

Velan Digital Solutions



**Enhancing efficiency in industrial processes
through valve automation, control and monitoring**

VELAN
Quality that lasts.

Velan: A world leader in valve design, engineering solutions, and manufacturing

Velan at a glance

History

- Founded in 1950

People

- Over 1,200 employees

Product line

A world-leading range of valves across all major industrial applications:

- High pressure gate, globe, and check
- API standard gate, globe, and check
- Metal-seated and resilient-seated ball
- Triple offset and dual plate check
- API 6D & 6A

Including: actuators and steam traps

Quality

Velan holds major applicable approvals:

- ASME N/NPT (since 1970)
- ISO 9001 (since 1991)
- ISO 14001
- ISO 45001
- PED
- IEC 61508 SIL 3 Capable
- API 6A and 6D
- ATEX
- Comprehensive quality programs are fully compliant with the most stringent industry standards such as: ISO-9001, ASME NCA 4000, ASME NQA-1, and 10 CFR 50 Appendix B.
- Velan has been surveyed and audited by leading organizations around the world such as Bureau Veritas, API, ASME, NUPIC, DCMA, and shipbuilding companies.
- Total Process Improvement Program, including Lean manufacturing and Six Sigma.

Headquartered in Montreal, Velan has several international subsidiaries.

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Velan Digital Solutions

Since 1984, Velan has offered automation, control, and monitoring for valve packages. In 2020, Velan installed its first online valve monitoring solution for severe service applications. Velan is committed to innovation and digital transformation. Our digital solutions are designed to improve efficiency, reduce emissions, and enhance performance. By leveraging cutting-edge IIoT technology with our world-class valves, we aim to provide our clients with the tools they need to succeed in a rapidly evolving industrial landscape.

Velan shaping the future of IIoT for the oil and gas industry:

Velan is participating in the API RP 559 IIoT Task Force, the first API standard for IIoT recommended practices in the oil and gas industry, which addresses cybersecurity and other critical aspects.



Velan PLC System featuring Fieldbus with diagnostic capabilities, control of interlock and permissives, HMI screen for system monitoring, DCS communication and handshaking, and an option for intrinsically safe signals.



Typical external limit switch arrangement providing position indication (e.g., drum A, mid-point, drum B, bypass). Class 1, Div 1 or 2 or CENELEC explosive proof construction & Signal redundancy included. Signal available for local panel and/or remote DCS location.



For a mining end user, the Velan Online Monitoring System is combined with a Velan NPS 12 Class 300 severe service valve and the Velan Cable Drive actuator to monitor the operating torque.

