification was also born to check if the projects guided by it really managed to fully meet its requirements, both in the analytical design of structural calculations, as well as in bench tests. The INMETRO identification seal indicates which standards or regulations developed for that specific product category have been followed in their design / manufacture / placing on the market.

For the use of the seal (INMETRO / NBR 15827) on its valves, Micromazza submitted its products to a technical structural improvement. The certification was effectively obtained on June 2, 2020. This certification is based on a genuinely Brazilian standard, with a differential for highly critical valves in industrial applications and exploration, production, refining and transportation of oil products.

The INMETRO NBR 15827 certification brings a market differential to Micromazza products, since the seal certifies not only the consistency of a project in the face of critical operational conditions, but also the company’s persistence in believing in its technical training.

The corporate management made significant investments in obtaining the certification, as it believes in the associated technical knowledge and the improvement of all other company projects.

Whenever you buy a product, regardless of its function or value, quality and reliability are expected. When high-performance technical features are present, there is a search for fundamentals that prove consistency, generating expectations that are not always described in their packaging. This is exactly the benefit of the INMETRO NBR 15827 certification, generating the market differential that guarantees the permanence of a consolidated product for MICROMAZZA and its customers.

Aware of the benefit and the market differential that this certification offers, MICROMAZZA decided to add another value to this certification effort, with the extension of the warranty of the valves with INMETRO seal for 3 years, if its application is proven according to the operating parameters established in the project.

Griffco Valve Announces New Hires

Griffco Valve, Inc., a U.S. manufacturer of back pressure valves, pressure relief valves, calibration columns, pulsation dampeners, fusion dampeners, injection valves, gauge guards, corporate stops, and other accessories, distributed worldwide for chemical-feed systems, recently announced the appointment of Gregory T. Lucas as U.S. Western Regional Sales Manager. He will be responsible for providing training and sales support for the company’s distributors, as well as expanding the company’s distributor network.

Lucas joins the company from NETZSCH, where he served as Regional Sales Manager for Texas and Oklahoma. During a career spanning more than 30 years, he has held sales and sales management positions at Grundfos, Oliver Equipment Company and other companies in the chemical and petrochemical processing industries.

A resident of the Houston, Texas area, Lucas earned an Associates Degree in Mechanical Engineering from Green- ville Technical College and attended the University of South Carolina.

The company also announced the appointment of William L. Bendel II to the position of Product/Technical Manager. He will be responsible for compiling and prioritizing product and customer requirements, defining product goals, and working with Griffco engineering, sales and marketing to support the company’s distributors, end-users, and channel partners.

“Bill is a dynamic and effective manager who adds a wealth of pulsation damper experience and expertise to our pump accessory products,” said Col-in Black, President of Griffco Valve. “We are confident that his knowledge of the industry and working relationships will contribute to our continued success.”

Bendel most recently served at Bla-coh Fluid Control as Senior Technical Outside/Inside Sales Manager for the western region covering seven states. Among his many responsibilities, Ben- del managed accounts through distribution channels and direct sales, and played a key role in product pricing, new product development, and over- seeing inventory supply. He previously held the post of Senior Technical Sales Manager for McMaster-Carr Supply.

A resident of Alta Loma, California, where he will be based, Bendel earned a Bachelor of Science in Biology from San Diego State University and Associate of Arts in HVAC Engineering from Mount San Antonio College.

Curtiss-Wright Signs Exclusive Agreement with Ringo Valves

U.S.-based Curtiss-Wright’s Nuclear Division (Curtiss-Wright) has signed an exclusive sales agreement with Spain’s Ringo Valvulas (Ringo Valves), a subsidiary of Samson AG Group. Curtiss-Wright will act as Ringo’s sole sales channel for the Commercial Nuclear markets in North America, South Korea, and Taiwan.

The agreement will allow Curtiss-Wright to expand its existing portfolio of valves in support of the domestic and international nuclear fleet. Ringo’s expertise in the manufacture of custom and tailored valve designs will enhance Curtiss-Wright’s ability to offer innovative valve solutions that promote safety and efficiency, resolve obsolescence challenges, and support advanced nuclear technologies.

Ringo Valves has more than 40 years of experience in the design and manufac-turing of specialized nuclear valves for all types of plant applications, from standard service to the most severe operating conditions. More than 100,000 Ringo valves are installed in boiling water reactors, pressurized water reactors, and CANDU reactors in more than 45 countries.
Optimation Technology Announces New Chief Operating Officer

Optimation Technology announced a new Chief Operating Officer. Wendy Smith, with over thirty years’ experience in plant operations and design and engineering services management, is excited to take on the challenge.

Smith has a Bachelor of Science in Ceramic Engineering with a Business Management minor from Alfred University, including a study abroad semester at the University of Sheffield in England. She started at Corning Incorporated as a Metting Engineer and went on to hold key manufacturing and operations leadership positions over the next 15 years including Department Head, Product Line Coordinator, Supply Chain Manager, Operations Manager and Plant Manager.

In 2003 she joined Optimation Technology Inc. as the Mechanical and Process Engineering/Design Supervisor as well as the COO of Klug Systems (a company that Optimization had recently acquired). Over the next 15 years, Smith took on additional management and leadership roles at Optimization where she is currently the COO, a member of the Sales Team and the Executive team, and sits on the Board of Directors.

Inspectioneering Launches Specialized Integrity and Reliability Staffing Business to Help Clients Navigate Uncharted Waters

Inspectioneering, LLC, a niche media company serving Inspection, Maintenance, and Engineering professionals in the energy and process industries, announced the launch of Inspectioneering Talent Solutions, a specialized recruiting and staffing firm offering turnkey workforce solutions to help companies find and secure the top Mechanical Integrity and Reliability talent needed to successfully operate their business.

“There is a growing shortage of skilled Inspection, Maintenance, and Engineering professionals in the industries we serve,” says Jeremiah Wooten, Inspectioneering Vice President. “An aging workforce and a decade of young talent opting for other careers and industries has revealed a significant gap of experienced and qualified individuals ready to step into these critical roles.”

COVID-19 and the resulting economic conditions have further complicated the landscape. Facilities across the country are being idled or running at lower rates, and/or operating with reduced manpower. Many companies are being forced to make difficult decisions and lay off valuable employees due to the current market conditions. In May, Chevron announced it was laying off up to 15% of its workforce amid restructuring. BP, CVR Energy, and HollyFrontier Corporation announced it was laying off up to 15% of its workforce amid restructuring.

“Now may not look like the best time to launch a staffing business, but we see this as an opportunity to help the industry recover,” says Inspectioneering President Tyler Alvarado. “Facilities are still operating and companies must continue to keep them running reliably. We want to help ensure the right people are in place to do so.”

“Nobody understands this industry the way we do,” Alvarado adds. “We feel that both employers and job seekers need a strategic partner now more than ever to ensure these critical MI and Reliability roles are filled with the best talent available.”

Finding and securing qualified candidates can be an expensive and time-consuming process. Paid job boards, passive advertising, and social media posts are not the solution and other recruiters are not truly focused on this market. Leveraging decades of experience, a vast network, and a unique understanding of the industry, Inspectioneering Talent Solutions is ready to connect companies with top talent and get the industry back on the road to recovery.

For more information, please visit https://inspectioneering.com/talent.

SAMSON Valves on an LNG Powered Cruise Ship

SAMSON has joined a rather special project: the construction of a polar exploration ship, named “Le Commandant Charcot,” as a tribute to the French explorer of the 20th century. 18 valves will be located around the two tanks of this hybrid electric ship, powered by LNG. A technology that is more environmentally friendly and emits less CO2, Ponant, the owner of this vessel under construction, plans to deliver it in 2021.

For this project, he has engaged the services of the French company GTT, a specialist in membrane containment systems for the transport and storage of LNG by sea. The eighteen valves (NPS 1 to NPS 2, Class 150) are made in France. Their function? “To control nitrogen gas pressure for inerting the insulation of LNG tanks,” explains Thomas Contejeiro, a Procurement specialist at GTT.

Among the 16 valves Type 3241, eight of them (the cryogenic ones) are equipped with a long extension to withstand temperatures of -163 °C. The other eight are mounted with a short extension (resistance up to -40 °C).

Badger Alloys Appoints New Quality Engineer

Badger Alloys recently announced that Bret Kohler, CSSBB, has joined their team as Quality Engineer. The company’s skilled machinists provide machined castings for valve bodies, wear components, split castings, casings, and more. In his new role, Kohler will investigate the systematic processes throughout the foundry, identifying opportunities for improvement, researching best practices and implementing solutions.

Kohler is an experienced industrial and mechanical engineer in various manufacturing settings. He has focused his career on process improvement through Six Sigma and other root cause analysis tools to improve internal and external quality. Kohler holds a bachelor of science degree in mechanical engineering from University of Wisconsin – Milwaukee.

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A Welder is an **Artist**; an Inspector is the **Critic**

**An Interview with Garrett Borrow – QA Inspector**

No two welds are exactly the same, and this is something that Garrett Borrow, QA Inspector, has learned throughout his career in the welding and inspection industry. As every weld is different, he must be diligent and detail-oriented to make sure that all welds are done properly and to the project’s specifications.

