



Product capabilities

Case Study



# A partnership driving innovation in Vacuum and Cryogenic Technology

Swagelok Nederland cooperates with AAE in defining a new tool

## Introduction

In the world of high-precision engineering, collaboration is key to innovation. AAE, a leading High Tech System Supplier, has partnered with Swagelok to develop a cutting-edge vacuum demonstrator that sets new standards in cleanliness, efficiency, and cost-effectiveness.

Mauro Michele Campagna, a Thermo-Fluid Dynamics Technology Specialist at AAE, was tasked with developing a demonstrator tool that could meet stringent requirements for vacuum and cryogenic applications.

The project consists of three phases: development of the vacuum demonstrator, followed by the Cryo demonstrator, and concluding with the proof-of-principle system.

The objective was to engineer systems capable of operating under high vacuum pressure while upholding the highest standards of cleanliness within a controlled laboratory environment.

### Who is AAE?

AAE – High-Tech Solutions from Helmond AAE (Advanced Automated Equipment) is a leading high-tech machine builder based in Helmond, the Netherlands. Founded in 1976 as a family-owned company, AAE develops and manufactures innovative systems and precision solutions for sectors such as semiconductors, medical technology, automotive, and industrial automation. With more than 500 employees and a strong focus on collaboration and innovation, AAE helps customers worldwide push technological boundaries and achieve sustainable growth.

“Working with vacuum and cryo technologies means every seal, valve, and fitting must be flawless,” Mauro explains. “Any contamination can compromise the entire system.”





## The challenge: Precision under pressure

Faced with the challenge of sourcing components that could withstand high vacuum conditions without leaking or introducing impurities, AAE turned to Swagelok Nederland. The decision was driven by the need for vacuum-compatible valves and fittings that met rigorous cleanliness standards, while still being able to protect against overpressure conditions.

Swagelok's expertise—and the guidance of Paul Krouwels, a technical advisor—proved invaluable.

"Paul doesn't just answer questions; he asks the right ones," Mauro says. "His input helped us refine our design and choose the best components for the job."



## The solution

One of the key success factors was involving Swagelok early in the design process. This proactive approach allowed AAE to avoid costly missteps and optimize the system from the ground up.

"Early involvement with suppliers is important to achieve the best result," Mauro emphasizes. "It may cost more at the beginning, but it saves you from expensive corrections later."

The final solution: The vacuum demonstrator, is more than a technical achievement—it's a strategic tool. Clients can now visualize cleaning options and understand how different vacuum settings affect performance. This helps prevent over-specification, reducing unnecessary costs.

"It's not about making things complicated," Mauro says. "It's about simplifying the complex and doing the right thing from the start."



## A partnership built on trust and knowledge

With the vacuum demonstrator nearing completion, AAE is already planning the next phase: a cryogenic demonstrator. The project is not only a technical milestone but also a learning opportunity for AAE's team, deepening their expertise in vacuum applications.

The collaboration between AAE and Swagelok exemplifies how open communication and mutual challenge can lead to superior solutions.



Mauro sums it up best: "I like the open communication with suppliers and being challenged so that together we can determine the best solution."

With an investment of time and euros at the start of the project and a development timeline of one year, this project showcases how strategic partnerships can drive innovation, reduce costs, and deliver lasting value.