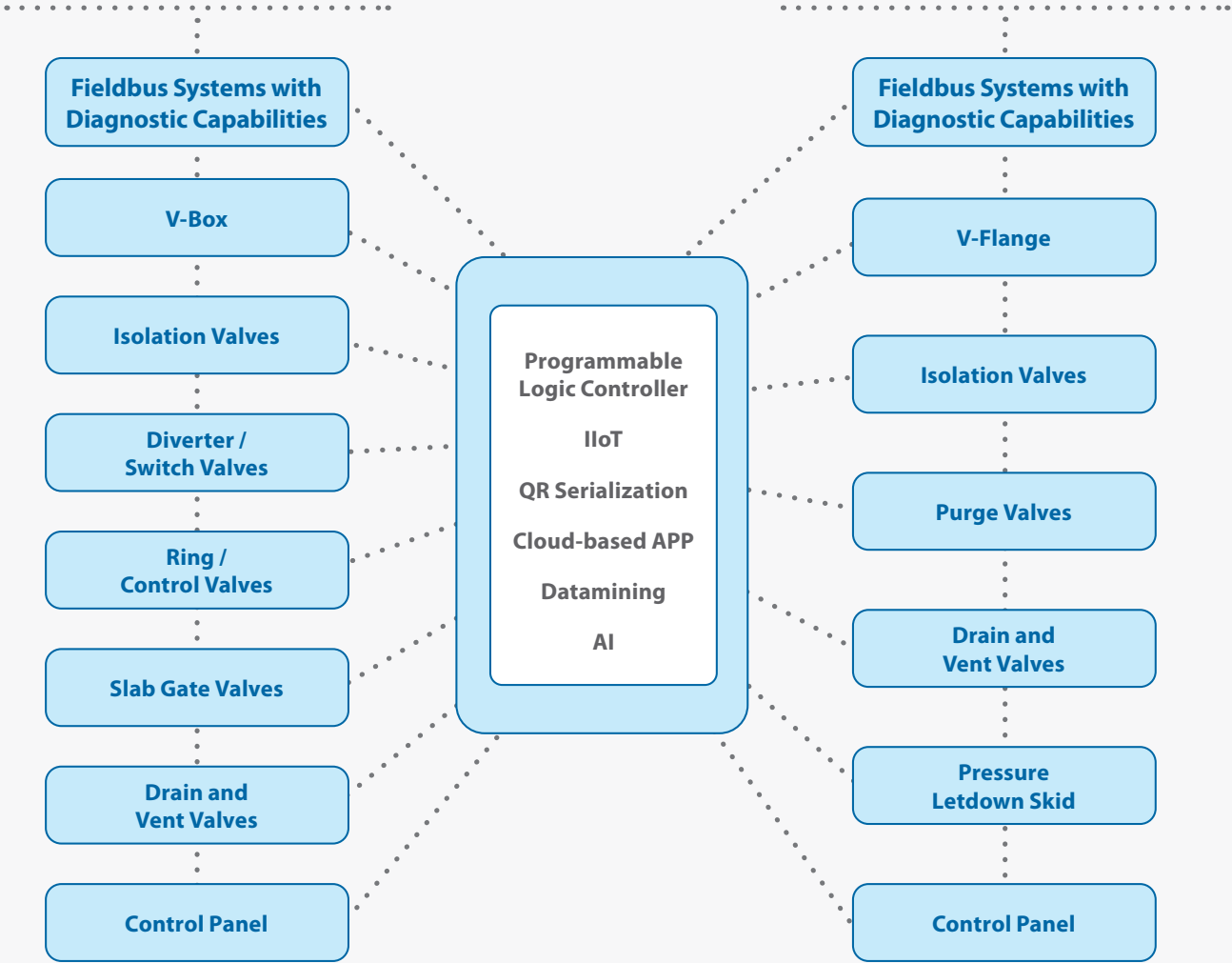
Velan introduced valve monitoring solutions in the 1980s and has continually evolved these technologies to meet the growing demands of our global customer base. Today, our advanced solutions ensure real-time monitoring and data collection, enabling proactive maintenance and significantly reducing downtime. These evolutionary advancements have solidified our position as a leader in the industry, providing unparalleled reliability and efficiency.

Velan Digital Solutions is a comprehensive package comprised of software, hardware, and our world-class valves, actuation, torque and position transmitters, and other proprietary technologies. Together, as a complete package, our digital solutions provide valve monitoring, predictive analysis, preventive warning, and turnaround planning. Our solutions are custom-tailored to meet the specific needs of various industries and individual plants, ensuring optimal performance and reliability.

Velan Digital Solutions Suite

Delayed Coker Unit (DCU)

Ebullated bed & Slurry-phase hydrocracking



Velan's Comprehensive Solution

Predictive and Preventive Maintenance:

Our digital solutions intelligently leverage existing sensors installed on valves and actuators to optimize processes. By repurposing sensors, such as using proximity switch sensors and actuator torque outputs to collect data with timestamps, we minimize the impact on new and existing installations. The gathered signals are analyzed using advanced AI systems to predict potential failures and plan maintenance activities. This approach helps in minimizing unexpected breakdowns and optimizing operational efficiency.

On-site Assistance:

Velan offers live access to documents and remote troubleshooting capabilities, ensuring that field personnel are well-prepared to handle any situation. By collecting data, we can provide plant operators with advice on optimizing their plants to prevent future failures. Moreover, Velan has adopted Augmented Reality to respond to our customers' emerging needs while delivering a high quality customer experience. Real Time Assistance (RTA) allows technicians in the field to collaborate with Velan experts, speeding up the identification and solution of any valve-related issue, seamlessly worldwide.

Commissioning, Start-up and In-factory Testing:

Factory testing of the entire system accelerates site acceptance testing, requiring only the connection and communication protocol to be tested on site. Customers can witness the testing at the factory. Velan also provides site commissioning services, including expert smart system installation. Our skilled, global field-service staff are available to maintain these systems. Additionally, we perform start-up commissioning on-site, customized for each customer, and program the sequence of operations to optimize performance.



Severe-service valves in service with monitoring circa 2012.

Key Features of Velan Digital Solutions

- **Measurement of Health Signals:**

Signals such as pressure, temperature, position, torque, flow, seat leakage, number of cycles, electric signal from actuator could be acquired from the Velan valves, other valve brands, purges and/or end-user process lines.

- **Robust Construction:**

All signal data is collected by a Velan control box designed for harsh conditions (humidity, rain, dust, temperature, IP66 tested, etc.) This control box can be directly mounted on the valve bracket for valve size NPS6 and larger.

