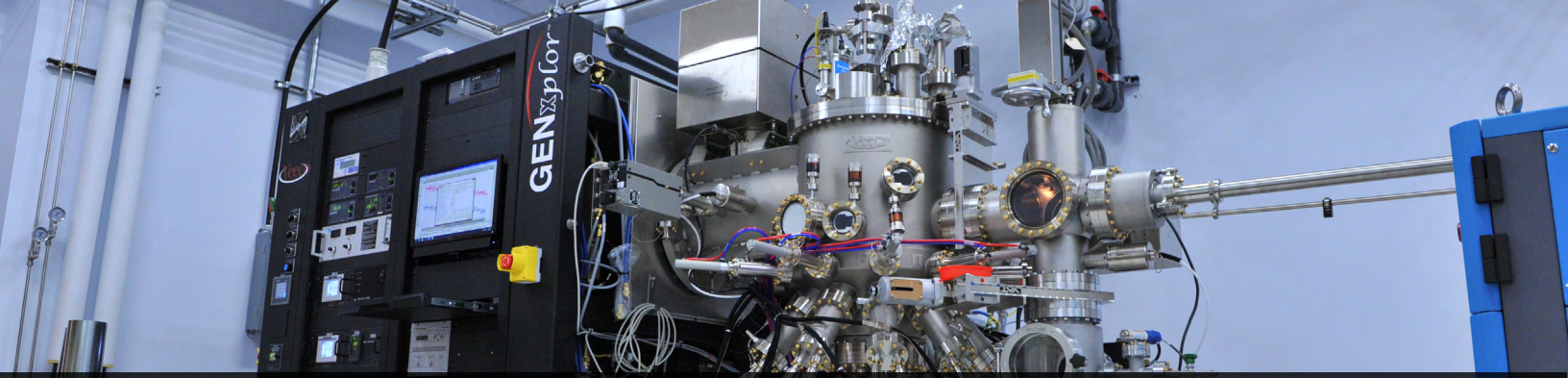

Microelectronics Portfolio

Metalorganic Chemical Vapor Deposition (MOCVD) Tool Install

About Us

Since 1985, High Purity Systems has provided precision welding, quality piping installation and fabrication solutions to the industrial sector. High Purity Systems delivers value and responsiveness to meet the ever-changing needs of our clients. Expertise includes Class 100 Clean Room orbital welding, onsite piping installations from stainless steel to carbon steel, piping fabrication shipped nationally and custom prototyping.

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The Problem

High quality process piping is the foundation of any laboratory. When a client from the semiconductor industry wanted to build a research and development laboratory, they called on High Purity Systems (HPS) to make sure the job was done properly.

During HPS' initial overview of the job, we noted that laboratory development would require connecting and installing process piping lines for installation of a Metalorganic Chemical Vapor Deposition (MOCVD) tool using highly specialized equipment. For HPS, this project was well within our comfort zone.

Before delving into the project details, we want to thank — yes, thank — one of our competitors for helping our customer recognize that HPS provides unmatched services expertise. Our competitor subcontracted its installation work, which led the customer to question the competitor's experience in performing high purity gas line installations and the company's commitment to getting the job done right. At HPS, we are proud to say we perform our own installations — without subcontractors — and deliver unrivaled quality.

The Strategy

Ready to work, we consulted with the customer to determine the exact specifications required to develop their laboratory. The customer did not yet have a specific plan for how to go about connecting and routing the piping, so HPS was happy to create a detailed layout for the installation.

This was not the only barrier HPS faced in this piping system project. The customer didn't specify the construction materials, a crucial detail that could have completely slowed down project completion. To expedite the process, our team helped the customer select materials that would meet all of the project objectives. Ultimately, HPS recommended stainless steel tubing, PFA, and PVC to help lower material costs. The customer agreed to the proposed plan and the project began.

Our team installed process supply lines for liquid nitrogen, gaseous nitrogen, compressed dry air, ammonia, dilute silane, hydrogen, and a chilled water loop. All of these lines supported and connected the MOCVD tool, a Molecular Beam Epitaxy (MBE) system, silane, ammonia and nitrogen cabinets, a portable chiller, and the hydrogen bank that was located outside.

HPS used orbital welding equipment to install the single wall stainless steel tubing for non-hazardous gases and double containment stainless steel tubing for highly combustible and hazardous gases. The tubing ranged from ¼" OD to ½" OD. Each line was pressure tested prior to completion. Once completed, our team had a third-party QA/QC validate the system's analytical counts for turnover to the customer.

The Result

As with every job HPS tackles, our sincere dedication to quality and complete customer satisfaction on this project was unparalleled. Every weld was completed to American Society of Mechanical Engineers (ASME) B31.3 and semiconductor standards for weld oxidation limits and weld profile.

Once the project was complete, the customer was excited to use their finished laboratory. They appreciated High Purity Systems' drive to deliver valuable guidance during project development, provide quick solutions to on-site challenges, and overcome unanticipated issues.