

# 15 years ago

## A Revolution Begins in the Gas Chromatographic Valve Market

Between 1998 and 2004, technologies developed by Yves Gamache became semiconductor industry standards to measure traces of N<sub>2</sub> and Ar impurities in electronic bulk gases (He, H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, Ar). Despite having the most sensitive gas sensor on the market for that application and the most advanced gas chromatograph (GC) platform, commercially available valves were greatly limiting the performance and reliability of Gamache's products. Most valves were failing in the first 6 months, rarely exceeding 1 year. Measuring ppt N<sub>2</sub> impurities requires valves with exceptional characteristics, which were simply not available at the time.

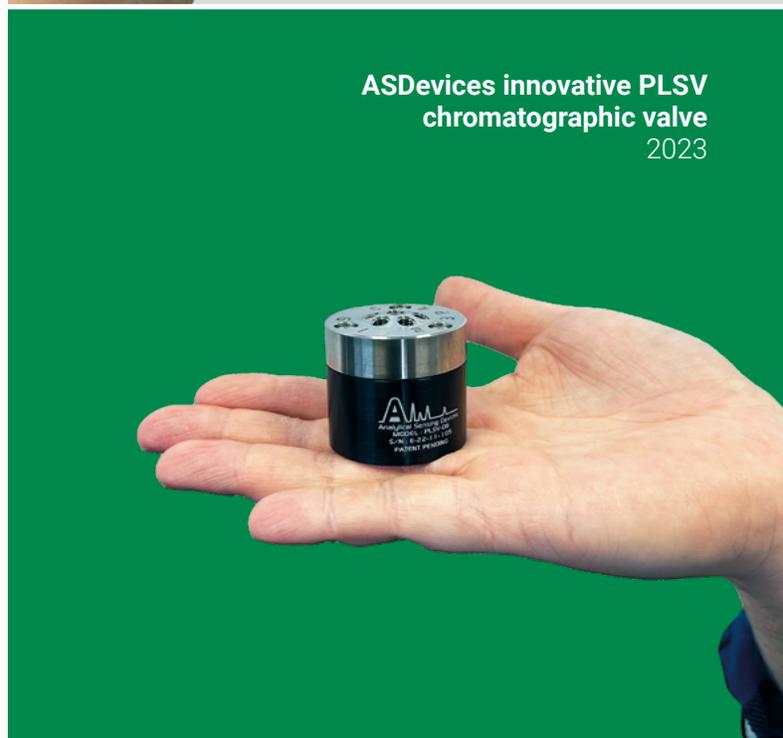
At that time, diaphragm and conical rotary valves were only available from a single supplier and no adequate solutions were available or in the development phase to address the issues related to ultra-trace permanent gas analysis, especially ultra-trace N<sub>2</sub>. Using his well known ability to innovate, Gamache patented new concepts and hired mechanical engineer Andre Cliche to engineer and validate the new concepts he patented. This led to the introduction of the purge concept and the first chromatographic purge diaphragm valve, in 2004.

Since then, Cliche has become R&D Director for ASDevices and Gamache has been reinvesting each year to develop innovative chromatographic valve technologies, resulting in 12 patented concepts. His 15-year quest has led him to develop the best diaphragm valve on the market and eventually, a completely new concept commercialized by ASDevices under the name **Purge Lip Sealing Valve (PLSV)**. This revolutionary analytic valve offers a longer lifetime and a purge system that eliminates all types of possible leaks (inboard, outboard, cross-port). It's simply the best gas chromatographic valve on the market.

**First purged diaphragm valve**  
2004



**ASDevices innovative PLSV chromatographic valve**  
2023



Proven across multiple applications over the past 6 years, this new technology is at the core of ASDevices' strategy, allowing the company to further improve GC performance of gas chromatographs used in the semiconductor industry and more recently, ultra-trace sulfur analysis in hydrogen. By the same token, GC manufacturers involved in environmental markets have been able to reduce their costs by using high-reliability 14-port valves from ASDevices. More and more GC integrators are adopting and integrating ASDevices valves in their process GC and laboratory GC like Agilent, Perkin Elmer and Thermo Fisher Scientific.

