

A Photoionization Detector (PID) is one of the most powerful technologies for detecting total VOCs, and its performance is largely determined by the quality of its PID sensor—specifically the vacuum ultraviolet (VUV) lamp at its core. The lamp’s intensity, stability, and lifespan directly influence the sensor’s sensitivity, resolution, and overall reliability. High-intensity lamps enable the development of PID sensors with exceptional resolution, reaching down to ppb or even sub-ppb levels. A long lamp life not only increases the durability and stability of the PID sensor but also saves customers significant time and money on maintenance and replacements. However, many current VUV lamps on the market suffer from limited lifespans and declining output over time due to several factors:

- Insufficient vacuum levels during lamp production.
- Impure internal gases within the lamp enclosure.
- Contamination or impurities on the lamp enclosure surfaces affecting internal gases.
- Ineffective sealing of the lamp.
- Low-quality crystal materials.

These issues often cause a gradual decrease in lamp intensity, limit the achievable sensitivity, and shorten the operational life of PID sensors.

Senovol Corporation, located in Silicon Valley, leverages advanced semiconductor vacuum technology to produce VUV lamps that offer superior vacuum conditions, exceptional intensity, and remarkable longevity. By using Senovol’s high-intensity, long-life lamps, customers can design PID sensors with unparalleled sensitivity and stability while minimizing maintenance and replacement costs.

The graph below demonstrates the long-term stability test of our lamps. We continuously operated these lamps for over two years (from September 20, 2022, to December 10, 2024) at 24 hours per day, 7 days per week, periodically measuring their sensitivity. Throughout the entire 20,000-hour testing period, the lamps maintained the same level of sensitivity without any detectable change. This data suggests that our lamps can continue performing reliably for at least five years of continuous operation.