Valve World Americas had the opportunity to speak with Borrow about his experiences as an inspector, the typical welding discrepancies he has seen in his work, and what hopes he has for the future of the industrial sector.

By Brittany Schroeder

Upon graduating high school, Garrett Borrow had many education options to choose from, but he ultimately decided to enter the Welding Engineering Technology program at the Southern Alberta Institute of Technology (SAIT). “I decided on welding because I thought it was interesting, and it was something I had never done before. The program gave us thought-provoking learning materials and provided the ‘ideal situation’ for the industry,” said Borrow. “After I graduated, I was sent out into the world with the knowledge I had gained, ready to start working.”

Borrow soon started working for a small, ‘Mom and Pop’ shop in Calgary, Alberta, as a Quality Control (QC) Inspector. He worked within a team of 40 people for almost three years and had worked up to the Acting Manager position before he joined another company. Borrow began to work for a boiler and pressure vessel shop, and soon the company was acquired by Alstar Oilfield Contractors, who took over Borrow’s employment. For the last two years, Borrow has worked for Alstar as a Senior Quality Assurance (QA) Inspector, and is a Level Two Visual Inspector, accredited under the C.W.B. (Canadian Welding Bureau). “In short, my job is to check other peoples’ work and make sure everything is correct before it goes out the door,” he said.

**A Fast-paced Environment**

Borrow’s days are very fast-paced. He is part of a team of three to five inspectors that look after all the pressure piping being produced by the welders on the shop floor. Each section of piping requires an inspection before being sent out to the yard for nondestructive testing (NDT), painting, and installation. As a Senior QA Inspector, Borrow works with approximately 12 welders, and is also responsible for training new inspectors as they join his team.

For Borrow, the best part of the job is being social with the other inspectors and welders. “Working in a shop environment, you get very close with the people you work with. As the QA Inspector, you are often telling people that their work is incorrect. It is important to develop the skills to be professional about it, while at the same time you need to be able to walk away from that conversation without the welder hating your guts. It is a very fine line,” said Borrow.

When thinking about the most challenging aspects of the job, Borrow said that it is the stop in workflow. “As a QA Inspector, you are the reason that the workflow is slowing down, or fully stopping. If something is wrong, you have to go back and tell the welder to fix it, which extends deadlines and pushes back the project schedule a bit,” he explains. Borrow stresses that even when the shop is trying to meet a short deadline, it is crucial that the inspector still takes their time and ensures that the work is done correctly.

**Inspection Procedures**

When Garrett Borrow arrives at work, the first thing he does is set up his tools for the day; this includes his flashlight, cam gauge, a measuring tape, a level, and some other tools that he might need for the day. “I usually have a few drawings in my inbox from the day before, and I will grab the first one on the top of the pile and head out to the floor to find the spool, which is a section of pipe. I tag it with a control number, and this identifies the spool for everyone who works on it for the rest of the process, all the way up to installation.”

Once the spool has been tagged, Borrow walks around and checks all of the materials to ensure they are the correct metal grades and ratings. From there, he moves on to levels and dimensions. Borrow must make sure that each of the fittings are sitting square and level, and he dimensions and measures the spool to ensure that it meets the requirements of the drawing. “If everything checks out, I will move on to make sure the welds are up to par with no visual defects,” Borrow explains. After assessing the pipeline spec, he sends it out for the required NDT. The spool may be x-ray or magnetic particle tested, and may undergo many other tests before it moves back into the shop for hydro testing.

**The Art of Welding**

As Borrow would say, “Welding is an art form.” Welding is different for every person who is doing it; depending on the welder, there can be big changes in the finished weld. Most often, Borrow sees issues caused by the environment, rather than the material or consum-
Another possible issue for welders comes from switching between companies that provide consumables. Borrow stresses that it is crucial to find a company that provides good quality consumables, and to stick with them. “Switching between companies would be the same as a painter changing from their regular brand of paint to a new one they have never used. They have to get used to the new materials, as a welder would need to get used to the new consumables,” said Borrow. “There is a rhythm to welding, just as there is with painting and being a musician. Their work is like a metronome on a piano: tick, tock, tick, tock. The welders have the muscle memory, and they are going to do it perfectly because they know what is happening. If they fall out of that sequence, they will stop, sit back, and look at their work. If they have made a mistake, they will take out their grinder – which is basically their eraser – and zip it out. Then they will fall back into their rhythm. It is really awesome to see."

Projects and Challenges

Borrow and his team typically have five to seven large projects on-the-go at all times. As they are located in Alberta, their projects are primarily for the oil and gas industry, and typically consist of oil field equipment to be used throughout the province. “We are also making modular units that we ship internationally – New Zealand and Romania, just as examples,” said Borrow.

There are many challenges Borrow and his team face while working on their various projects. “My biggest challenge is being a stop in flow, but there are a ton of other challenges we encounter every day,” he relayed. For Borrow, the biggest challenge he and his team frequently come up against is obtaining materials and the supply chain. This problem has become increasingly worse since the COVID-19 pandemic caused mill and manufacturer closures.

As an inspector, Garrett Borrow works within a three-millimeter tolerance. What does this mean? “Even if the pipe is 17 meters long, it needs to be within three millimeters (mm) of the dimension on my drawings, or else it is unacceptable,” he explained. “This can get tricky, because when you connect 17-meter-long pipes together, and if I accept three millimeters on one section, another three-millimeters, and another and so on, suddenly we are out half-an-inch, and it becomes a problem.” For Borrow, running into a problem like this is a big challenge as it requires for the team to go out to the site and perform repairs that could have been avoided if they were caught in the shop. “But sometimes it is not feasible to catch right away,” Borrow stated.

Materials and Supply

Lead Times

Borrow has seen and worked with a lot of different materials during his career. Typically, he and his team work with mild steel, but they have seen a lot of stainless steels as well. The stainless steel systems Borrow and his team work on are typically smaller in size, and include a wide range of stainless grades.

For the majority of Borrow’s projects, the material selection process is dictated by the project’s requirements. “The company has a team of people dedicated to finding us the correct material, ensuring it will arrive within our schedule, and auditing suppliers and making sure they are up to par for our projects,” Borrow relayed. The shop where Borrow and his team are located is in the East Shepherd Industrial Park in Calgary, AB, which means that sometimes they can obtain materials from nearby companies. At other times, the clients bring in their own materials that have already been sourced and obtained.

In regard to obtaining supplies, lead times can delay a project, and this has happened to Borrow on several occasions. “How far out we order materials and parts depends on the project’s deadline, and it depends on what we are ordering,” he commented. “If we need to order specialty materials, or European fittings, it can take upwards of a month or more for shipping. It will also depend on the size of the part, because you cannot express post a component or material that is 1,200 pounds.”

Stainless steel has been a requirement for many of Borrow’s projects, which has allowed him learn about the pros and cons of the material. “Stainless steels have a lot of benefits – corrosion resistance and long-term durability, for example – but there are also manufacturing downsides that I hope will be improved in the future,” Borrow said.

Stainless steel has a high thermal expansion rate, which means it will expand when heat is applied. Once it has expanded, it will not shrink down to the size it was before the heat was applied. This makes it difficult for welders, because the welding process requires the application of heat to the material. Keeping stainless steel straight is one of the team’s biggest issues when working with the material. “We also have to deal with stainless steels as they harden. When stainless steels are heated and cooled in a certain way, sometimes it will harden, and then, like glass, it becomes brittle. In general, it is best to not rework stainless steels,” Borrow explained. “Overall, the pros are on par with the cons, and I am looking forward to when there are no more cons to speak of in relation to stainless.”

Welded Valves

On a day-to-day basis, Garrett Borrow often works with valves and valve fittings. “We also see some valves coming through our shop. Anything welded will come past me or one of the other floor inspectors, so we have seen a lot of valves in our work,” Borrow relayed.
The most common problem experienced with the valves are leakages. While most problems are caught prior to the inspection stage, there is the odd time that an issue will go unnoticed. “I typically just look at the valve’s class, rating, material, etc., to make sure it all looks good. I might even cycle it once to ensure that it turns properly. Once the valve is welded on and sent down the line, the biggest problem is leaking, and that is why we run the hydro test. We do not want any leaky valves!”

Sharing Industry Experience

As veteran engineers start retiring, the urgency and importance for the younger generation to learn from their experiences is paramount. “When I started at my first company, the ‘Mom and Pop’ shop, the owner’s son had just left engineering school. He entered the company and he learned everything he needed to from his dad, who had been in the industry for many years,” relayed Borrow. It is Borrow’s belief that the knowledge gap in the industry works both ways. “The new engineers graduate from school with the knowledge of how to use new technologies and work the computers, while the older generation of engineers are able to whip out a piece of paper and tell the younger generations about how they could be wrong. It is really interesting to see.”

Borrow believes that over the next 15 to 20 years, as more engineers retire, younger engineers will need to step up and learn as much as they can from the older generations before they go. “We need to soak up everything we can and learn from our experiences before we lose them from the industry. What we learn in school is the ‘industry ideal’, and that is not what happens in the real world. We need to learn firsthand from those who have experienced the industry for decades.”

