

# CASE STUDY



## MONITORING SUCCESS: DUKE UNIVERSITY'S EVOLVING PARTNERSHIP WITH REES SCIENTIFIC



### CLIENT PROFILE

**Client:** Duke University

**Location:** Research Triangle Park (RTP), North Carolina

**Industry:** Academic Research and Vaccine Development

**Departments Served:** Cord Blood Bank, Stem Cell Research, Cancer Research, Duke Human Vaccine Institute (DHVI)

**Solutions Utilized:**

- Environmental Monitoring System (EMS)
- Wireless, hardwired, and hybrid sensor configurations
- Custom PLC design and system integration
- Comprehensive calibration, preventative maintenance, and ongoing technical support
- Customer Since: Early 2000s; Duke Human Vaccine Institute since 2024

### A LONG-STANDING PARTNERSHIP

For nearly two decades, Rees Scientific has been a trusted partner of Duke University, supporting departments like the Cord Blood Bank, stem cell research, and cancer research. This long-standing relationship highlights our commitment to delivering reliable, innovative monitoring solutions tailored to each department's unique needs.

In September 2024, the Duke Human Vaccine Institute (DHVI) joined the Rees family, further expanding our presence within Duke University and marking the start of a highly collaborative, dynamic partnership.

### INITIAL ENGAGEMENT: A CUSTOM MONITORING SYSTEM

Duke University's initial investment was a testament to the scale and complexity of their research environment. They deployed a 270-input hybrid system that included:

- **Wireless Sensors:** Covering temperature, humidity, CO<sub>2</sub>, power monitoring, and water detection, supporting both room and CTU (Critical Temperature Units) monitoring, as well as life-safety systems for process-gas storage.
- **Hardwired Differential Pressure:** A high-speed, reliable solution that's among the best in the industry for data transmission and accuracy.

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This hybrid architecture showcased Rees Scientific's flexibility, seamlessly combining wireless and hardwired components to fit Duke's infrastructure and future growth.

## PRECISION THROUGH MULTI-POINT CALIBRATION

To meet the rigorous demands of Duke University's research programs, Rees Scientific provides multi-point calibration services across all environmental monitoring inputs. This approach ensures:

- Tight tolerances for both equipment and room monitoring
- Accurate sensor performance over the full operating range
- Reliable data integrity for audit trails and regulatory compliance

Multi-point calibrations are critical in research environments where even slight deviations can compromise outcomes or delay processes. By proactively validating sensor accuracy at multiple thresholds, Rees helps Duke maintain confidence in every data point, from ultra-low freezers to ambient lab conditions.

## SUPPORTING EXPANSION WITH EXPERTISE AND FLEXIBILITY

From the outset, Rees Scientific didn't just supply equipment; we provided a partnership rooted in engineering expertise, local support, and innovative problem solving:

- **Regional Service Team:** Our local, highly trained field engineers have been critical to Duke's success, offering rapid response, hands-on troubleshooting, and on-site support whenever needed.



- **Engineering Solutions: Expanding Beyond Typical Monitoring**
  - We helped Duke expand their system far beyond standard EMS capabilities, offering a suite of integrated engineering solutions tailored to their specialized lab operations:
  - **PLC Design for Lab Lighting Systems:** Implemented a smart access and lighting control system that integrates differential pressure sensors, hand-wave lighting activation, and room access logic. This includes a traffic light system with audio indicators for GMP space access, providing real-time visual and auditory status based on differential pressure readings to help ensure controlled access to cleanrooms and sensitive environments.

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- **Validated Process Gas Weighing System:** Developed a reliable and compliant weighing solution to support critical gas management needs, helping Duke meet both operational goals and regulatory requirements.
- **Integration Using BACnet:** Leveraged BACnet protocol to monitor and interface with Water for Injection (WFI) and Air Compression Systems, allowing for seamless visibility and control of key utilities that support laboratory infrastructure.
- **Comprehensive Documentation:** Provided complete IOQ documentation packages typically handled by external consultants, saving time, reducing cost, and ensuring full audit readiness.

## A COMPLETE SUITE OF MONITORING CAPABILITIES

Our partnership with Duke goes far beyond installation:

- **Flexible System Architecture:** We offer fully wireless, fully hardwired, or hybrid configurations, giving customers like Duke the flexibility to adapt as their needs evolve.
- **Advanced Sensor Portfolio:** Our systems monitor temperature, humidity, CO<sub>2</sub>, power, differential pressure, water detection, and more, ensuring complete visibility and control across laboratory

- spaces and Controlled Temperature Units (CTUs) such as refrigerators, freezers, and incubators.
- **Robust Software:** Rees Scientific's monitoring software provides real-time data, comprehensive reporting, and alarm management, keeping Duke informed and compliant.

## AFTER-INSTALL SERVICES: ENSURING CONTINUED SUCCESS

Rees Scientific stands out for our dedication to post-installation service. With Duke and all our clients, we provide:

- **Regular Calibration Services:** Ensuring that every sensor and monitoring component continues to deliver accurate, reliable data that meets regulatory requirements.
- **Preventative Maintenance:** Scheduled inspections, system health checks, and component maintenance to maximize uptime and reduce the risk of unexpected failures.
- **Ongoing Technical Support:** Our regional service teams remain engaged long after the initial installation, offering continuous assistance for system updates, expansions, and day-to-day troubleshooting.

This comprehensive service model ensures that Duke can focus on their critical research, confident that Rees Scientific is always there to support their monitoring needs.

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## WHERE WE STAND TODAY

Currently, we're supporting Duke HVI's expansion into new labs for their Analytical and Process Development departments at their Alexandria Way location in RTP. Their Rees system has grown into one of the most advanced installations in the area, a testament to our flexibility, engineering expertise, and commitment to partnership. With Rees Scientific, Duke HVI knows they have a partner who grows with them, supporting their research with the latest technology, personalized engineering, and unwavering service every step of the way.

## KEY TAKEAWAY

*The Duke University case study shows how Rees Scientific delivers a complete package: from system design and installation to calibration, maintenance, and ongoing support. We build partnerships that empower our clients to achieve their goals with confidence.*