

Velan: Combating Fugitive

Velan is one of the world's leading manufacturers of industrial steel valves, recognized as a standard-bearer in quality and innovation. After more than six decades, Velan's innovative beginnings continue to underlie the company's present-day principles. Valve World Americas had the opportunity to speak with Vahe Najarian, Corporate Manager, Research & Development, about the company's advancements in fugitive emissions technology and continued contributions to the industry at large.

By Kelly McLaughlin & Sarah Bradley

Combating Fugitive Emissions Through Innovation

Having worked at Velan for 20 years, Vahe Najarian has borne witness to the ever-evolving standards surrounding fugitive emissions technology. His own contributions to the landscape are rooted in vast experiences which builds on the work of his predecessors. "There were no standards back then," Najarian says, referring to the time at which he was introduced to the industry. "We had to come up with our own standards — and this is one of the main areas that we have seen change." According to Najarian, a major packing and sealing evolution occurred in the 1970s with the U.S. nuclear industry, during which time shorter packing length and live loading where introduced to the industry and recognized by EPRI (Electrical Power Research Institute). No visible leak was also achieved with the introduction of better packing materials such as graphite. With time, environmental legislation evolved globally, and a new era of invisible leak came about, to which we are all bearing witness today. "This era also marks improved test methods combined with research-and-development driven solutions to refine the gland and gasket systems in an order of magnitude to the point where 100ppm fugitive emissions is possible today. With all these changes, one must wonder, where the technology will evolve next," says Najarian.

Environmental Demand

With society's growing ecological concerns Najarian says, environmental legislation evolved globally, and the topic of fugitive emissions has taken a centre stage, to the point where international standards became an absolute necessity. In this respect, it is significant to recognize the national German TA Luft (Technical Guidelines for Air Pollution Control) as one of the first standards which established the foundation on which both ISO and API fugitive emissions standards evolved, and which are today's dominant valve emissions specifications. "There are historical reasons as to the direction each standard took, but more importantly, it is imperative for decision makers to grasp the intent of each," says Najarian. API 622 for example is a unique packing type testing standard which benchmarks and qualifies fugitive emissions performance and stem-corrosion concerns in test fixtures, as well as packing material testing. API 624 and 641 on the other hand are multi-turn and quarter-turn valve type test standards respectively, based on fixed testing and performance criteria

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This Naphtha Cracker plant located in the Philippines is the home of several of the largest Velan air-operated gate and globe valves ranging from 1" to 24". These valves are designed for either fail-open or fail-close operation which are very critical parts of the process.

of 100ppm methane gas. ISO 15848-1 is also a valve type test standard, it however offers a multitude of performance and testing criteria which needs to be agreed upon between customer and valve manufacturer. This approach provides specification flexibility, but also complexity from a standardization perspective. Finally, ISO 15848-2 is the only standard addressing fugitive emissions production testing requirements from a quality assurance and quality control perspective.

API and ISO Fugitive Emissions Standards

"Velan is committed in participating in standard writing committees," says Najarian. "This insures that our voice is heard whenever new standards are written, and we try to make those standards practical with the intention of serving the industry at large. This also helps us stay ahead of the game in selecting the right innovation R&D strategy, and maintain our brand which is recognized for both the technology and quality that we provide to meet the needs of the customer."

The fact that API valve standards started mandating API fugitive emissions standards has caused a market shift," Najarian explains. He indicates, for example, that European and global engineering firms who write valve specifications make use of API valves. As such, they must also acclimate to API fugitive emissions standards along with their established practice of specifying ISO fugitive emissions standards. This is a challenging dynamic and "that's where we must get the strategy right as we are a global valve company who aims at meeting market demand." Therefore, the majority of Velan commodity valves are dual qualified to both API 624/641 and ISO 15848-1, as well use packing qualified to API 622, which includes the very important stem corrosion test protocol. These valves also meet US-EPA (United States Environmental Protec-

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tion Agency) LDAR (Leak Detection and Repair) requirements, as well as the definition of Low-E valve using Low-E packing found in consent decrees.

Commitment to In-house R&D

The presence of Velan's in-house R&D goes hand-in-hand with the company's ability to offer its unique value proposition and performance optimization. When the company conducts qualification tests, they venture beyond providing a pass or fail. In addition to fugitive emissions performance, Velan conducts a review of valve performance. "To do this," Najarian believes, "it is imperative to possess this skillset in-house, which allows you to determine the reasons behind the results and how you can further optimize." Velan's approach to R&D is threefold; it combines qualified technicians and engineers who possess a thorough understanding of valves, as well as the experience and



Velan recently published two product updates announcing the dual certification for valves that qualified for both API 624 and ISO-15848-1 as well as API 641 and ISO-15848. Both updates are available on velan.com when signed in as MyVelan members.



Velan low emissions advertisement from 1990.

Emissions through Innovation



quired. “We have done some 300 plus tests in the last two years or so. That’s the kind of true development that you need if you want to optimize your product,” adds Najarian.

To maintain high standards, Velan performs its in-house qualifications with reputable third-party witnesses, who are present during the tests and certify these results. As well as validating some of the testing by performing them at third-party independent test laboratories. But that is not all, in-house R&D capabilities also come into play when customers need a solution tailored to a specific application with additional performance criteria. “We begin by establishing standard product qualification levels, and we are able to leverage this foundation and capabilities to address new challenges as they arise. That is something we would not be able to do without a commitment to in house R&D,” he says.

