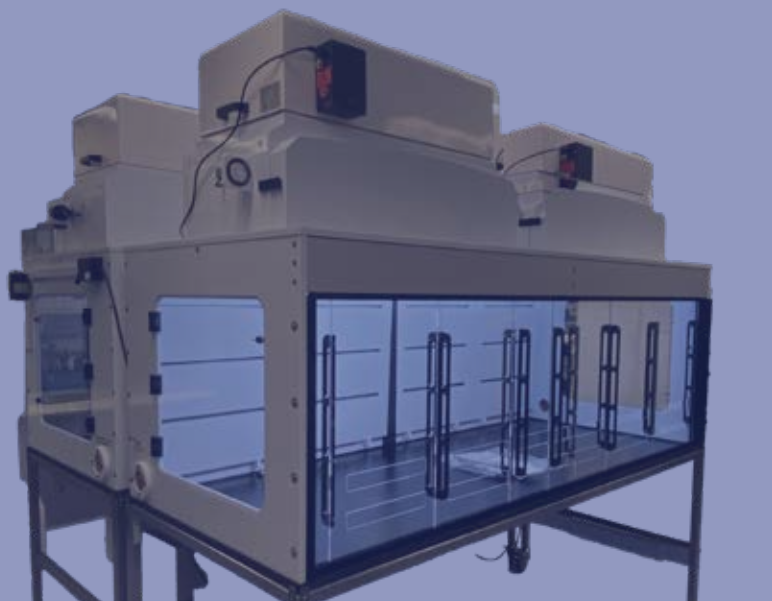




**PCS**  
PROCESS CONTROL SOLUTIONS



# CASE STUDY

## *Custom Flow Science Enclosures:*

### **Delivering a Custom Microfluidizer Containment Solution Through Partnership**

When working with high-value or highly potent compounds, maintaining both operator safety and product integrity is critical—especially when the process involves specialized equipment like a microfluidizer. Microfluidizers are essential in industries such as pharmaceuticals, biotechnology, and cosmetics, where they are used to create stable emulsions, uniform dispersions, and nanoparticle formulations through high-shear fluid processing. These systems force product streams through micro-channels at extremely high pressures, reducing particle sizes and ensuring consistent, scalable results.

However, operating a microfluidizer with potent materials presents unique challenges. The intense pressures involved, combined with the need for precision and cleanliness, require a containment solution that not only integrates seamlessly with the equipment but also protects operators from exposure and maintains compliance with strict industry regulations. This is where the combined expertise of Flow Sciences, Inc. (FSI) and Process Control Solutions (PCS) came into play. When a customer approached FSI needing a custom enclosure designed specifically around their microfluidizer system, the team knew collaboration would be key. FSI brought decades of experience in high-performance containment and airflow control, while PCS provided specialized knowledge in integrating complex process equipment.



Together, the two companies designed, engineered, and delivered a solution tailored to the customer's exact needs. From early design concepts to installation and testing, the partnership ensured that every detail was accounted for—resulting in a system that provided operator safety, efficient workflow, and consistent product quality.

This case study highlights how Flow Sciences and Process Control Solutions worked together to overcome a complex containment challenge and deliver a fully integrated, high-performing microfluidizer workstation that exceeded customer expectations.



## Situation:

As part of a laboratory renovation project, a global health care company sought to create a workspace that could accommodate a new research group and its specialized process equipment. One of the primary challenges was enclosing a Microfluidizer, a large and complex instrument essential to the group's operations. Due to its size, a standard Flow Sciences enclosure was not a viable option. Additionally, the research group required unique access features to facilitate equipment loading and operation, which standard vented balance enclosure designs could not provide.

## Problem:

Of the instruments requiring enclosure, the largest was a Microfluidizer, which exceeded the dimensions of a standard Flow Sciences enclosure. Additionally, the equipment necessitated unique access features that could not be met by a conventional vented balance enclosure. It became evident that a custom containment solution was required. Further complicating the project, the laboratory's entryway could not accommodate the size of the custom enclosure, presenting additional logistical challenges.

## Solution:

We designed two custom enclosures with the internal capacity to accommodate this biopharmaceutical company's Microfluidizers. To meet the specific access requirements, we integrated proven Flow Sciences custom features, including horizontally sliding front doors and hinged side access doors. Given the constraints of the laboratory's entryway, the enclosures were shipped flat-packed and fully assembled on-site, ensuring seamless installation without compromising functionality or containment integrity.

## Conclusion:

With the assistance of a local specialty moving company, we successfully transported the enclosure components into the laboratory piece by piece and assembled each unit in place. We then conducted a standard white-glove installation of the remaining components, including filters and fans, ensuring full system functionality. Finally, we completed the startup process and provided comprehensive user training for the new lab personnel.



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