CASE STUDY

Custom Polypropylene Wet Process Bench by Burt Process Equipment for a Leading Research Institution

BURT
PROCESS EQUIPMENT

Overview
A prominent research institution, known for its advanced work in semiconductor technology and nanoscience, approached Burt Process Equipment for a custom wet process bench. This institution required specialized equipment for handling delicate chemical processes in a safe and controlled manner. The wet process bench was to be integrated into their semiconductor fabrication lab, which is a key facility for both academic research and industry collaboration.

Project Requirements
The research institution needed a wet process bench that could handle the unique demands of semiconductor manufacturing while maintaining the highest safety and operational standards. As part of a cutting-edge educational institution, the equipment also had to be adaptable for use in a variety of research and development projects.

Specific design requirements included:

- Dimensions: (84” x 32” x 72”H) with a recessed workspace for chemical spill containment.
- Material: ½-inch thick white polypropylene, featuring welded construction for enhanced durability and chemical resistance.

Key Bench Features:

- Recessed workspace with a 2-inch spill containment area.
- Overhead lighting to provide adequate workspace illumination.
- Hand nozzle, to be connected to the facility's DI water line.
- Two separate basins for an acid bath and a DI water rinse, including quick-dump feature for rapid draining.
- Integrated drainage system leading to an under-bench lift station.
- A flip-sash made of clear PVC for safety, providing an 18-inch access opening.
- Built-in storage underneath to house a PES-72 lift station.
- Exhaust plenum with connections for integration into the existing exhaust system, with slots for laminar airflow.

Solution Provided

Burt Process Equipment engineered a custom polypropylene wet process bench that was designed to support the client's advanced semiconductor research. The bench's white polypropylene construction was chosen for its resistance to chemicals commonly used in semiconductor processing. The recessed workspace effectively contained spills, ensuring safety and easy cleanup.

The system also featured integrated basins for both acid and DI water rinsing, ensuring efficient chemical management during processing. The flip-sash and exhaust plenum design provided a safe working environment by preventing fumes from accumulating and ensuring a controlled airflow during operation.

Lift Station and Infrastructure Integration:
The PES-72 simplex lift station, stored under the bench, was integral to the design.

It included:

· A 7-gallon molded polyethylene tank.
· A 1/3 HP CPVC vertical immersible pump, delivering 2 GPM at 10 feet total dynamic head (TDH).
· A discharge CPVC check valve.
· 2-point float type level control for automatic pump-down operation.
· A NEMA 4X control panel for managing the lift station and lighting.

Customer Background

The customer is a leading educational and research institution focused on advancing the fields of nanoscience and semiconductor technology. With a reputation for innovation, the institution is at the forefront of developing new technologies and solutions for the semiconductor industry. The wet process bench was a critical addition to their cleanroom facilities, enhancing their capability to conduct research and development in semiconductor fabrication, while supporting collaborations with industry leaders.

Outcome

The installation of the custom polypropylene wet process bench provided the client with a high-quality, durable, and safe workspace for handling delicate semiconductor processes. Burt Process Equipment's ability to design the bench to exacting standards, while incorporating features for future research adaptability, made the project a success. The bench is now a key component in the client's semiconductor lab, supporting both cutting-edge research and education.

This project highlights Burt Process Equipment's expertise in creating custom solutions for specialized research environments, furthering the advancement of semiconductor technology at a leading academic institution.