Borrow has learned a lot from his mentors and older inspectors throughout his industry experience. “I feel like a lot of people say there is a knowledge gap because the older generation of engineers do not want to share their secrets, but I think the real problem is the younger engineers not asking them to share. It is our responsibility to learn from them, but we might need to give them a push to get started,” Borrow said.

Final Thoughts

Borrow’s hope for the future is a shift into new industries, which will bring in new types of projects. “We are really focused on the oil and gas industry, which makes sense because of where we are geographically located, but I think in the next two to three decades, it would be great to start branching out. The oil and gas industry will always be around, but we may see a reduction of oil in favor of other emerging technologies, and we need to be ready for that shift,” said Borrow.

Garrett Borrow also shared some advice to new engineers by saying, “Take a few minutes, get out onto the shop floor, and try to meet a welder. Those welders are really nice people, and they will be able to show you a totally different side of the industry that you had no idea about. There is so much more to learn than what you have seen on paper, and we are willing to teach you.”

India discovered how to turn diamonds into gems.

We’ve done the same for industrial valves.
Supporting the Troops – The Patriotic Employer

An Interview with Sara Alford & Brandon Foote – Newmans Valve

Newmans Valve is dedicated to supporting the United States, not only through their business practices, but also through their support of U.S. Army veterans and active military personnel. Valve World Americas spoke with Sara Alford, General Manager at Newmans, and Brandon Foote, Inside Sales and active member of the U.S. Army, about the importance of exercising flexibility for both active duty military personnel and veterans.

Brandon Foote has been in the military for almost 14 years, in which time he has been deployed on three separate occasions. He also works for Newmans Valve, a master distributor based out of Stafford, Texas. “Each military deployment lasts about a year, and my current contract for service ends in 2025,” said Foote. “During my last deployment, in 2018, I was an employee at Newmans and was grateful for the flexibility they had in granting me the time I needed off for my military service.”

The U.S. Army deployed Foote overseas for most of 2018; while he was away, Sara Alford kept in contact with him to ensure he had everything he needed, offering additional help to his family as well. Foote continued, “I am quite limited in what I can do while I am away, so Sara was a great help.” When Foote was deployed in 2018, his wife had recently had a baby, and he had to leave when the baby was only two weeks old. “Having Sara to check on my wife and kids meant the world to me. It would have been difficult to do that to Brandon or any employee who went to serve their country.”

Before Foote found his place at Newmans, a previous employer had laid him off during one of his first deployments. “It is not something you want to experience. It also taints your outlook going forward—you are always thinking, ‘Will this be the time I am let go again because of my military service?’ Luckily, Newmans has always supported my service and, even as I am heading off for another deployment quite soon, I know I will have a job to come back to.” In Foote’s experience, he has seen companies hire veterans outright after their service, and will provide the proper training to ensure success in their role. He has also found that some companies will not put as much effort into providing a veteran with a successful and supportive workplace.

For Alford, providing support to U.S. veterans is of the utmost importance. “Brandon is on active duty, and we have two other veterans working at Newmans as well. Being able to hold jobs for active duty members is something we are always committed to doing,” she said. “Even though it is mandated that all companies hold jobs for people who go into service, there are a lot of companies out there who will find a loophole in order to be able to layoff the employee. We think of ourselves as a family at Newmans, and we could not imagine doing that to Brandon or any employee who went to serve their country.”

Before Foote found his place at Newmans, a previous employer had laid him off during one of his first deployments. “It is not something you want to experience. It also taints your outlook going forward—you are always thinking, ‘Will this be the time I am let go again because of my military service?’ Luckily, Newmans has always supported my service and, even as I am heading off for another deployment quite soon, I know I will have a job to come back to.” In Foote’s experience, he has seen companies hire veterans outright after their service, and will provide the proper training to ensure success in their role. He has also found that some companies will not put as much effort into providing a veteran with a successful and supportive workplace.

A Patriotic Employer

When Foote returned to the U.S. after his 2018 deployment, he nominated Alford for the Patriotic Employer Award. “The whole thing was a big surprise to me,” Alford stated. “Apparently the whole company knew he was nominating me! The military came in and did a special presentation and awarding ceremony. It was an honor to be nominated and to receive such an award.”

Newmans Valve held Foote’s job while he served his country in the past, and they will do it again now. Upon his return, they will welcome him back to the Newmans family with open arms. The company is proud to honor both those who serve and those on the home front who are supporting the troops and hope to inspire other companies to do the same.
Valve Leakage: Explained

In practice, control valves leak, even when fully closed. Ignorance of valve trim leakage definitions has led to many misunderstandings throughout industry. Control valves being misidentified as requiring tight shutoff (TSO); TSO valves (or control valves) requested when excessive or inappropriate for the application; Vendors highlighting their valve having “tight shutoff” capabilities without mentioning crucial testing details. These scenarios help cultivate valve terminology confusion which can inherently introduce process safety risks, schedule-creep and/or higher capital and maintenance costs. Familiarization with the specifics of valve verbiage and leak testing is beneficial and will ideally spread clarity regarding this subject in the Oil and Gas space.

This article discusses the importance of proper valve selection and highlights the differences in valve leakage criteria depending on the role of the selected valve. A bare bones approach for new Process Engineers to rationalize how much valve leakage is acceptable is discussed.

For those who are new to the Chemical Process Industry, the fact that valves leak can be quite troubling. In particular, when procuring a control valve, the responsibility to inform the Control Systems engineer of the appropriate control valve seat leakage generally lies with the Process Engineer. This begs the question: how much control valve leakage is acceptable?

In practice, ignorance of valve trim leakage definitions has led to various misconceptions about both control and on/off valves, respectively: control valves being used as on/off valves and vice versa; control valves misunderstood to be tight shutoff (TSO) valves; TSO valves requested by engineering or operations for use in unsuitable applications. The sections that follow discuss valve basics, selection and leakage information in the hope of clarifying any misunderstandings surrounding this subject.

What is a Control Valve?

Simply put, a control valve is a valve used to manipulate the flow of a fluid. According to API RP 553, a control valve is composed of a valve body and an actuator. The actuator assembly varies the open area inside the valve trim, which limits (on closure) or increases (on opening) flow rate through the valve body based, on an automatic signal from a controller. Control valves work within a control loop or automated system as the “final control element.” Other loop components, the transmitter and controller, work alongside the control valve to maintain the desired variable (e.g., flow rate, pressure, temperature)\(^1\).

Unbeknownst to some, when a control valve is fully “closed” it still allows a volume of process fluid through the valve plug and seat, also known as the valve trim. Every control valve leaks to some degree; ranging from a small stream to bubbles per minute. The American National Standards Institute and the Fluid Controls Institute (ANSI/FCI 70-2) recommend the leakage classes seen in Table 1.

Image courtesy of Spartan Controls.

<table>
<thead>
<tr>
<th>ANSI/FCI 70-2*</th>
<th>Maximum Leakage</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>0.5% of valve capacity at full travel</td>
</tr>
<tr>
<td>III</td>
<td>0.1% of valve capacity at full travel</td>
</tr>
<tr>
<td>IV</td>
<td>0.01% of valve capacity at full travel</td>
</tr>
<tr>
<td>V</td>
<td>0.0005ml/min/psid/inch port diameter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VI</th>
<th>Nominal Port Diameter (in)</th>
<th>Bubbles per Minute</th>
<th>Milliliters per Minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1</td>
<td>1</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>1-1/2</td>
<td>2</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>2-1/2</td>
<td>4</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>0.90</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>11</td>
<td>1.70</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>27</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>45</td>
<td>6.75</td>
<td></td>
</tr>
</tbody>
</table>

*For complete table, refer to ANSI/FCI 70-2

Consideration must also be given to the following facts:
- Once a control valve is shipped from the manufacturer or supplier, there is no guarantee that it will meet the factory tested leakage criteria.
- The leakage testing conditions do not simulate the actual operating conditions. Factory testing is usually performed using air or water at low pressure.

What is a Tight Shut-Off (TSO) Valve?

A true tight shutoff valve (TSO) conforms to API 598, specifically the "no leakage" class as specified in the API 598 standard. This ensures that the valve will not allow any fluid to pass through it, which is crucial in industries where leaks can have severe consequences. The ANSI/FCI 70-2 standard recommends leakage classes for control valves, with TSO specifying a leakage rate of 0.0005 ml/min/psid/inch port diameter. Emphasis on proper valve selection and testing is essential to ensure process safety and operational efficiency.
visible leakage" requirement highlighted in Table 5. The API 598 standard covers valve inspection and liquid/gas testing of both resilient-seated (soft or combination) and metal-seated valves of various types. The allowable seat leakage rates of test fluid, for test duration (refer to Table 4 of API 598), is shown in Table 2.

As highlighted above, the tightest available shutoff is resilient-seated that demonstrates no visible leakage during closure testing by the valve manufacturer. Additional provisions are required to achieve zero leakage through metal seated valves.

Which Valve Do I Choose?

Consideration must be given to the original design intent of the valve in question; control or shutoff? There is a saying: "Shut-off valves shut, control valves control and neither one play's the other's part very well". In other words, on-off valves should not be used for throttling and control valves should not be used for isolation. It is important to establish a clear understanding of the valve application and its requirements. If a design intent or subsequent risk analysis dictates the need for complete isolation, then on-off valves subject to API 598 testing should be considered to achieve a TSO (tight shutoff). A double block and blind arrangement is also a worthwhile design consideration. In this case, it is not uncommon to have a control valve and shutoff valve in series to provide both control and isolation.

