

Profiles in Problem Solving:

# Utilizing Custom Solutions for Robotics & Automation

NuAire's Custom Class II Biosafety Cabinets Help Clients Accommodate Increasing Automation, Fit Oversized Equipment, & Safely Interact with Samples



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**Getting pharmaceuticals out the of cleanroom and into clinics to improve the lives of patients remains an urgent priority in the vaccine development field to this day.** As an innovative leader in global health care, the French pharmaceutical company Sanofi and its North American branch located in Cambridge, Massachusetts, have kept pace with demand for immunological assay and vaccine development while also evolving novel solutions. A key element of Sanofi's success derives from the custom design service of US laboratory equipment manufacturer, NuAire. This family-owned, engineer-led business in Plymouth, Minnesota, has been meeting laboratory needs around the world for over half a century.

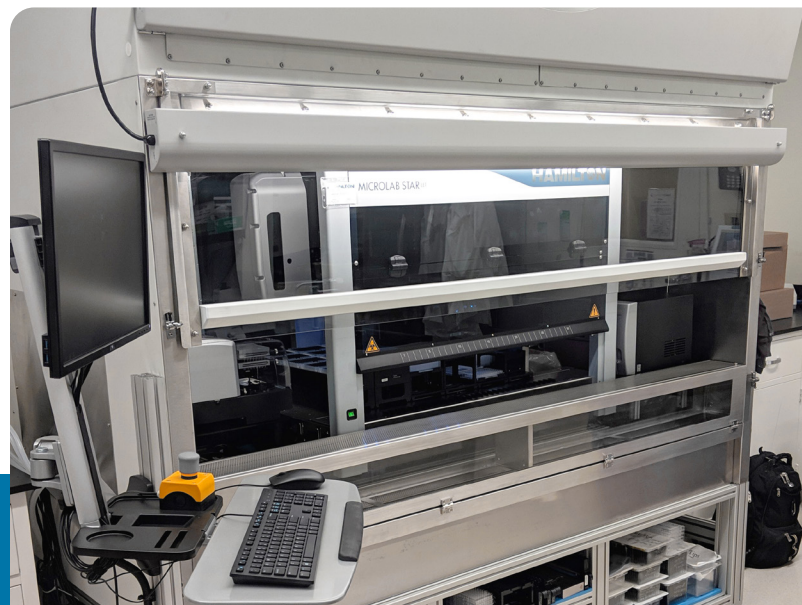
## Partnering for Success

NuAire and its engineering team design and manufacture custom cabinetry critical for keeping unique laboratory projects on track. They do this by prioritizing customers' needs and building solid problem-solving relationships, according to Robert Parkhill, Ph.D., Sanofi Pasteur's head of automation.

In partnership with NuAire's custom products engineers, Sanofi developed novel biological containment solutions that helped accommodate automating lab workflows such as robotic liquid handling. "Standard biosafety cabinets didn't meet our needs because of size," Dr. Parkhill lamented, "Typically, most biological hoods that are used in the lab are designed to operate for an individual with small equipment inside. For our application we still needed the biological containment, but in a large-scale format to accommodate our automation platforms."

Standard, off-the-shelf biological safety cabinets (BSCs) usually range from three to six feet wide with a work zone depth of 20 inches, which could not safely house the robots and interactions in clean conditions. "In order to develop more integrated automation solutions into our strategy, we had to find an alternative to the standard hood. We had to find something that was much bigger while continuing to maintain the same type of work environment," Dr. Parkhill went on to say.

NuAire's expertise, accessibility, and collaboration with Sanofi principals helped solve the size problem and produced a custom class II biosafety cabinet that met Sanofi's specific needs. "Most certainly, the communication and teamwork from this relationship was a key contributor and helped a lot in meeting our long-term goals," continued Dr. Parkhill. Since 2018, Sanofi has furnished their labs throughout North America with approximately twenty customized NuAire biosafety cabinets.



NU-S121 Custom Class II Biosafety Cabinet

## Custom Work: A NuAire Specialty

In the past 20+ years, NuAire has built oversized class II custom biosafety cabinets as large as 14 feet wide. Their engineers also designed containment solutions that combined both standard and custom BSCs. This long track record of efficient, resourceful problem-solving appealed to Dr. Parkhill because their experience helps avoid costly delays. “It saved us a lot of development time, enabling us to get started quickly and move forward about nine months earlier than expected,” he recounted.

