

CASE STUDY: Transforming Sensor Calibration Efficiency with Environics' Series 4040



Overview

Gas Sensing Solutions is an international leader in the design and manufacture of ultra efficient, high-speed solid-state CO₂ and methane sensors with a mission-critical 24/7 calibration operation. They needed a way to streamline sensor screening while boosting precision and reliability. Recognizing Environics' expertise in custom, reliable gas delivery systems, they partnered with us to implement the Series 4040 - a flexible, scalable solution that has delivered over 15 years of continuous performance.

The Challenge

The client needed a flexible and scalable gas dilution system to:

- Accurately calibrate sensors across a wide concentration range (percent to ppm)
- Reduce reliance on costly pre-mixed gas cylinders
- Ensure 24/7/365 operation with minimal downtime
- Guarantee traceable, repeatable results for system-to-system correlation
- Enable unattended, programmable workflows for lengthy calibrations

The Solution

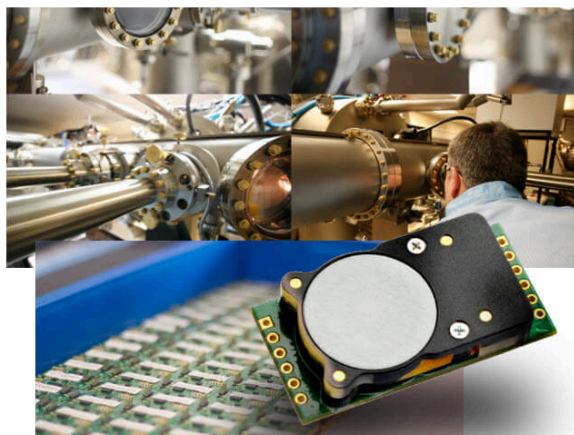
The client deployed eleven Environics' Series 4040 systems, enabling a more automated, cost-effective, and high-precision calibration process across R&D and production.

Key Features:

- **High Accuracy & Repeatability:** $\pm 1.0\%$ of set point for concentration and $\pm 0.05\%$ full-scale repeatability, even with dynamic concentration ranges.
- **Flexible Modes of Operation:** Simple manual modes for testing and program modes for automated operation.
- **Wide Dilution Range:** An expanded dilution range significantly reduced the number of cylinders required
- **Certified Traceability:** All MFCs are NIST-traceable and factory-calibrated using primary flow standards

The Impact

- **Long-Term Stability:** Over 15 years of 24/7 uptime across 11 systems, providing exceptional reliability and durability.
- **Significant Cost Savings:** Lower storage and procurement expenses through use of pure gases rather than pre-mixed.
- **Improved Calibration Accuracy:** Proprietary Environics calibration technology enhanced calibration precision.
- **Higher Yield & R&D Output:** Consistent gas delivery increased high-yield sensor manufacturing and provided more controlled R&D testing environments.
- **Minimal Downtime:** Quick and reliable support reduced possible downtime.



"The reliability, accuracy and operational duration of the 4040 unit is second to none... backed by an incredible customer service team... there simply is no better system than Environics."

- Jim Walker, Design Engineer



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