How Much Valve Leakage is Acceptable?

API RP 553 states that the worst-case process scenario should be considered for control valve leakage class selection. In other words, how many bubbles might be one bubble too many? In effort to help methodize the leakage class selection process for control valves (for new process engineers) being installed in revamp design circumstances, a sample approach is formulated in the following sections:

### Table 2: Allowable Seat Leakage Rates in Closure Tests

<table>
<thead>
<tr>
<th>Valve Size (NPS)</th>
<th>All Resilient Seated Valves</th>
<th>All Metal Seated Valves (excluding check valves)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 2</td>
<td>0 (No visible leakage)</td>
<td>0&lt;sup&gt;(2)&lt;/sup&gt; Liquid Test&lt;sup&gt;(1)&lt;/sup&gt; (drops/min) 0&lt;sup&gt;(2)&lt;/sup&gt; Gas Test&lt;sup&gt;(1)&lt;/sup&gt; (bubbles/min)</td>
</tr>
<tr>
<td>2 ½</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>12</td>
<td>24</td>
<td>48</td>
</tr>
</tbody>
</table>

<sup>(1)</sup> For liquid testing, 1mL = 16 drops. For gas testing, 1mL = 100 bubbles

<sup>(2)</sup> There shall be no leakage for specified test duration. For gas testing, 0 bubbles infer "less than 1 bubble" per minimum specified test duration. Refer to Table 4 of API 598 for required test durations.

<sup>(3)</sup> Refer to API 598 for test fluid leakage rates for valves up to 48 NPS.

**Step 1** Look at the big picture and identify the risks:

It is important to understand how the process works in its entirety; mistakes can be made when designing in a silo. Understand the relationships between the control valve in question and both the upstream and downstream operations. Are there further effects in addition to valve closure that result from a common cause? Does a small amount of material leaking through the valve seat introduce any intolerable situations? This should consider both safety, environmental considerations and economic risks (leakage of a volatile material may be undesirable even if not "unsafe"). Consider the leakage rates in terms of mass flows or energy flow because that may have more meaning from an HSE perspective than the volumetric flows specified in ANSI/ASME 70-2.

**Step 2** Reflect on fluid behaviour:

Determination of the process fluid phase region is essential, as each phase behaves differently. Liquid phase fluids exhibit low compressibility and high mass density. What is the liquid bubble point, and could this be reached? Conversely, a gas or vapour phase fluid has high compressibility and low mass density. What is the vapor dew point? If the stream is single phase, the possibility of flash separation should be realized. Another consideration is what happens to the leaking material after contact with the medium downstream of the valve. Does the leaking material condense, evaporate or react on contact with air, water or other process fluid with which it may come into contact.

**Step 3** Establish a pressure profile:

Map out the system pressure behavior when the control valve is to be "closed". Ensure that consideration is given to any other effects that might have been prompted simultaneously. What is the path of least resistance? Is there a potential for backflow through the valve seat?

**Step 4** Consider the piping configuration:

Create a sketch or refer to isometric drawings to become familiar with the system piping configuration. The piping layout can dampen the effect of leaking valve seats. In horizontal pipes, the liquid will pull to the bottom wall of the pipe and gas will fill the top portion. Are there various high points that could collect vapor? Are there low points that could result in liquid pooling?

**Step 5** Consider response time:

Per API RP 521, a commonly accepted response time is between 10 and 30 minutes, depending on the complexity of the plant. Upon initiation of a non-standard event, what does the intervention plan look like? Is there enough time for operator intervention before the scenario in question takes place?

It is fair to say that valve leakage class selection is situationally dependent. Having an awareness of the above considerations and generating a process narrative should ultimately help paint the picture and inform the selection of control valve leakage class.

**Conclusions**

In particular scenarios, valve leakage requirements are well understood, whereas in other situations, the requirements are unclear and the final verdict amounts to careful judgement and reflection on past experiences. But what if you are new to the realm of Process Engineer ing? Thinking through the aforementioned steps to determine how much leakage is acceptable is a good place to start. It is important to consider these queries because underspecifying valve shutoff requirements can introduce process safety risks while over-specification can lead to significant capital and maintenance costs.

---

**REFERENCES**


2. API Recommended Practice 521, (Section 4.2.5) Pressure Relieving and Depressurizing Systems

3. API Standard 598, Valve Inspection and Testing

4. API Recommended Practice 553, Refinery Valves and Accessories for Control and Safety Instrumented Systems

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**ABOUT THE AUTHOR**

Amanda Price is a Process Engineer in the Multi-Projects Group at Fluor Canada Limited, based in Calgary, Alberta, Canada. She is a registered Professional Engineer in the province of Alberta with 5 years of project definition and execution experience, primarily in the refining industry. Amanda holds a Bachelor of Science degree in Chemical Engineering from the University of New Brunswick.
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-Pennsylvania: Valve Relief Fuel In Repair/modification Of
Between: September 17, 2020
Contact point: jose.f.montes@navy.mil, (215)697-2568
Language in which tenders or requests to participate may be drawn up: English

United States-Virginia: Valve Expansion
Description: Valve Expansion
Between: September 22, 2020
Contact point: cindy.hunt@dla.mil
Language in which tenders or requests to participate may be drawn up: English

United States-Oklahoma: Body Valve
Description: Body Valve
Between: September 24, 2020
Contact point: keith.russ@us.af.mil
Language in which tenders or requests to participate may be drawn up: English

Brazil: Supply And Installation Of Moto Pumps Sets And Sludge Recirculation Valves
Description: Supply And Installation Of Moto Pumps Sets And Sludge Recirculation Valves
Between: September 28, 2020
Contact point: +55-(1 1) 33886651
Language in which tenders or requests to participate may be drawn up: English, Portuguese

United States-Pennsylvania: Valve Assembly
Description: Valve Assembly
Between: September 28, 2020
Contact point: collin.browning@navy.mil, (717)605-1667
Language in which tenders or requests to participate may be drawn up: English

United States-Pennsylvania: Repair Kit Valve
Description: Repair Kit Valve
Between: September 29, 2020
Contact point: DibbsBSM@dla.mil
Language in which tenders or requests to participate may be drawn up: English

United States-Virginia: Housing Valve Butte
Description: Housing Valve Butte
Between: September 29, 2020
Contact point: tiffany.vu@navy.mil, (215)697-0104
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
Between: September 29, 2020
Contact point: karla.alvarez@imss.gob.mx
Language in which tenders or requests to participate may be drawn up: English, Spanish

Canada-Montreal: Supply Of Cofferdam Valves, Joists, Lifting Structures And Other Accessories
Description: Supply Of Cofferdam Valves, Joists, Lifting Structures And Other Accessories For The Evacuation Structures Of The Jean-r.-marcotte Wastewater Treatment Plant.
Between: September 29, 2020
Contact point: zoulikha.seghir@montreal.ca
Language in which tenders or requests to participate may be drawn up: English

United States: Body Valve Aircraft
Description: Body Valve Aircraft
Between: September 29, 2020
Contact point: tiffany.vu@navy.mil, (215)697-0104
Language in which tenders or requests to participate may be drawn up: English

Velan has developed advanced valve technology to isolate high-pressure catalyst and hydrogen. Securaseal R-series metal-seated ball valves, inject and remove catalyst daily from ebullated bed reactors with a unique design that includes a gold-plated gasket, thermal protection, and materials resistant to sulfidation. Combined with the new patent-protected cable drive actuator, Velan offers a revolutionary new alternative for quarter-turn actuation. Learn more about how we can help your process needs, visit www.velan.com.

Cracking into the ebullated bed hydroprocessing market

POWERED BY:

To subscribe to the Projects & Tenders newsletter please contact Josh Gillen (j.gillen@kci-world.com). To submit a project or tender please contact Angelica Pajkovic (a.pajkovic@kci-world.com).

Velan 1950-2020
Quality that lasts.
It is well worth mentioning that anything can be controlled if you just have the right valve for it. Engineers need to find the shortest possible way to solve a problem and decide on making it cost-effective. Hence, the solution might be selecting a control valve for the project.

A Complete Guide - Control Valve Selection

What is a Control Valve?
A control valve is used to control the flow of the fluid. It works on the principle of varying the flow passage size as per the direction received from the controller signal. Valves are majorly used in the process plants. They are known to play a huge role in reducing the financial cost. However, it also increases the process plant’s profitability and, at the same time, being energy conservative.

Understanding the Control Valve
The entire system has a control loop. This loop consists of a controller, sensing element, and a final control element. Thus, an effective control valve should accurately respond to any signals across its operating range, respond with accurate speed, and have a wide range of flows.

The Advantages:
Control valves are cost-effective and has a multi-way design flexibility to reduce the number of valves required. It should be lightweight, durable, and give rapid and effective functioning. Moreover, it is compact to facilitate minimum space usage.