The Velan FE Recipe

When faced with increasingly stringent and diverse requirements, Velan embarked on an extensive qualification program to ensure low emissions performance and compliance across product lines. At the same time, Velan set a goal to achieve fugitive emissions performance without compromising on required valve performance in the

ability to troubleshoot root cause. This expertise is combined with semi-automated testing equipment, which allows the company to conduct many tests in parallel. Finally, its automated software, analyzes the data to provide the company with an efficient way to maximize its work while minimizing resources re-



Alexander Kraus, Lab Technician, performing an API 624 test at one of Velan’s R&D labs located in Granby, Quebec, Canada.

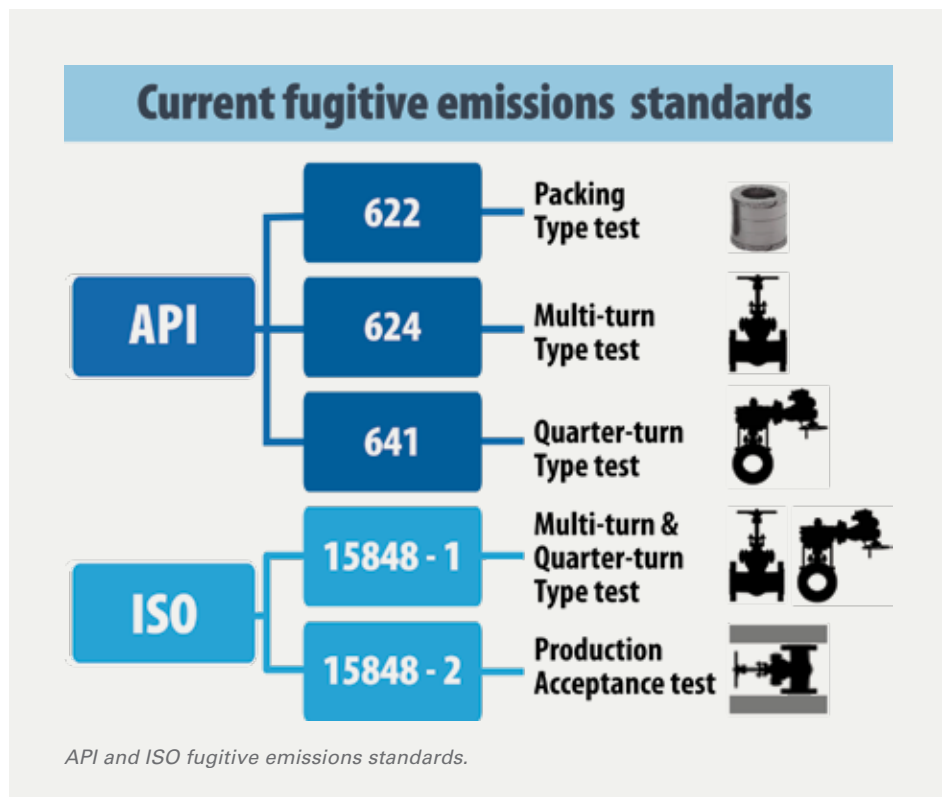
field. Velan does not omit these aspects, Najarian says, noting Velan’s vision of performance optimization: “There is a clear concept of fugitive emission performance that everyone wants, but there is also a counter concept of valve performance, which is not being discussed adequately. It is often the same for all mechanisms, if you want more of something, then you must be willing to give up something else. In the case of valves this could involve after service life (packing retorque margin), higher stem corrosion risk, high operating torque and even valve inoperability. So, there is a need to strike the right balance.” And with their in-house commitment to R&D Velan can achieve that goal by offering you dual certified FE valves with performance optimization, which provides you with low cost of ownership.

Looking to the Future

Having already experienced the recent market impact of API standards, Velan is anticipating further changes when the standards go to review at the five-year mark. The first round of a new standard is naturally accompanied by some

shortfalls and elements upon which to improve, Najarian notes. In the second round, however, these issues will typically be cleared up. This can involve, for example, qualifying larger-size valves and horizontal stem positions. The committees at API are working on this, says Najarian, and Velan is a part of those committees. “I do not expect that fugitive emissions evolution will stop for at least another ten years,” Najarian prospects. Should this be the case, there is time yet for Velan to further contribute to what is a significant global initiative. Though there is still work to be done along our collective route to a greener future, the road is as promising as it is winding — and Velan, for one, will play its part in paving the way.

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API and ISO fugitive emissions standards.



BIOGRAPHY



Vahe Najarian, Eng. is the Corporate Manager of Technology R&D at Velan Inc., Montreal, Quebec, Canada. He earned his Bachelor degree of Mechanical Engineering at McGill University. He has over 20 years of machinery and valve experience including research and development, design, manufacturing, project management, customer service and engineering technical support. This includes 12 years of extensive valve testing, valve qualification, valve and technology development experience in an applied laboratory environment. In recent years his focus has been fugitive emissions technology and strategy. Vahe also participates directly and indirectly in several valve standard writing task force activities at MSS, API and ISO. As well as made both technical and training presentations at numerous valve related conferences.

The views and opinions expressed in this article are those of the profiled company and do not reflect the position of Valve World Americas.