COVER STORY

Quality that lasts. This is what Velan Inc., a leader in steel valve manufacturing, promises its customers. Velan's dedication to progressive innovation has allowed it to create valves that meet the critical industrial needs of the most demanding industries.

By Angelica Pajkovic

VELAN: valves and volatile temperatures the future of cryogenics

Valve World had the pleasure of speaking with Frédéric Blanquet, Sales Manager of Cryogenic Valves, and Dan Velan, Head of Marketing, to discuss the history of the company, its unique operational capabilities, and its promising outlook in terms of research and development. Velan's experience in cryogenic valves positions it to play a key role in LNG, Liquid Hydrogen (LH_2), Liquid Helium (LHe) and other special process applications.

The History of Velan Inc.

Understanding Velan as a company requires a look back into its history. Its founder, A. K. Velan, had an idea for a steam trap in 1949 and founded Velan Engineering in Montreal, Canada. The company quickly expanded into the United Kingdom, France, and several other countries. As the nuclear power industry emerged and thrived through the 1960s and 70s, Velan's product lines and technologies grew to address the industry's needs. Since then, Velan has continued to build an ever-growing portfolio of valves for the power, oil & gas, and process industries.

Today, Velan is made up of five business units supported by manufacturing plants around the world: MRO, Project, Severe Services & Navy, Nuclear & Specialty Applications (Velan France), and Upstream & Midstream Oil & Gas (Velan ABV). Velan has R&D centres in Montreal (Canada), Lyon (France), Lucca (Italy), and Coimbatore (India). Each centre is active in developing innovative technologies to help address complex process challenges or improve performance and reliability; they all play a part in the development efforts for cryogenic and hydrogen applications.

A global effort

Velan France is known for specialized valves and niche technologies. It's connected with a wide variety of customers and is currently working on many prestigious projects, including the ITER Fusion Reactor Project, LHC-CERN, and Fermilab in Chicago. "These particular research cases are decades ahead of what we are seeing in the normal industry," said Velan.

This experience has given the team strong expertise with extremely low temperatures, which they are able to leverage for commercial processes. For example, Velan's cryogenic triple-offset valve leverage technology was developed for the ITER project.

Velan Italy, meanwhile, has worked on expanding its large portfolio of ball valves to accommodate applications in LNG. Velan Montreal has adapted its longstanding research programs in fugitive emissions and materials technologies to advance its product offering for LNG and hydrogen.

All of these efforts combine for a truly global offering, with plants in India, Korea, Portugal, Italy, and Canada all manufacturing products for cryogenics, LNG, and hydrogen. Velan leverages these global capabilities to spread knowledge and business practices across sites and business units and offer customers a broad product offering.

Customer first, always

Before digging deeper into the research, it is important to pause and consider the ways in which Velan as a company benefits its customers and employees alike. What exactly makes Velan unique? Well, it all comes down to product quality. Delivering high-quality and long-lasting products has always been at the forefront of Velan's approach to business. The nuclear market, for example, is one in which quality and reliability are of top importance and where Velan is a trusted partner.

Velan is one of the most innovative manufacturers in the market, and innovation has been a key aspect of Velan's culture from its origins. By creating new and specific products, the company is better able to serve its customer's needs. "We have large project engineering capability that helps us respond to customer inquiries efficiently and accurately when completing a wide variety of different projects. We are able to provide customized solutions and tailor-made products for a wide range of critical applications," stated Velan. Velan's ability to engineer specialized quality products provides customers with

A 48" Torqseal Triple-Offset Valve completes a cryogenic qualification test.

Part of a package of cryogenic side-entry and top-entry ball valves from 6-24", ASME 900 class, temperatures to -196 °C, destined for a project in Asia.

Velan Velflex High Performance Butterfly Valves have been used in LNG receiving terminals for over 20 years.

Velan has adapted most of its extensive gate, globe and check valve product line for cryogenic temperatures.

a unique service for their demanding applications.
Velan is influenced by the market and global changes as much as any business. "The customers are therefore truly the main source of information that Velan turns to when making decisions and plans," asserted Blanquet. "For example, Velan has been working at improving its systems to track products through production, improve automation, and improve forecasting capabilities. Our field engineers travel all around the world to serve nuclear power plants and refineries, gathering information and reporting back."
One aspect that makes Velan stand out next to its competition is its widespread global reach. In Italy, for example, Velan ABV considers ball valves as its core business; in France, its plant supplies butterfly and control valves; while its plants in India, Canada, and Portugal supply gate, globe, and check valves. "Our worldwide manufacturing and distribution capabilities allow us to respond to needs in a manner not seen with other companies," explained Velan. "Not long ago, we had the pleasure of providing specialized valves for an emergency. A customer had several failing triple-offset valves and came to us to find a solution. Our ability to produce specialized valves quickly, was absolutely critical to the success of the customer's project."