Parameters to Select a Proper Control Valve
1. Design Parameters and Flow Coefficient
One shall study the detailed account of the fluid and system properties. The identification process is an important step before the selection of an appropriate control valve for the project. So, one must understand the relationship between the valve and its requirements. As the valve is power-operated, constant monitoring of its power loss is necessary. The engineer must be alert and responsive to the valve’s reaction.

2. Noise
Extra noise earns a negative point for the valve. Control valves may produce noise depending on the cavitation, aerodynamic effects, and mechanical vibrations. The noise generated is generally below 100dB. However, aerodynamic effects leading to noise can cross 100dB. Thus one should keep in mind the noise restrictions, and the information on our website will help in a better understanding.

3. Flow characteristic Selection
Flow characteristic has an impact on the selection. This gets divided in equal percentages with a quick opening. When the constant flow is needed, a quick opening is required for frequent on-off service. An equal percentage is required in cases where the pressure drop across the valve is expected to remain constant.

4. Materials of construction
Materials are an important factor, along with preferences and costs. Using nickel or cobalt-chromium alloys can help reduce erosion. Valves also require insulation, so that they can withstand high pressure in certain cases.

5. Maintenance
Maintenance is an important point, as its cost can add to the project budget. A poorly suited valve may require more maintenance than the perfect match. While considering a control valve for a project, one should consider several parameters. The Dead time lag, gain, and time constant in the control valve form the base to determine the control valve. Moreover, these factors help to differentiate and check the worth of the valve. It is always better to make an informed choice and thus head into our website for help.

ABOUT THE AUTHOR
Sohel Shaikh loves to write about control valves & Control Valve Manufacturers in India. He has been in the industry for five years and he has contributed to many guides & articles about the valve industry.
Gas Pipe Upgrade Made Easy

Spire Energy is a public utility serving more than 1.7 million customers in Alabama, Mississippi and Missouri, making them the fifth largest publicly traded natural gas company in the U.S. A recent upgrade project in the St Louis, MO Metro area required connecting two different pressurized polyethylene (PE) mains.

The utility did not want to perform this operation by squeezing the PE pipe because they did not want to put excessive strain on the pipe and needed a 100% stop off in order to complete the work in a safe environment. “Because we had no isolation valves available in this area, we decided to go with Shur Stop, a Mueller brand,” said Ray Hill, Drill and Stop Supervisor for Spire Energy.

While relatively new for flow control in PE gas distribution systems, line stopping serves as a control or temporary valve. A line stopping system is inserted into the pipe using a hot tap connection. To stop the flow of gas in the pipe, the line stopper and its housing is attached to an entry valve and mechanically lowered into the pipe. After the procedure is completed, the line stopper is removed, and an integral plug is used to seal the hot tap connection.

The existing low pressure 8” PE main in St. Louis was operating at 25 psi and needed to be connected to a new high pressure 8” main which was operating at 60 psi. The problem was that they could not increase the pressure on all of the existing low-pressure mains at one time, so they had to use the Shur Stop to tie in only a portion of the low pressure main. This meant Spire had to cut behind the stopper on the high pressure line and 90 over to the existing low-pressure section of main that they wanted to increase pressure on. The other portion of low-pressure main was capped and continued to operate at 25 psi.

“From the time you start drilling to actually achieving a 100% stop off, Shur Stop is faster than squeezing and absolutely more reliable,” concluded Hill.

ABOUT THE AUTHOR

Bryan J. Kortte, Marketing/Product Manager at Mueller Gas. Kortte is a seasoned professional with over 25 years experience working with natural gas distribution utilities. His expertise in product development, management and training is consistently featured at industry events and in technical presentations.
U.S. Valve Industry will Suffer Longer than China and Europe due to COVID

As of late August the U.S. economy has recovered from a low in April of 51% of its 2019 high to 78% now. However, the coronavirus continues to hamper the recovery. It is likely that there will not be much recovery in the next few months.

By Robert McIlvaine, President & Founder - The McIlvaine Company

China’s economy, on the other hand, as shown by multiple mid-year indicators, has ridden out its downturn due to COVID-19 strains and bounced back to growth in the second quarter. Economists believe that the country’s V-shaped recovery is only getting started.

In the last quarter China’s gross domestic product expanded by 3.2% year on year, reversing a 6.8% contraction in the previous quarter.

South Korea’s economy is expected to shrink minus 0.8% this year according to the Organization for Economic Cooperation and Development. This is a change from the previous forecast of minus 1.2% and propelling the country to No. 1 in terms of growth rate.

Asia’s fourth-largest economy became the first among OECD’s 37 member nations to have its growth forecast adjusted upward from the international organization's earlier projections announced in June, a biannual economic report by OECD showed.

The report also portrayed the dire situation that the global economy faces under the novel coronavirus, with all member nations posting negative growth forecasts. Turkey and Japan ranked No. 2 and No. 3 with minus 4.8% and minus 6%, respectively. Germany ranked No. 2 and No. 3 with minus 4.8% and minus 6%, respectively. Germany and most deaths from COVID.

The U.S. has invested heavily to insure access to vaccines as soon as they are available. On the other hand a number of Americans may refuse to be vaccinated. This will make it difficult to achieve herd immunity.

Goldman Sachs made projections in early August about the U.S. economy going forward. They predict a continuing growth in GDP from a low of a negative 16% in May. However, if there are lockdowns in the late summer and early fall economic activity will flatten or fall.

The Goldman Sachs forecast treats the vaccine development as the major variable. However, there is a good chance that most people will not be effectively vaccinated by the end of 2021.

U.S. crude oil production from seven major shale formations is expected to decline by about 56,000 bbl/d in August to about 749 million bbl/d, the lowest in the last two years, the U.S. Energy Information Administration (EIA) said in a monthly forecast on July 13th.

The biggest decline is forecast for the Eagle Ford, where output is expected to slide by about 23,000 bbl/d to 1.1 million bbl/d, the lowest level since August 2017.

In the Permian Basin of Texas and New Mexico, production is expected to fall for the fifth straight month, easing by about 13,000 bbl/d to 4.15 million bbl/d, the lowest since March 2019, the data showed.

Output from the Bakken in North Dakota and Montana is the only region forecast to see increases. Production there plunged by more than many other parts of the country earlier this year as oil prices collapsed after the coronavirus pandemic eroded global fuel demand.

Now that prices have recovered from record lows, some of that Bakken output is expected to return.

Total worldwide valve purchases will be down from USD $65 billion in 2019 to less than USD $61 billion in 2020. Twenty five percent of the reduction will be in the U.S. where valve purchases are likely to be USD $1 billion lower than in 2019.

China is likely to register a growth in purchases in 2021 to USD $13.5 billion. China is already the number one valve purchaser. Its lead over the U.S. will grow considerably in 2020 and it will retain that leadership for the foreseeable future.

The comparative performance of various countries will be to some extent impacted by vaccine availability. Russia has announced that it has a vaccine. There are many questions as to whether it is safe and effective. The U.S. has spent many billions of dollars to be first in line for available vaccines. China has vaccines in development and could end up first over the finish line.

The pandemic is also having an impact on imports. Tariffs have already impacted imports. However the forecasts for valve use are based on domestic production plus imports less exports. So long as the total of production plus imports is the same, there is no impact on total valve purchases.

REFERENCE
1. Industrial Valves: World Markets published by the McIlvaine Company

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

http://www.mcilvainecompany.com
The harmful effects are friction, seizing and gross damage. It commonly occurs in fasteners made from stainless steel, aluminum, and titanium. Stainless steel fasteners are particularly susceptible to thread galling, although it also occurs in aluminum and titanium that self-generate an oxide surface film.

The fastener galling is that galled nuts and bolts may pass all required inspections (threads, material, mechanical, etc.), yet they still fail to function together. During the tightening of the fastener, pressure builds between the contacting thread surfaces and breaks down the protective oxide coatings. With the absence of the oxide coating, the metal high points of the threads are exposed to one another, which increases friction. The combination of these two events can generate enough heat to fuse and seize the nut and bolt together.

Minor galling may cause only slight damage to the thread surface and the installer may still be able to remove the fastener. However, in severe cases galling can completely weld the nut and bolt together and prevent removal of the fastener.

If the tightening process is continued once galling begins, the fastener may be twisted off or have its threads stripped. Unfortunately, even with an understanding of the mechanism of galling, little is known on how to successfully control it.

Industry has established code ASTM G196-08, a test method for measurement of galling resistance of material pairs. Galling value established after a series of tests at different loads:

- Other test methods generate a galling threshold stress;
- G50 value represents the load at which galling has a 50% likelihood of occurring in the given conditions;
- This is more representative of real-world performance and provide a more consistent measure.