- **24/7 Live Monitoring:**

The Velan.IO cloud platform has secured 24/7 access to a dashboard that allows for live monitoring, historical charting, and checking for alerts and alarms.

- **Compatibility with Communications Protocols:**

Our valve monitoring solutions are compatible with any communications protocol, such as HART, MODBUS, Profibus, Foundation Fieldbus, Pakscan, and DeviceNet.

- **Reliable Long-Distance Data Transmission:**

Collected health signals can be locally archived on a protected hard drive with restricted access, transferred to the end-user network by wiring, wirelessly transmitted up to 600 meters (656 yards), or uploaded to a cloud server via cellular data.

- **Configurable Instrumentation:**

All instrumentation is carefully selected to respect the end user's approved instrumentation list. The location and fixation of the instrumentation are analyzed to ensure that the valve integrity is not impacted and to avoid any potential leakage. Furthermore, the instrumentation can be easily removed and replaced.

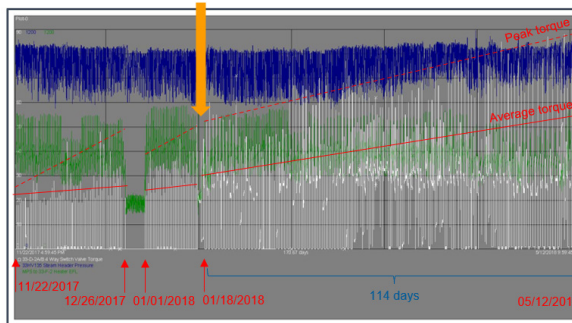
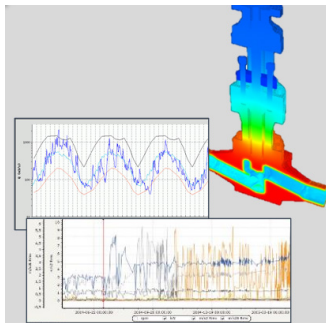
- **Personalization:**

Alerts and alarms are fully customizable and the dashboard interface is adjusted to match the end user's instrumentation and controls. Note: To guarantee the end user's process integrity, the portal and dashboard do not allow for modifying the process parameters.

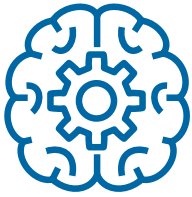
- **Security:**

The data collected is encrypted, stored securely, and transmitted with strict access controls to ensure its integrity and confidentiality. The Velan cloud server adheres to standards from **AICPA**, **FedRAMP**, **ITAR**, and **ISO 27001** for enhanced security and continuous threat assessment.

Process temperature, pressure, and acoustic monitor on critical service valves.



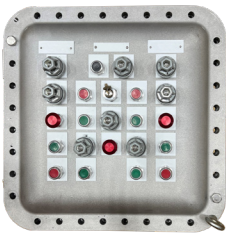
Torque, Steam Purge pressure of Switch valve in DCU service



IIoT and AI Integration:

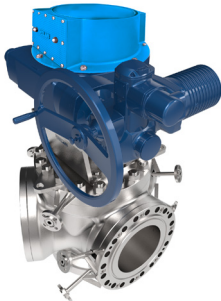
Velan is a leader in IIoT, actively participating in the API RP 559 IIoT Task Force. This task force is developing the first API standard for IIoT recommended practices in the oil and gas industry, addressing cybersecurity and other critical aspects.

Velan use IIoT and AI in valve systems to improve efficiency and reduce emissions. Our solutions provide real-time data and insights for better decision-making. We use IIoT to collect data and AI to analyze it, helping end-users plan maintenance and turnarounds. This solution helps end-users know when to order replacement valves and parts, avoiding delays. With our solution, refineries can proactively prepare for turnarounds, ensuring timely ordering of replacement valves and parts. This approach eliminates lead time delays and enhances operational efficiency.



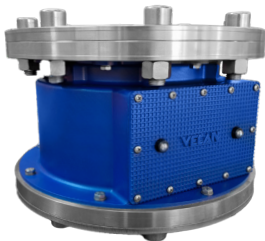
Programmable Logic Controllers (PLC) and Control Panels:

Our PLC and control panels offer robust features and benefits, including redundancy, HMI diagnostic features, and integration with ancillary equipment. These systems are essential for remote monitoring and control of industrial processes. Velan has installed over 500 of control panels worldwide in hazardous areas, adhering to local regulations and 8 PLC systems. Commissioning is straightforward, as Velan offers a factory-tested interlock system and a turnkey PLC system that seamlessly connect to the customer's distributed control system. This setup ensures that conditions are optimal before operating a valve.