Cryogenics & LNG

Cryogenics refers to liquefied natural gas (LNG), helium, hydrogen, oxygen, and other liquid gas used at extremely cold temperatures. The cryogenic market has existed for many years, but the energy transition and new process technologies have emphasized a renewed focus recently.
Velan's product offering includes gate, globe, check, ball, butterfly, and control valves; a portfolio that is amongst the largest available from any manufacturer. Velan has supplied cryogenic valves for applications in chemical processing, LNG, hydrogen, aerospace, and big science. The company's first Velflex cryogenic butterfly valves were installed in LNG tankers almost 50 years ago.
In recent years, Velan has taken steps to expand its product lines, for example, in ball valves. "We have sold cryogenic ball valves for over 40 years, but recent R&D efforts at Velan ABV, the subsection of our company focused on up and midstream sectors, has improved and greatly expanded our capability. Recent projects have included valves to 24" and ASME 900 pressure class," said Velan.
Most of Velan's products are for isolation type applications, whether they be manual or actuated. Velan France, however, has a portfolio of control valves for cryogenic applications that are quite unique. Velan's line of bellows seal control valves are designed for temperatures down to 1.2K (-457.5 F), and have Cvs of 0.001 to 1700, depending on size.
At Velan, its cryogenic valves and all the products it manufactures are produced in-house; this includes purchasing raw material, manufacturing products, assembling them, and testing them. For example, each of Velan's relevant plants have all the testing facilities necessary to verify the efficacy of the products; the valves are dipped into liquid nitrogen at minus 196 degrees Celsius. Once the valve has reached this temperature, gaseous helium is sent through it to measure leakage. For the most part, Velan uses the BS standard, BS6364. The plant can also tailor products specifically to the client's needs, creating valves that will work for them, whether they are butterfly valves for LNG, or cryogenic control globe valves for other liquefied gases like helium and hydrogen.

Advances in hydrogen

"One of the most intriguing new developments at Velan is our work with hydrogen," said Blanquet. "A few years ago, one of our customers started developing hydrogen, and we were able to supply valves to their first hydrogen liquefaction plants in the US. Although it is still quite a new market, hydrogen is becoming more of a focus in our industry." Velan has been successful in this market so far and has been able to adapt its valves and materials to new hydrogen applications.
Liquid Hydrogen (LH_2) is cooled to temperatures of 20K, when liquid helium used in particle accelerators at CERN and some other applications are cooled at 4K, so Velan's experience has proven a good fit. Although hydrogen may still be at the beginning phases, Velan is able to leverage existing proven expertise within other markets regarding designs, materials, and fugitive emissions requirements to meet the new requirements. Additionally, ongoing development projects are being done to further provide quality solutions for hydrogen production, use, storage, and transportation to meet new applications.
Velan's success and reputation for high-quality products provides reassurance for customers in a newly developing energy market.
When asked what is next for hydrogen, Blanquet explained: "At the moment, hydrogen is a big subject, but the question is, how will it go? How big will it be? Will it be as big as oil? Or will it just stay as it is today? Right now no one can answer these questions."
Hydrogen is one way to reduce CO_2 emissions and pollution, so many companies are interested in this possibility because of the positive impact it could have on the environment. "The opportunity to produce valves that can lead to a smaller carbon footprint, is just one of the reasons Velan is excited to be advancing with hydrogen technology," stated Velan. "We cannot predict which technology will take off, but our strategy is to partner with industry leaders to supply and support them in bringing new technologies to the market. This was part of the strategy the company was founded on and continues to be a part of our DNA today."

Velan bellows seal control valves used to cool liquid helium at the CERN Large Hadron Collider particle accelerator.

What is next?

When asked what is next, most companies in the oil & gas industry tend to discuss the environmental impact of their work, and what they are doing to improve or mitigate that impact. Velan is no different; it is focused on the environment as it moves forward with its research. LNG and green hydrogen are promising first steps and can allow the company to eventually transition into using more green technology.
"The LNG market had slowed down, but has suddenly re-emerged because of the war in Ukraine. Everybody wants to have LNG import plants, especially in Europe, because they cannot buy Russian gas." Blanquet explained. "This situation, coupled with the renewed interest in nuclear energy in the world, as a means to reduce greenhouse gas emissions, has placed Velan in an ideal position to continue to strengthen its efforts in the energy sector."
Velan's efforts in the marketplace are summed up by Bruno Carbonaro, CEO, "A main goal of the company moving forward is to support our customers with safe and reliable valves for their existing and emergent needs. The energy transition creates many challenges as well as opportunities, and we are excited about playing a role."