CASE STUDY

An Innovative Approach to Remote Gas Monitoring in Cell and Gene Therapy Manufacturing

Information at a Glance:

- Implemented real-time remote monitoring for five gas panels
- Prevented gas shortages in critical lab environments
- Ensured efficient and timely gas cylinder replacement
- Seamlessly integrated with existing systems
- Provided peace of mind and operational efficiency

"Elemental Machines' monitoring system has transformed our approach to gas management. Their innovative solution has significantly reduced our operational risks and ensured uninterrupted service."

– AmplifyBio

Background

AmplifyBio, a concept to commercial development and manufacturing partner for the development of advanced therapies, recently opened the 350,000 sq. ft. AmplifyBio Manufacturing Enablement Center (AMEC). This large footprint, combined with a modular suite layout designed to simultaneously accommodate multiple clients and the manufacture of multiple drug modalities, creates an ongoing need for innovative environmental monitoring systems capable of ensuring data are easily accessible to both the client and AmplifyBio teams.

Elemental Machines had previously implemented efficient monitoring solutions for cold storage units and ambient areas, and their expertise was needed to address the unique challenges of remote gas monitoring in AMEC.

SITUATION

In the manufacturing of biological drugs, gas panels are crucial for maintaining the right environmental conditions in clean rooms and laboratories. The existing gas manifolds were efficient but lacked remote alarming capabilities, making it difficult to know when gas cylinders were running low.

The company needed a solution for remote monitoring and data collection for five process gas panels, including four in the clean rooms (O_2, N_2, CO_2, COA,) and one in the lab (CO_2). Each panel had two supply pressures for two gas cylinder bottles and one overall line pressure, requiring a comprehensive monitoring approach.

SOLUTION

In collaboration with Elemental Machines, AMEC personnel developed a unique solution using the Element-C (combination pressure element). This system utilized three 4-20mA pressure transducers to capture all three pressures for each panel, enabling remote data access and alarm capabilities:

- The teams collaborated to brainstorm a solution and source the necessary elements
- Gas panels were wired with 24VDC and 5VDC transformers and pressure transducers
- The Element-C was configured for remote alarms

RESULTS

The installation and connection of the Element-C system were completed successfully, providing AMEC with the ability to monitor the gas panels effectively. These configured alarms ensured proactive management of gas supplies, preventing any shortages for the incubators in the lab and the process gases in the clean rooms.

The Element-C system has significantly improved gas management at AMEC, ensuring efficient and timely replacement of gas cylinders without waste. Plus, its remote monitoring capabilities have brought peace of mind and operational performance to both client and internal teams alike.

With the proof of concept verified, AmplifyBio plans to acquire four more combination units to complete the installation for the remaining panels, further solidifying the success of this innovative solution.

CONCLUSION

AmplifyBio's collaboration with Elemental Machines exemplifies the power of transformative technology and interdisciplinary teamwork to find efficient and cost-effective solutions. This case study highlights both companies' commitment to continuous improvement on the critical elements that affect client projects. Elemental Machines' solutions have proven to be effective in diverse environments, ensuring reliability, efficiency, and cost-effectiveness.

Ready to enhance your lab's operational efficiency and reliability with cutting-edge IoT solutions?

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