In 2023, Gamache and his team will continue to release new valve technologies based on R&D done in the past few years, including innovations for high and very high temperature operations (300 °C and 400 °C, respectively), as well as a new HPLC valve. ASDevices will also release the PLSV technology in a package that is backward compatible with other industry standards, allowing users to upgrade old products with better and **more advanced technologies**.



Gamache's journey of innovation is never ending – but ever rewarding.

**Yves Gamache**  
(CEO, ASDevices)

**André Cliche**  
(R&D Director, ASDevices)

## ASDevices innovative valves portfolio



### Purged lip sealing valve (PLSV)\*

Our innovative, proprietary purged lip sealing valves offer all the simplicity of conical rotary valves – and last longer than diaphragm valves

- No leaks: Unique purge technology eliminates inboard/outboard and cross-port leaks
- Long lifetime: Over 1 million actuations
- Constant pressure drop
- No dead volume

\* patent pending



## Purged pulse diaphragm valve (PPDV)\*

This latest innovation in diaphragm valve technology uses actuation gas to purge the valve's inner volume

- Static purge design reduces operation and integration costs
- New plunger design increases lifetime
- Long-term storage pressure relief
- Can be retrofit to replace any diaphragm valve
- Simplified integration: No need for independent purge gas circuit like competing purged diaphragm valve technology.



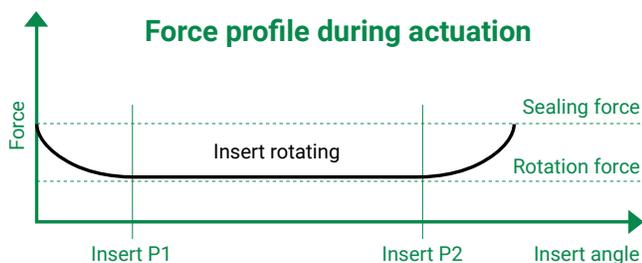
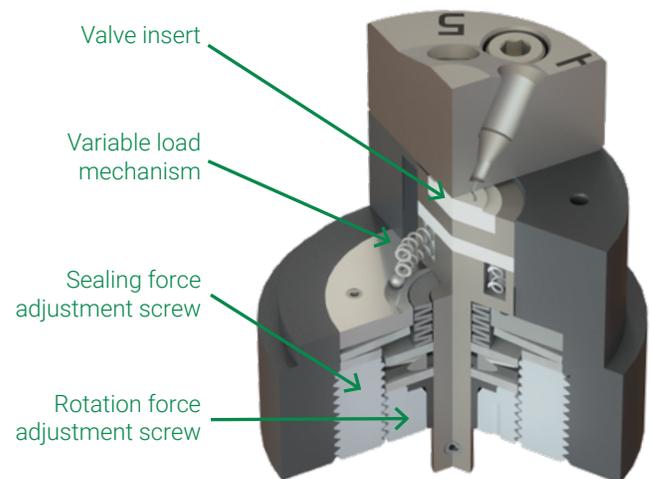
## HPLC Wear proof valve\*

This durable, high-performance valve variable load mechanism releases the sealing pressure during actuation for an unprecedented lifetime

- Up to 5x longer lifetime than other valves technology
- Better performance and quality
- Variable sealing pressure technology
- No dead volume

## Wear-proof actuation mechanism

What makes our GC and HPLC valves frictionless is a unique, proprietary technology that allows the force profile to release pressure during actuation. The innovation resides in a unique actuator that slightly reduces the force applied on the insert prior to rotation. The result is that high pressure can be used for sealing and a lower pressure can be used during rotation, reducing the insert's wear and increasing its lifetime.



**ASDevices**

\* patent pending