## The Custom Design Process

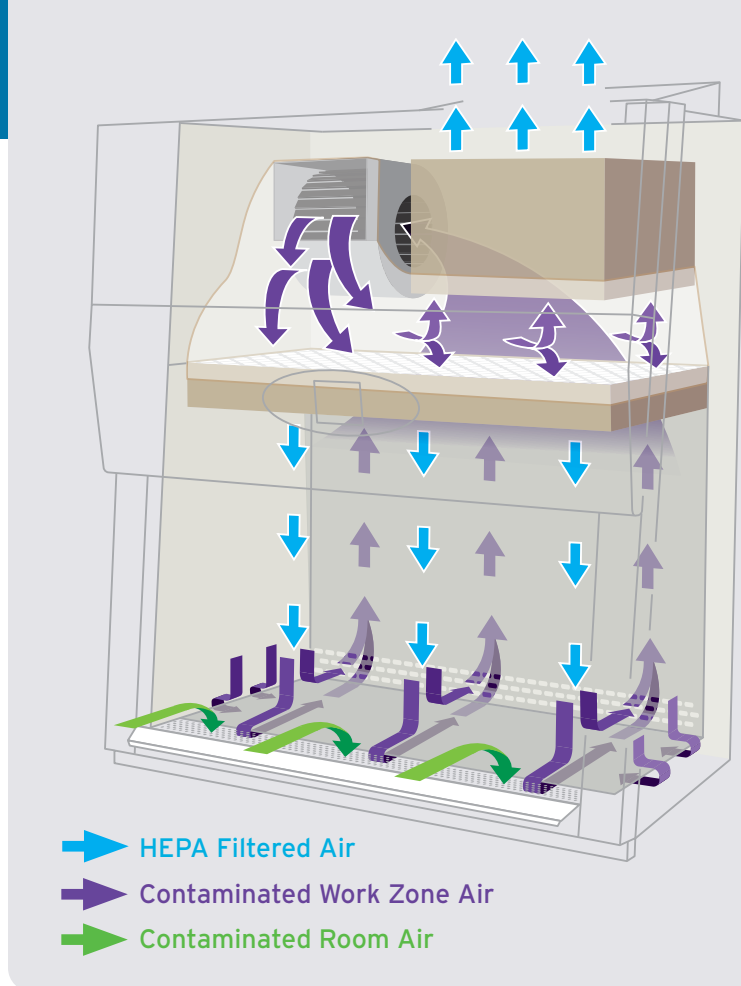
A custom project begins with an in-depth interview between the client and NuAire engineers with Custom Product Coordinator, Kay Templin. The project then progresses through an iterative exchange of engineering drawings and models to create a final product design. “Generally, a starting point is a non-disclosure agreement (NDA), because a lot of times we are sharing proprietary data,” she continued, “So the NDA is a first step to protect everyone’s intellectual property.”

All custom cabinets are manufactured in NuAire facilities located in Minnesota. This dedicated custom products team ensures all projects move forward without delay. In Sanofi’s case, discussions on end-use and their custom design of integrated features and details “melded into what we needed,” Dr. Parkhill recounted. “[NuAire] became the first one that could accommodate the size and custom dimensions when accessing the interior workspace. We had an advanced system where we had a robot that was reaching into the platform to access equipment, and we wanted to make sure when it reached in it can move around optimally, which is how we came up with the solution.”

Dr. Parkhill especially appreciated NuAire’s attention to detail by creating a design that easily fits through standard doorways. This makes product delivery and installation easy. “We can fit them in any lab that we have with a standard door, which was extremely important,” he lauded.

## Ensuring Safety

NuAire’s standard line of biosafety cabinetry have long held an enviable reputation of safety by conforming to the most rigorous standards set by regulatory organizations. Even so, Dr. Parkhill understood that any customized application could potentially compromise safety performance. “Our biggest concern was the



placement of the automation equipment into these hoods, which could alter the way that they work,” he explained. Any oversized device placed within the work zone of a biosafety cabinet poses a containment risk by obstructing standard airflow dynamics.

“NuAire never compromises on safety,” Ms. Templin asserted. NuAire’s President and CEO, Bill Peters, explained, “We follow NSF/ANSI 49 for containment performance and UL 61010-1 for electrical/mechanical safety on all customizations. In addition, at a client’s request, additional testing can be performed involving videotaped airflow smoke visualization with simulated equipment for aid in field certification process.”

Along with NuAire’s extensive safety record, technical expertise, and creative leadership in the industry, Dr. Parkhill also credits the successful partnership to ease of communication and relationship building. “I think the biggest thing is the personal relationships. I communicate with Kay a lot,” he lauded.

Whether it’s determining the optimal height for a robot working surface, or Kay’s personal fishing triumphs, the two have bonded over their shared values of excellence, enterprise, and mutual trust. “Accommodating and working with us has been one of the most important things as we’ve gone forward,” Dr. Parkhill recounted.



# CUSTOM SOLUTIONS

Engineered to Your Lab's Specific Needs

In every NuAire product you'll find brilliant yet practical design with keen attention to detail in every phase of the fabrication and assembly process; you'll always receive thoroughly tested equipment at outstanding value, and with dependable customer service guaranteed. These are the fundamentals for NuAire's international reputation and the reasoning behind our universal recognition as the world's finest. Despite our engineers' finely honed genius, your lab may require something that has never been done before. Luckily, our custom sales department has nearly half a century's worth of experience in crafting all sorts of new and innovative lab equipment to meet your specific needs. We routinely reshape

our cabinet's inner and outer dimensions to neatly fit within any space inside your lab. We often add computer arms, monitors, and microscope windows into our standard cabinets, as well. Another common customization involves installing an IV bar and smooth interiors for efficient and ergonomic pharmacy compounding. Regardless of what type of modification your lab and research may require, NuAire is capable of meeting any esoteric laboratory need and provide you with excellent troubleshooting support for years to come, ensuring your custom equipment continues to perform at peak levels for the entirety of its lifespan.

**If your lab requires a unique solution, give us a call; we love a challenge.**



This Class I BSC was created at a nominal width of 8' [2.4 m], with clear polypropylene sidewalls, and a custom mounted IV bar.



This LabGuard BSC was fitted with a microscope viewing window to accommodate workflow specializing in human cell tissue research.



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20-1626-W-G-EN-1-0622