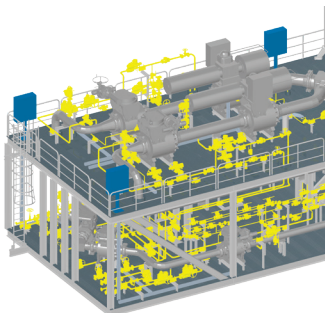
V-Box:

Velan's V-Box is an innovative solution for delayed coker valves, especially the switching valve. It integrates all the electronic devices currently installed on top of the gear operator into one unit atop the switching valve. The V-Box houses signal inputs/outputs and logic boards to monitor the steam purge system, meeting high standards of functionality and reliability. It monitors the evolution of the valve performance in time, signaling any deviation from the operating condition that could result in a hazardous condition for the operators or in an abrupt interruption of the production process. This enhances coker valve performance and control, offering an efficient solution for valve operations.



V-Flange:

V-Flange is an advanced and reliable remote monitoring system designed specifically for quarter-turn valves. This innovative solution combines a robust on-valve device with an intuitive cloud dashboard, offering comprehensive monitoring without the need for an external power supply or electrical connection for data transmission. Its advanced features and cloud integration ensure that end-users have all the information needed to maintain optimal valve performance and extended life-cycle, all the while reducing the need for manned inspections and interventions.



Pressure Letdown Skid:

Velan's high-temperature letdown stations offer a comprehensive solution for the most critical applications in residue hydrocracking. These stations fully integrate valves, hardware, and software into a modular skid framework customized to each plant. The pre-engineered, automated modular units, composed of valves, piping, and actuators, enable plants to safely switch from one control valve to another when maintenance is required. Our solution ensures ease of operation through complete automation, enhancing plant operations, ensuring safety and maintainability, and reducing overall engineering costs.

Long-Standing Experience

Velan has a long history of innovating valve designs to achieve the lowest fugitive emissions, even in the most severe services. Velan Digital Solutions integrate hardware, software, IIoT and AI into valve systems to enhance efficiency and reduce emissions. Our advancements in valve automation and monitoring solutions further enhance plant efficiency by combining high-performance and reliable valves with real-time data and insights for better decision-making.

Velan Valve Automation & Control a 40-Year History

1983	Velan installs its first electrically operated switch valve in the USA
1984	Velan installs its first hard wired panel complete with switch and intel ISO interlocks
1998	Velan installs its first diagnostics package on a two-wire loop
2001	Velan installs its first PLC driven interlock system
2003	Velan installs local disconnects switches to prevent spurious valve movement
2004	Velan installs local disconnects switches to prevent spurious valve movement
2004	Velan incorporates a disconnect switch without cutting power to the control circuits
2007	Velan supplies its first intrinsically safe PLC driven control panel system

Current List of Control Panel Installations

Location	Number of delayed Coker Facilities	Quantity of Panels	Diagnostics PakScan	PLCs	Intrinsic Safety
North America	21	111	—	—	—
Asia	47	198	5	1	—
Europe & MEA	7	43	7	5	1
South America	14	185	5	2	—
Total	89	537	17	8	1

Revolutionizing Industry: Velan's Digital Solutions for Efficiency & Sustainability

Velan's digital solutions are transforming industrial processes by enhancing efficiency and sustainability. We invite you to reach out for more information or to schedule a demo. Together, we can achieve greater heights in industrial innovation.

Do you want to learn more about how Velan Digital Solutions can enhance efficiency for refineries?
Call us at +1 514 748-7743 or write to quotes@velan.com

Learn more about Velan's full product line

Quarter-turn

- Memoryseal® ball valves
- Securaseal® metal-seated ball valves
- Torqseal® triple offset valves
- Velflex high performance cryogenic butterfly valves
- Coker ball valves
- Velan ABV API 6A & 6D trunnion-mounted ball valves

Special applications

- Nuclear
- Cryogenic
- HF Alkylation

Gate, globe, and check

- API 600 gate, globe and check valves
- API 603 corrosion resistant gate, globe and check valves
- Pressure seal high pressure gate, globe and check valves
- API 602 small forged gate, globe and check valves
- Proquip dual plate check valves
- Y-pattern bonnetless globe and check valves
- Velan ABV expanding and slab gate valves



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Go to the *Literature* tab on velan.com to access our most up-to-date library of literature and tools.

"Join My Velan" to gain access to even more! As a member of the MyVelan community, you can access additional resources including Maintenance manuals (IOMs), Data sheets, Application notes, and Product updates.



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