

Case Study

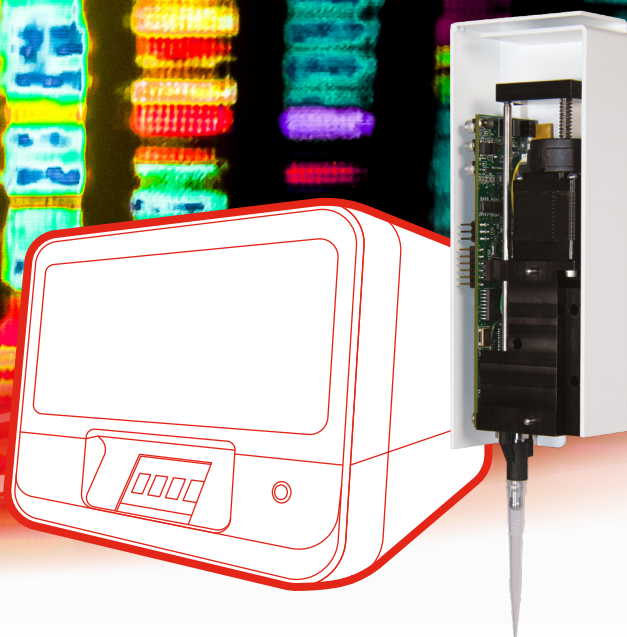
CUSTOMER: US-based supplier of scientific instrumentation, reagents, consumables, and services

LOCATION: United States

APPLICATION: Template Preparation, Library Preparation, and Chip Loading for Next Generation Sequencing (NGS) applications

PRODUCTS: Tricontinent Air-Z Premier Air Displacement Pump (customized)

CHALLENGE: Selecting a compact, high-performance, maintenance-free air displacement pump from an OEM supplier with extensive liquid handling expertise that was willing to provide a high degree of flexibility, collaboration, and support through product development and the instrument lifecycle



A leading provider of products and services to the scientific community turned to Tricontinent when designing a new range of Next Generation Sequencing equipment. The application required a compact, high performance air displacement pipetting pump solution that provided improved performance over products available in the market which would allow them to turn their initial concept into a viable, real world product.

To achieve their goals, our customer relies on cutting-edge technology, a culture of continuous innovation, and close collaboration with its network of OEM suppliers. Based on successful collaboration on previous liquid handling projects, the customer turned to Tricontinent when designing a new range of Next Generation Sequencing equipment. This time, the application required a **compact, high performance air displacement pipetting pump solution that provided improved performance over products available in the market** which would allow them to turn their initial concept into a viable, real world product.

SELECTING THE RIGHT PRODUCT AND PARTNER

Building on its extensive portfolio of products, the company set out to develop a range of workflow simplification products to support their latest NGS systems. Engineers had developed an initial design that would automate library preparation, template preparation, and chip loading; improving productivity by saving both time and labor.

TRICONTINENT

By simplifying the NGS workflow and reducing the need for operator interaction, the system would also help laboratories minimize sources of user-introduced errors and variability.

Key to the design was an air displacement pipetting module that would allow the system to manage samples and reagents, while eliminating the risk of carryover and cross-contamination during the preparation process. Having evaluated a range of available solutions, the company struggled to find a module that fit the compact dimensions required by the system design, while providing the necessary speed for mixing required by the process.

The customer's Engineering team was also faced with the challenge of finding a module that utilized a proprietary disposable tip that featured a high install/uninstall force. **With no commercial off-the-shelf solutions available or OEM suppliers that were willing to modify their standard design; the customer relied on Tricontinent to develop a custom solution that would meet their exact requirements.**

SELECTING THE RIGHT EQUIPMENT

Engineers at Tricontinent began evaluating the customer's system design and requirements in order to get a better understanding of the solution needed. The team determined that Tricontinent did not have a readily available solution, however were quick to design a feasible product that met the

customer's size and performance requirements leveraging Tricontinent's proven precision syringe technology deployed in their other air displacement products.

Tricontinent worked in collaboration with the customer's engineers during both the design and testing phases to ensure that the Air Displacement Pipette pump solution aligned with their requirements. This included ensuring compatibility with the customer's proprietary disposable pipetting tips, developing full control electronics and implementation of pressure sensing capability, tip presence sensor, and full quadrature encoder; without requiring modifications to the customer's original instrument design.

WORKING TOGETHER TOWARDS SUCCESS

Maintaining a high level of engagement throughout the entire process, **Tricontinent was able to provide the customer with a reliable, high-performance, and maintenance free pipetting module that was tailored to meet their specific requirements.** By choosing Tricontinent as a trusted partner, the customer was able to design, develop, test, and bring to market a cutting edge workflow simplification system to support their NGS systems; all at a lower cost and shorter time to market.

Following the success of the pump project, the development and production release of their system in 2013, as well as continued demand

for their product in the market; the customer has continued to maintain a close relationship with Tricontinent, selecting the Air-Z Premier (a more compact and feature-rich version of above solution) to drive a new range of soon to be released sample preparation systems.

ABOUT TRICONTINENT AIR-Z PREMIER

The Air-Z Premier is a full featured, fully programmable, high-resolution air displacement pipetting module with a host of innovative features. The Air-Z Premier has a 1000 μ L capacity, and is driven by a stepper motor that is capable of dispensing speeds between 1 μ L/second up to 3000 μ L/second. The module features an integrated tip ejector, as well as three separate liquid level detection modes, and real-time pressure data streaming that can be used for automatic or manual dispense and aspirate verification or blocked tip detection; all in a compact package.



Tricontinent
Air-Z Premier

Tricontinent is a leading manufacturer of liquid handling solutions for Original Equipment Manufacturers (OEMs) in the medical, pharmaceutical, biotechnology, and laboratory industry. With its experienced Engineering, Technical, and Operations staff and capabilities, Tricontinent designs and manufactures standard and customized syringe pumps, rotary valves, syringes, and liquid handling (XYZ) robots that meet the precise needs of its customers. Backed by over 45 years of engineering excellence and innovation, and a global manufacturing network, Tricontinent stands out as the reliable choice for OEMs worldwide.

For more information, visit www.tricontinent.com

TRICONTINENT