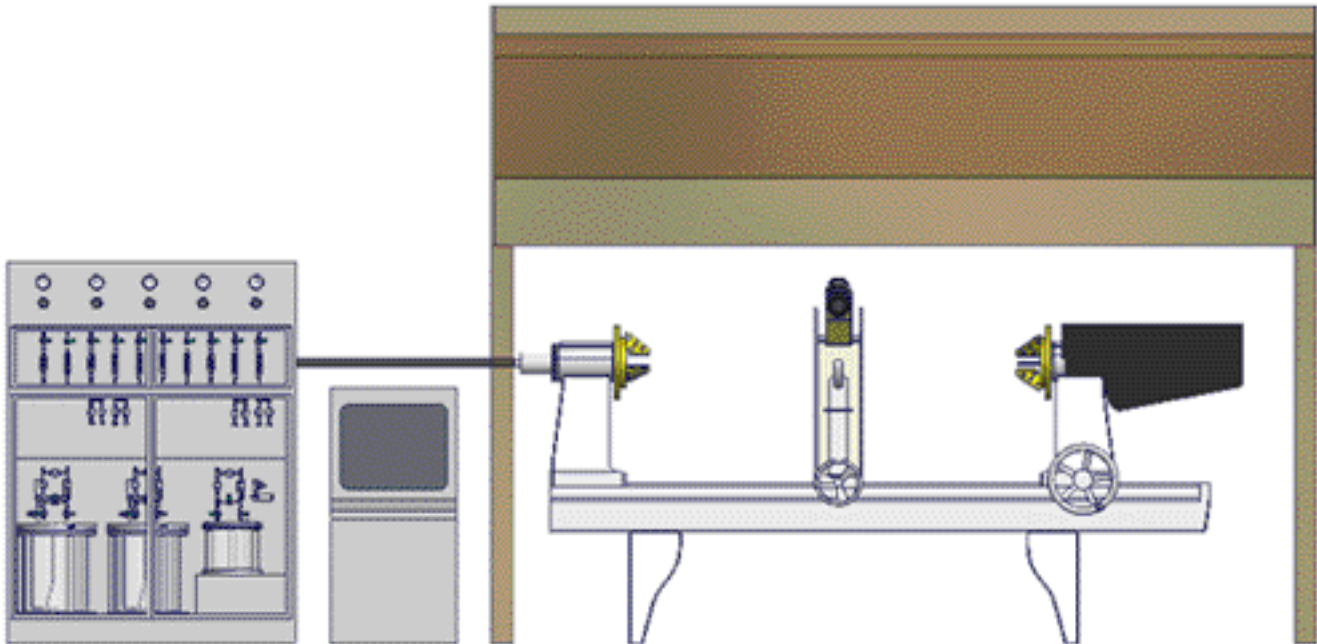


MCVD SYSTEM

DESIGN SERIES 100



Features

- ▶ 2-meter glass working lathe
- ▶ Stainless steel gas train with vacuum leak integrity to 1×10^{-8} sccm He/min
- ▶ High purity rotary seal
- ▶ Tube diameter control system

Process Design

- ▶ Single-mode processes up to 400- μm
- ▶ DSF and NZDSF capable
- ▶ 62.5-UM and 50-UM multi-mode capable
- ▶ Specialty preform processes

Automation

Today more than ever manufacturing processes must concentrate on improving efficiency and reducing costs. These goals must be reached while maintaining the highest quality standards. PPB's automation package is combined with exceptional data acquisition and processing techniques. This provides an atmosphere where the system is least affected by outside conditions. Variability is reduced and operator impact is minimized. This is done while providing the flexibility to manufacture many different preform designs. While MCVD has proven itself an extremely flexible process for the production of many different types of preforms, PPB's automation package adds even more flexibility to perform manufacturing capabilities of MCVD preforms.

- ▶ Lathe traverse & rotation control
- ▶ Bubbler pressure control
- ▶ Bubbler temperature control
- ▶ Ramping of chemicals, speed, and temperature
- ▶ Semi-automatic chemical filling
- ▶ Tube internal pressure control
- ▶ Data acquisition and process control
- ▶ Communications with database or LAN

Computer Automation Systems:

PPB's lathe control system has been created specifically by our production engineers for the automation, control, and data acquisition of our preform manufacturing system. The automation system maintains complete control of the process. Also, the system can be linked to a local area network to enable system monitoring from a remote location. This will enable engineers to monitor the process in real time from their office, laboratory, or even their home.