Galling can be minimized with the following measures (as specified by Fastenal Inc.):

- Use coarse threads with a 2A-2B fit instead of fine threads. Coarse threads have a larger thread allowance and are more tolerant to abuse during handling.
- Heat contributes significantly to thread galling. Fastener installation alone generates friction and therefore heat. An increase in speed during installation increases the friction (heat) between the threads. Lowering the wrench speed during installation and removal can help avoid galling.
- Avoid prevailing torque locknuts. Prevailing torque locknuts function by adding resistance to the threads, which in turn creates friction and heat. If a prevailing torque locknut must be used, ensure a minimal amount of threads are protruding beyond the nut. The most common stainless steel galling issue occurs with nylon insert locknuts. The added friction that the nylon insert produces between the mating threads increases the potential for galling significantly. As a precaution, a wax coating can be added to stainless steel nylon insert locknuts to reduce the friction. Although wax is a good lubricant it is affected by heat and can dissipate over time.
- Mating parts of the same alloy have a greater tendency to gall than those of dissimilar alloys. However, not all combinations of stainless steel act the same. For instance, a 400 series stainless steel nut can work well on a 316 series bolt, but this will cause a reduction in the overall corrosion resistance of the assembly.
- A smoother surface texture will lead to less frictional resistance. Rolled threads usually offer smoother surfaces than cut threads. As previously mentioned, friction increases the possibility of galling.
- Proper installation torque. If the fastener is overtightened, the threads can begin to yield which will induce friction between the mating surfaces.

Summary:
1. Resistance to galling is an important property for product designers/engineers.
2. ASTM G1 96-08 is a more relevant test of galling properties.
3. Super Duplex performs better than other alloys that were tested.
4. Ferrulium 259-SD50 performs better than Alloy 32765.
5. Increase in galling resistance is roughly comparable with increased strength.
6. Improved understanding of the mechanism can aid future development.

COURTESY:
- Langley Alloys, UK, charts and images.
- Review of the Minor of the Galling Characteristics of Stainless Steels by Committee of Stainless Steel Producers, Washington, DC, USA
- Fastenal Inc.
- Industry codes and practice author participates in.
- Numerous industry colleagues and experts known to author.

### 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 MACE representing Canada.
Uniting the Valve Community at Valve World Americas Expo & Conference 2021

June 22nd – 23rd, 2021 at the George R. Brown Convention Center, Houston, TX

Be part of the sixth biennial Valve World Americas Expo & Conference to take place on June 22nd and 23rd, 2021 at the George R. Brown Convention Center in Houston, TX. The dynamic and interactive event will give attendees the opportunity to network with the leading minds driving ahead innovation and excellence in the fields of valve manufacture, use and maintenance. Featuring an exhibition and a technical conference, the event will have something to offer for everyone, including manufacturers, service providers, EPCs and end users.

During the exhibition, manufacturers, suppliers and distributors will have the opportunity to network with the leading minds driving ahead innovation and excellence in the fields of valve manufacture, use and maintenance. Featuring an exhibition and a technical conference, the event will have something to offer for everyone, including manufacturers, service providers, EPCs and end users.

The Valve World Americas team is thrilled to announce the appointment of Dan DeVine, Valve Technology Engineer for Corteva Agriscience through Midland Engineering, Ltd. as Chairman for the 2021 Valve World Americas Conference. Dan has been heavily involved with the event since the beginning and his knowledge, expertise and immense experience in the industry will be a great asset in assisting to put together an exciting and informative conference program this year.

Share Your Knowledge

The Valve World Americas team and Chairman encourage presentations to be made at the event on a wide variety of topics related to valves, actuators and the flow control industry. Workshops will be centered around one theme or topic with speakers giving presentations related to that theme, sharing their knowledge and expertise with conference attendees. Following the presentations, attendees will be invited to ask questions and audience interaction is always encouraged to help spark debate, discussions and the free exchange of ideas and experiences, which are all integral components of the conference experience.

If you would like to make a presentation during the conference, please submit a 300-500 word abstract outlining the material you would like to cover to Sarah Bradley (s.bradley@kci-world.com) and Catarina Muia (c.muia@kci-world.com) by December 1st, 2021 to be reviewed by the Chairman and Steering Committee.

I am honored and excited to be the Chairman of Valve World Americas Expo & Conference 2021, and look forward to another fantastic event, where attendees can enjoy the networking, camaraderie, and outstanding technical presentations that accompany Valve World. This is a wonderful event for the valve industry, showcasing new inventions, practical solutions, productivity enhancements, and potential cost savings opportunities.

The first time I attended the Valve World Americas event was in 2013. It was introduced to the complexity of this technology through regulatory compliance for Leak Detection and Repair (LDAR) of fugitive emissions. Getting involved and participating in these conferences has been a very rewarding experience.

Witnessing the transformation of packing products and changing stem sealing performance, seeing the creation of new testing standards, along with other improvements, which were often at the forefront of discussions in previous years at Valve World, are some of my favorite career highlights.

Certainly, there are other equally important aspects too: seat sealing capabilities, operability, long term reliability and integrity, availability of cost-effective valves to meet a variety of pressure-temperature conditions, to name a few, that are vital to successful production. I cannot think of a better place to learn for the first time or to continue increasing your technical depth than Valve World.

Either through attending a multitude of technical presentations, or meeting with the valve and packing manufacturers, or companies that provide supply chain, automation, repair and reconditioning, drill and tap services, and various other vendors.

This event has something to offer to everyone, no matter what industry you work in, including utilities, oil and gas, pharmaceutical, commodity and specialty chemicals, and agriculture. I am confident that all attendees will discover areas of improvement and learn about new innovations that are beneficial.

Whether it is savings on valve costs, improving delivery times, proper valve maintenance, or partnering with other manufacturers and end users, I think you will find your attendance will be time well spent, personally satisfying, and can bring profitability to your company or business.

I look forward to seeing everyone there.

Regards,

Dan DeVine
Valve Technology Engineer
Corteva Agriscience through Midland Engineering, Ltd.
By Brittani Schroeder, Angelica Pajkovic and Catarina Muia

After almost two decades in the oil and gas industry, Jay Humphrey has gained valuable expertise and knowledge working with various vendors, clients, and engineering components.

Valve World Americas recently sat down with Jay Humphrey to discuss his experience working as an Expeditor, his interaction with various applications and materials, and his advice for new procurement and materials management professionals in the industrial sectors.

Managing Expectations

An Interview with Jay Humphrey – Senior Expeditor, S&B Engineers and Constructors

When Humphrey began his academic career, he had no idea he would end up working for an engineering company. “I intended to become a lawyer, but after getting married and hearing my friends’ experiences from law school, I decided it was not for me. So, I decided to pursue other avenues,” he said.

After graduating from Lamar University in Beaumont, Texas, with a Bachelor of Science, Humphrey spent two and a half years as a logistics professional in Iraq. His primary role was materials management and supply chain logistics for the military efforts taking place there. Upon returning to the United States, he began a position in materials management for BP and remained with the company for roughly six years.

“I eventually became the System Administrator for BP’s inventory tracking software, and we developed the software that makes it easier to keep track of all the inventory the company had acquired. The goal was to streamline the purchasing process, and eliminate accidental ordering duplications or loss of materials,” explained Humphrey. Following BP, Humphrey became the Materials Manager at Fluor, where he worked on a nuclear reactor construction site for a year.

A Senior Expeditor’s Role

Humphrey is currently a Senior Expeditor at S&B Engineers and Constructors. In his role, he travels to various vendor locations to monitor the progress of the fabrication and assembly of components for the company’s various projects. While the type of component being fabricated varies from project to project, and typically has a wide range of applications, many are primarily used in the construction of drilling and fracking sites for major oil companies. “For the first time in my career, I have a position where I am involved in the fabrication process. Before this role, the materials were usually already fabricated, and I was involved in the moving and cataloging processes,” Humphrey related. “Now, I am actually going in and visiting our vendors to make sure the fabrication process is going smoothly and everything is running on schedule for our projects in the oil and gas industry.”

Working on a Schedule

When Humphrey visits a vendor, his day typically starts off in a brief meeting with the Contract Administrator, or someone in a similar role. Here, he and the Contract Administrator will discuss the fabrication schedule in detail. Topics such as, where in the production process the facility is situated; whether the items are on track to be completed on time; and are there any forecasted delays or challenges that the facility may need to prepare for, are generally discussed.

“After this brief meeting, I will go out to the shop to make sure projects are at the stage the vendors say they are, and that steps are being done in the proper order. If the shop is having any issues, the pre-meeting is the perfect time to bring it up,” said Humphrey. “As they know I am going to inspect the shop, there is no use in trying to hide any issues they may be experiencing. It is much better to voice the issue and let me know what they are doing to improve the schedule.” After the walkthrough has been completed, Humphrey will share his findings with the Houston office, and the team will come up with a plan and prioritize the next steps.

If a delay occurs, Humphrey relays all relevant information to the team of engineers in the company’s Houston office. These engineers will then talk to sub suppliers to see if there is anything they can do in order to apply pressure or use...
leverage to get what they need prioritized, to ensure deadline dates are met. “Delays happen on projects roughly 50% of the time. Anything that does not meet our specifications will delay our schedule, because we will need to go back to the supplier and get the right item for our project,” said Humphrey. “The supplier agrees to the specifications and the delivery date, and knows that our construction schedule is dependent upon their ability to provide the items to us on time. So the specs and schedule are not a surprise to anyone.”

“Exotic Alloys

IN STOCK!

scheduled maintenance and shutdowns happen. Expenses with valves and exotic alloys

Prior to accepting his current role, Humphrey gained extensive experience working with valves. As an employee situated on the Eagle Ford Shale, Humphrey was responsible for tracking various valves, including globe valves and pressure valves, to ensure materials were no longer re-quired, “explained Humphrey. After the non-essential valves were left behind, Humphrey and his co-workers would collect them, assess their wear and tear and then sell them back to the original supplier. As some of these valves had never been used they could be re-sold to the supplier. Others would be refurbished for future use or sold as scrap.

“The communication I have with our vendors, the ability to convey our needs and expectations, and getting feedback from them, is my favorite part of the job. I enjoy traveling to meet our vendors and being able to work with them to come up with solutions to challenges we encounter.”

Humphrey admitted that he most enjoys the communication aspect of his work. “The communication I have with our vendors, the ability to convey our needs and expectations, and getting feedback from them, is my favorite part of the job,” he said. “I enjoy travelling to meet our vendors and being able to work with them to come up with solutions to challenges we encounter.”

In a world where things often happen that are completely beyond our control, it is no surprise to Humphrey when he is called in to address an unexpected challenge. “Usually, if I show up at a vendor’s facility, it is because something has gone wrong, or the schedule has been thrown off in some way, and I am there to fix it and get the schedule back on track,” Humphrey explained. “Situations like flooding in the shop, or suppliers providing materials that are not up to spec are often unpreventable and it is essential that rather than becoming discouraged, we find a solution to get our processes running smoothly again.”

In an effort to ensure that the solution process is carried out effectively and efficiently, it is therefore important to build a strong rapport, and working relationship, with vendors and suppliers. The ability to give and receive constructive feedback can make a large difference with how quickly a delayed project can begin to move forward again.

Experience With Valves and Exotic Alloys

 platform forms at the correct time and with the correct specs for the welders, pipelayers, and other engineering team members. “Platforms are not known for having a lot of space, so you need to have the materials there and the welders or pipelayers there at the correct times. You do not want engineers waiting for materials, and you do not want materials sitting around waiting for the proper personnel to arrive. Making sure that happens means being on top of work schedules,” relayed Humphrey. “Working with special alloys, such as Inconel, can also be challenging as they have specific requirements,” he continued. Due to its toughness, it is not uncommon for shaping tools to be broken or deformed when attempting to shape Inconel which can result in imperfect shapes. “This means that special attention needs to be paid when working with these types of special alloys.”

Advice for Materials Managers

After years of working in numerous roles in the industrial sector, Humphrey has a lot of advice to share with new engineers entering the industrial sector. “There are a lot of postgraduate courses for materials management and supply chain logistics. I would recommend those courses, because any kind of education you can get, you can get further your knowledge of supply chain logistics and materials management and procurement will benefit not only yourself, but all those you are working with,” said Humphrey. “These courses are a great way of doing your due diligence to make sure you get the best product at the best price for your customers.”

“We need to remember that things are going to happen—good and bad. They are going to be out of your control. You want to get your materials to the field and to your clients on time, but sometimes it is not possible. So just remember to stay on top of the schedule and manage expectations, so that plans can be made to work around any kind of delay in delivery.”

ABOUT S&B ENGINEERS & CONSTRUCTORS

Founded in 1967 on the principles of honesty, integrity and safety, S & B is one of the leading full EPC service firm in the U.S.A. with a primary focus on NGL fractionation, refining, petrochemicals & polymers and export terminals.

After more than fifty years, S & B remains a privately-held, family-owned company. The company’s resources and experience allow it to successfully execute projects of any size while still maintaining small company culture and flexibility.

In 1967, S & B was born when two friends agreed to invest their life-savings and start their own engineering firm. Their guiding principle was simple and straightforward—“Let’s never do anything we’d be ashamed of.”

Since its founding, the company has grown from a two-man operation to one of the largest EPC firms in the U.S.A., S & B provides full in-house engineering, procurement direct hire.
In Part 2, we take you further along in making your MRP system and business processes support lean processes on the factory floor. CAUTION: this article provides some guidance for key part management, but there is a lot of material and information available. Not everyone will agree with some of the material presented here, and not all of it will apply to every situation. The best way to take advantage of the tips and tricks provided in these two articles is to experiment with a single flow line or sample of parts and work out the kinks.

PFEP – Plan For Every Part

The starting point is to have a plan for every part. What is it? How many do I use in a given time period? How much effort must I expend to manage it? What is the storage unit size? These are but a few of the myriad factors to consider. Let us start at the beginning by asking some key questions:

### Do I Need to Manage This Part?

Many firms make and stock subassemblies, but as companies implement lean processes, the need to maintain this practice is starting to disappear. With process improvement or changes to flow, it may be possible to transform directly from components to a finished good, and the system should reflect that change. The way to go about it depends on the features of your software and the sophistication of your users, but here are two options for moving away from stocking subassemblies (Table 1).

**“Phantom”** items, and their BOMs, are not supported by all MRP systems. This is a special item category for which MRP will skip, or blow through, the item to plan the components. Some systems will check for inventory of the phantom and consume it before exploiting the components. Both these options mean fewer work orders and fewer transactions to process.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Trade-offs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fewer production orders</td>
<td>• Reduced BOM records</td>
</tr>
<tr>
<td>• Fewer system transactions</td>
<td>• Reduced BO records</td>
</tr>
<tr>
<td>• Visible on indented BOM</td>
<td>• More BOM maintenance if highly common part</td>
</tr>
</tbody>
</table>

The benefit of the phantom item option is in terms of bill of material (BOM) maintenance. Let us look at the case of a simple replacement of a fastener in a subassembly. If the subassembly is common to many finished products, then a swap only needs to be made to the BOM of the phantom item for it to be reflected in all the next higher assemblies. If the item is eliminated entirely (option 2), then the faster change needs to be replicated in all affected higher-level goods.

### Do I Need to Manage This In MRP?

This question brings us back to the A-B-C’s. Parts can be classified using the Pareto Principle based on item cost, annual quantity usage, or annual dollar value usage. At the end of the day, we want to focus our management efforts on the “A” items, with less effort on “B” and even less on “C” items. Most firms would choose to use their MRP system to leverage its most advanced planning features for the “A’s. As we move to the lower classes, one may choose simpler tools and less frequent intervention. The choice really depends on the daily volume and level of lean maturity. We can still mimic lean for all these cases, but it is simpler overall, in terms of transactions and reporting systems, for items not using full MRP logic (Table 2).

### Do I Need This Part in the BOM?

Let us look at class “C” and “D” items. If these items are low value and high volume, many companies may consider them to be consumables, removing them from the BOM and treating them as a shop supply. Removing items from the BOM means fewer MRP messages to manage, but it also necessitates keeping a sharp eye on inventory. In addition, consumables, or expense items, will no longer appear in the finished item cost. Most firms will build this cost into an overhead rate on labor, material, or process time.

Examples of parts considered expense items can be fasteners, adhesives, and packaging. The real benefit is in managing these items entirely with a simple Kanban, or 2-bin, approach with minimal ERP system recording. These inventory management systems are well described elsewhere and won’t be covered in detail in this article.

### Table 1.

<table>
<thead>
<tr>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>“As-is”</td>
<td>Eliminate item</td>
</tr>
<tr>
<td>Stocked item</td>
<td>Phantom item</td>
</tr>
</tbody>
</table>

### Table 2.

<table>
<thead>
<tr>
<th>Item Parameters and Data Elements for Your PFEP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy</strong></td>
</tr>
<tr>
<td>Lot-for-lot</td>
</tr>
<tr>
<td>Period of supply or ROQ</td>
</tr>
<tr>
<td>Order frequency or Intervention interval</td>
</tr>
</tbody>
</table>

### Example of a Class ‘B’ Item

Let’s consider an item with regular consumption of 1,000 units per week. After consulting with the supplier, we learn the following – the minimum order is 250 pieces, it packs 50 pieces per box, and then place 10 boxes into a master pack. They also place 10 master packs on a pallet due to the weight. This means a single pallet contains 5,000 units.

Based on internal policy, for an MRP part we can set the period-of-supply to be one week. Even though the commercial minimum order is 250, we might want to set the order quantity to 500, since this represents a master pack from the supplier. Doing so means the supplier and the transport company are not dealing with multiple small boxes. Since our typical order would be for 1,000, or two master packs, the supplier...
Procurement and Blanket Orders

A best practice approach is to simply set up a blanket PO with a supplier and send signals to pull product into the factory when it is needed. This can be done no matter what planning mechanisms are used for the PPEP. The supplier is provided forecast data to manage their production and supply chain, and agreements are made to achieve a set replenishment time when pull signals are broadcast. Ideally, the supplier agrees to maintain some finished goods (buffer) to ensure a short replenishment time when the “withdrawal” Kanban is sent. Cards or labels can be placed with the container or packaging and simply turned in to the Procurement team as a requisition. For parts planned outside the MRP system, as manual Kanban, they are then used to execute production. This can be done in a few different ways:

A. Release the work orders according to the MRP reports but hold the paperwork back and do not issue the parts until there is a pull signal from the shop floor. The order is released on time, but if production is not ready to begin work, we don’t push the material needlessly into a job queue for it just to sit. This way, you do not signal a job start, or material consumption, until it really occurs.

B. Release the orders when the floor is ready to produce. Use a Kanban style card or have someone from the shop floor tell the planner when they are ready for another production order to be released in the production control system.