Lathe Rotary Seal:

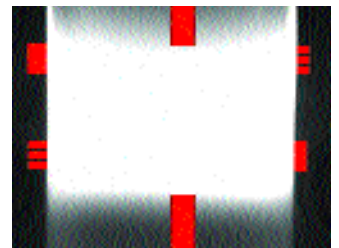
The PPB lathe rotary seal offers exceptional leak integrity, very little maintenance and the ability to run at a wide range of rotational speeds while maintaining low loss fiber.



Diameter Control System:

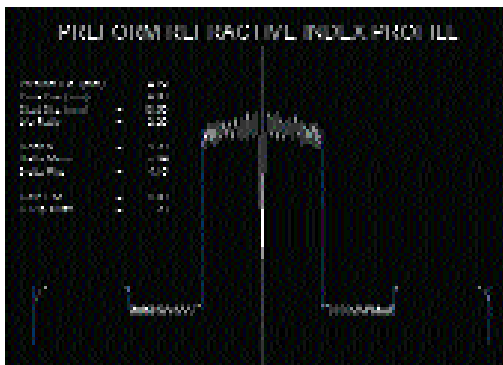
The Tube Diameter Control System utilizes a camera to measure the outside diameter of the deposition tube.

Then, the pressure inside the tube is changed to keep the substrate tube diameter on target. This system allows for the manufacturing of large preform processes with wide ranges of chemical dopants.



Manufacturing

- ▶ Fiber optics lathe for preforms of 1200-mm in length
- ▶ Fixed-head oxygen hydrogen torch
- ▶ Welded gas train of 316 electropolished stainless steel
- ▶ High purity valves, regulators, and piping
- ▶ Temperature control for each bubbler
- ▶ Bubbler pressure control
- ▶ High purity rotary seal



Support Services

Installation/Startup:

From the time the equipment arrives at your factory, our engineers will be on site to install, start up, tune, and begin manufacturing in the shortest time possible.

Support:

After installation, PPB's engineering team will remain on-site to assist the process and training on your new systems.

Future Capability:

To accommodate future process improvements, all the equipment for the series 100 MCVD lathe is designed and built with the future in mind. When it comes time to increase your process size or develop a different profile, our engineers will be available to assist you.

Process Improvements:

Our engineers can work in conjunction with your employees and current process to reduce your attenuation, increase yield, and improve quality.

Process Development:

Large preform processes, overcladding, offline collapse, and specialty preform process development assistance can be made available by PPB.

Process Control:

PPB's engineering staff can help your company develop the ability to monitor the process and make proactive changes to the existing conditions to prevent problems before they occur.

Facilities

Scrubber Systems:

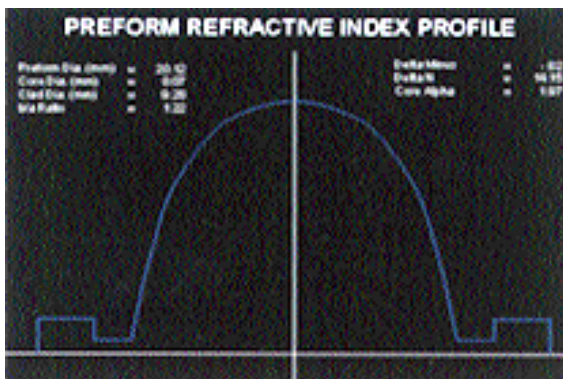
PPB can provide designs, equipment, and/or turnkey systems for your chemical treatment requirements.

Gas Delivery Systems:

Our engineering team can provide designs and vendor recommendations for all of your chemical delivery, purifier, and dryer needs.

Acid Wash Stations:

PPB can provide tube and preform washing systems.



Testing Equipment

Preform Inspection Station:

Preform diameter, length, geometry, and defects can be measured. This will provide valuable information when characterizing preforms to calculate yields and optimize quality attributes.

Preform Characterization:

When used in conjunction with a preform refractive index profile station, automated fit routines can be made to characterize the refractive index profile for use in characterizing single-mode, multi-mode, and DSF preforms. This gives information needed for overcladding as well as predicting the characteristics of the drawn fiber.

Consulting

Process Improvements:

Our engineers can work in conjunction with your people and process to reduce your attenuation, increase yield, and improve quality.

Process Developments:

Large preform processes, overcladding, offline collapse, and specialty preform process development assistance can be made available by PPB.

Process Control:

The ability to continually monitor the process and make proactive changes to the existing conditions to prevent problems before they occur.