C. Don’t use orders to produce. Go ahead and make the product using Kanban cards. When the item(s) is finished, open an order, back flush the material, and close the order. This is sometimes called orderless completion. Some ERP systems offer this feature in the Production Control module. The production order is opened, released, and closed in one step, while also backflushing labor and material. This is a terrific time saver.

Update ERP to Reflect Improvements

As lean is deployed, MRP settings should be adjusted. Reduce the lead times as you reduce cycle time. Remove safety stock or scrap factors as you improve yields. Change rounding values and fixed lot sizes as you practice setup reduction and reduce batch sizes or box sizes. In this case, lean and MRP play very well together.

Table 3.

<table>
<thead>
<tr>
<th>System - MRP</th>
<th>System - ROP/EOQ</th>
<th>Manual or System Kanban</th>
</tr>
</thead>
<tbody>
<tr>
<td>High – order reports, exception messages, detailed consumption transaction processing</td>
<td>Medium – order reports, detailed consumption transaction processing</td>
<td>Low – report only full container consumption at supermarket or point-of-use</td>
</tr>
<tr>
<td>System planning horizon</td>
<td>Looks at supply and demand over full MRP horizon</td>
<td>Some systems look at projected available balance to first ROP only; otherwise none</td>
</tr>
<tr>
<td>System intervention</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>Order quantities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum, maximum, multiple</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Align consumption with supplier minimum order and container sizes</td>
<td>Align consumption with supplier minimum order and container sizes</td>
<td>Align consumption with supplier minimum order and container sizes</td>
</tr>
<tr>
<td>Lead time</td>
<td>Key variable</td>
<td>Key variable</td>
</tr>
<tr>
<td>Unit cost, interest rate, service level, demand variation</td>
<td>Needed for system calculation of ROP and EOQ</td>
<td>Needed for system calculation of ROP and EOQ</td>
</tr>
<tr>
<td>Supermarket and point-of-sale</td>
<td>Applicable</td>
<td>Applicable</td>
</tr>
</tbody>
</table>

Table 3.
Bill Myers spearheads an electrical maintenance program that adds safety and reliability to the more than 2,000 valves, pumps, and other pieces of facility equipment at AstraZeneca’s two-building 550,000-square-foot pharmaceutical manufacturing plant in West Chester, Ohio.

Myers’ electrical career began in 1998 when he worked as an apprentice installing wall receptacles at a small elementary-school project. Throughout the past two decades, his career has evolved into developing critical strategies that help identify issues with technical equipment and planning the downtime needed for repair.

Along with a team of five technicians, he uses technologies such as infrared thermography, precision alignment, ultrasound, and vibration analysis to keep the facilities thousands of assets running effectively and reliably.

**Electrical Maintenance Program Prevents Critical Equipment Failures**

About 13 years ago, there was an incident in which a small mistake with an electrical connection turned into a big issue. In hindsight, Myers believes it could have been prevented with a proper strategy in place. Knowing this, he did something about it by creating the company’s Electrical Maintenance Program.

“In this line of work, mistakes are dangerous,” Myers said. “You must learn from them, and quickly. The incident that occurred was a bad connection, but we learned that we could have found it and prevented it if we had a well-organized, efficient program in place.”

Myers found inspiration from a Winston Churchill quote. “All men make mistakes, but only wise men learn from their mistakes.”

The 45-year-old Myers entered the electrical field after serving in the Marine Corps. “A high school friend was working as an electrician at a local union,” he said. “I was very interested in the electrical field and in learning more about how electricity works. After an apprenticeship, I was inspired to learn more about reliability when I saw several electrical issues causing unnecessary downtime.”

Now, with more than two decades of experience, he can see the difference a focus on reliability can make for a manufacturing plant.

“I like the fact that I work with many different systems and equipment at our facility,” he said. “Each has its own unique characteristics. This helps to keep the work new and interesting.”

He began creating and implementing the Electrical Maintenance Program that includes data collection and visual and infrared inspection in connection with all valves, pumps and critical equipment at the plant.

“This program has been instrumental in identifying electrical issues that would have impacted the facility,” Myers explained. “Early detection provides the time needed to make repairs well in advance of a breakdown.”

The criticality of the products produced at this plant make reliability even more crucial. The main product produced at this AstraZeneca facility is used to treat patients with Type 2 Diabetes.

“Within the different elements, there are many, many details that must be considered to make a safe electrical program,” Myers said.

Developing the program took a few years from start to finish and was fully in place by 2013. “It has evolved and now we use it very effectively,” he said. “We now dictate to the machine instead of the machine dictating to us.”

Making regular voltage, amperage, and resistance measurements and then entering the data into the Computerized Maintenance Management System (CMMS) is the core of the program, which also includes visual inspections and thermal imaging. The program was applied to all critical electrical distribu-
for Highly-Charged Facility Equipment

Specialist, Facilities Engineering for AstraZeneca

Myers focuses on a team strategy, utilizing skilled people with individual talents and experience. His team of five includes specialists in electrical, mechanical, HVAC, and boiler operation, along with a lead technician. “Most issues require some combination of people and their skills to quickly solve each problem the first time,” he said.

He has five tips for producing a program with effective reliability:
1. Collect data.
2. Lubricate properly.
3. Keep your equipment clean.
4. Train employees.
5. Make a commitment to your programs, and stick with it.

He offers sound advice to other end users. “Collect the data and implement routine inspections,” he advised. “Without the data, the health of the equipment cannot be accurately assessed. Without routine inspections, you will never know when a problem may be emerging—until it is too late.”

Maintenance Best Practices and Equipment Reliability Tips

Striving to be proactive and predictive is at the heart of Myers’ overall maintenance and reliability philosophy. He uses the Five Whys technique to determine failure, data collection, CMMS use, and when to use predictive maintenance technologies. “It is important to ask as many ‘Whys’ as possible until you get to the root of the problem with your critical valves, pumps, and other factory equipment,” he emphasized.

Myers also serves on the Electrical Improvement Committee. The goal of the committee is to ensure that procedures are in place to maintain electrical safety, such as ensuring an arc-flash analysis is completed and posted at the equipment. He works with the company’s Electrical Steering Committee.

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Randall “Randy” Verdin

AKA: RV, AKA: Boutte (Boo-T) – February 23rd, 1954 - August 4th, 2020

Randy Verdin, a man that never met a stranger, was born in Indiana, PA; moved to Boutte, LA as a child and was raised on the bayou. Attended LSU and then directly into the world of “sales”. His first valve opportunity came in 1978 when hired by Allied Valve in Port Allen, LA calling on DOW Chemical. He had a short stint with Valve Systems & Controls and then found his calling with Industrial Concepts, Inc. (ICI) in ’83. With ICI he was instrumental in promoting “new” metal seated and bel lows valve technology into the Refining and Chemical markets. We know those products today as Vanessa and Hatters ley-Heaton Bellows. With his success he was named sales manager and built an un-paralleled sales organization around him that then established those prod ucts from coast to coast.

In ’83, Randy felt it was time to expand his horizons and open his own company, Associated Valve. With similar products he was quite successful and sold the company four years later. After a number of years in the valve business he decided it was time for a new venture and created yet another company completely out of the valve industry. “Walls of Italy”, Providing the art of Venetian plaster and specialty stone to residential and commercial customers. Pursuing this venture for over a decade, the valve community was still in his heart and calling him back for another appearance. He was hired by Desselle-Maggard Corp. (DMC) in 2012 to again launch a metal seated butterfly valve manufactured by Neway and there was no one better for this role. With quick success he was asked to join Neway, then named VP of Business Development in 2014. Randy’s desire to do the right thing, his honesty, trustworthiness, professionalism, and infectious personality allowed him and his business development team to obtain over 50 approvals for Neway products at multiple end user accounts. This took countless days/ weeks of travel in the U.S. & Canada, attending all API meetings and Valve World Conferences. A statement he made so many times, “I need to be face to face with the customer.”

“He was a wonderful human being, full of faith, honesty, humility and passion. I knew when Randy explained his valves and the production process that he was being open and honest. If he did not know the answer, he would always follow-up when he got the answer. I could always trust what he said. I am truly going to miss our open discussions. He definitely made a difference.”

— Ken Felder, Valero

Randall Verdin was a lover of life, family, travel, food and golf, but most of all a lover of God. The industry has lost a class act, a friend to many and he will truly be missed. Rest in peace our friend. God Speed.

“I have many fond memories of Randy in the short time that I have known him. However, the most memorable was when he showed up at my office on Halloween dressed as a Blues Brother. His positive attitude, sense of humor and faith in the Lord made it a pleasure to work with him. Randy was not only a work associate, but a friend that will be dearly missed.”

— Claire Dwyer, Fluor

“In 1984 I initially met Randy through the valve business. Randy was a man of character and a true gentleman; thus, it did not take long for our relationship to develop into a close friendship. Although we had numerous fun interactions with regard to valve approvals during his time with Neway, what I mostly remember and will always cherish is Randy’s honesty, professionalism, enthusiasm for life and above all, his faith in God. My wife Amy and I were blessed to have had Randy and Cindy participate in our family life on many occasions. We know that Randy’s life touched many others in a positive way. He will be greatly missed.”

— Roy Bajerczuk – retired ExxonMobil

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“Take one step and you can see further.”

— Randy Verdin