

# Fiber Draw Tower

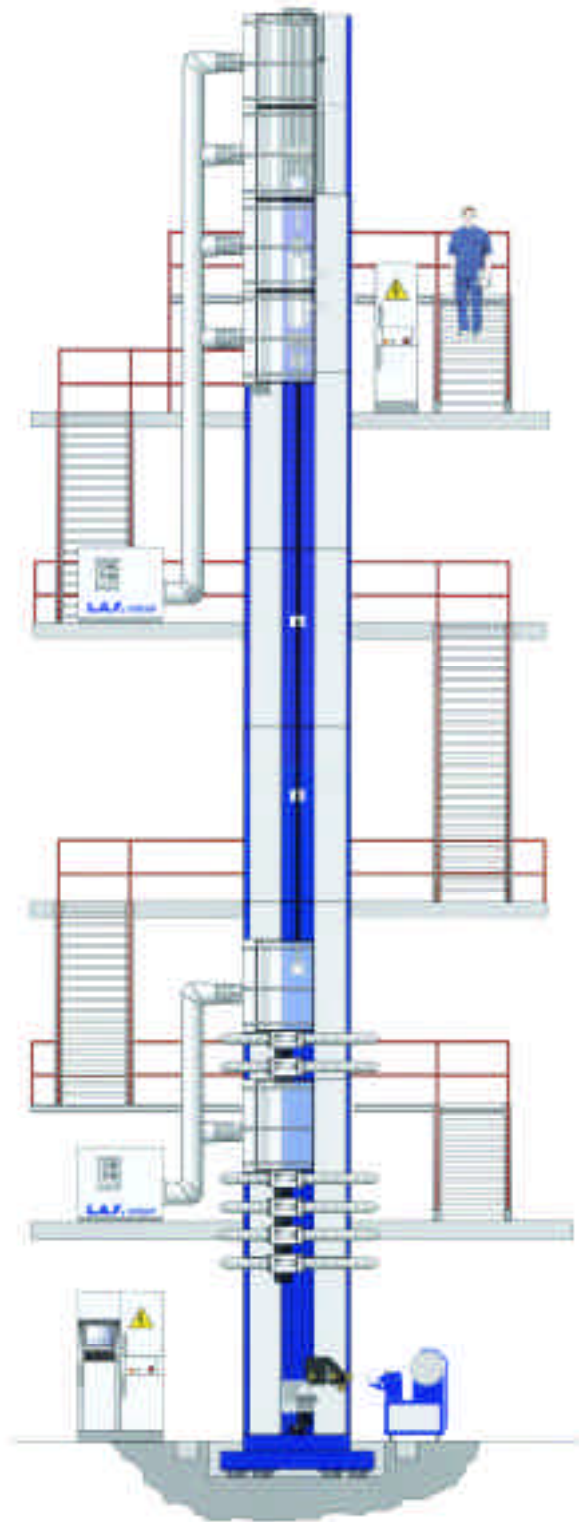
SERIES 300

## Features

- ▶ Dual-sided tower up to 30-meters tall
- ▶ Graphite induction furnace
- ▶ High-speed coating system
- ▶ Control system

## Process Design

- ▶ Draw speeds up to 1200 mpm
- ▶ Preform sizes up to 120-mm
- ▶ Dual-drum winder with capacity of 500-km/spool
- ▶ Complete automation package
- ▶ High efficiency furnace with long graphite life and low break rate



## Equipment

- ▶ Up to 30-meter dual-sided tower structure
- ▶ 4.5-meter preform feed unit with auto x-y control
- ▶ Graphite induction furnace with power supply
- ▶ Diameter gauges for bare fiber and coated fiber
- ▶ Bare fiber cooler
- ▶ Tension measurement device
- ▶ Coating applicators
- ▶ UV curing system
- ▶ High-speed, zero-vibration capstan
- ▶ Dual drum winder with 500-km/spool capacity and high speed changeover with zero whipping
- ▶ Complete automation package
- ▶ Laminar airflow system creating a Class 100 clean room environment around the exposed bare fiber



Dual Drum Winder



Auto X-Y



Interior Section of a Tower



High-Speed Zero-Vibration  
Capstan



Control System

## Installation/Startup

### Installation and 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 with the process and training on your new systems.

### Future Capability:

To accommodate future process improvements, all of the equipment for the Series 300 Draw Tower is specified to operate at speeds of at least 1800 mpm.



## Automation

PPB's automation package is designed to provide increased efficiency and improved quality through the entire fiber draw process. With data acquisition and process control, the quality attributes of the fiber can be maintained through the ramping process at the beginning and end of the preform.

The same control system allows the implementation of procedures and techniques that minimizes the time required to set up the tower and begin drawing fiber. This reduces down time and increases the efficiency of the tower providing for greater volume at lower cost.

### Features of the automation package include:

- ▶ Preform feed
- ▶ Preform x-y position
- ▶ Fiber diameter control
- ▶ Furnace power
- ▶ Furnace pressure and purge flows
- ▶ Fiber cooler flows
- ▶ Closed loop tension control
- ▶ Coating temperature and pressure
- ▶ Ramping for the beginning and end of the draw
- ▶ Spooler control and high speed transfer
- ▶ Complete process recipe generation
- ▶ Generation of cut-maps for the elimination of defects during prooftesting

## Facilities

### UV Exhaust System:

PPB can provide designs, equipment and/or turn-key systems for your UV oven exhaust and central vacuum requirements.

### Coating Delivery Systems:

Coating is often the most expensive material in the draw process. PPB can design a system which will deliver the coating from the largest bulk containers available to the reservoir at each tower. This can reduce the cost of the coating material and eliminate the waste associated with smaller containers.

## Consulting

### Process Improvements:

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

### Process Development:

Large preform processes, reducing set up time, increasing draw speed, improving quality parameters, break rate reduction and specialty preform process development assistance can be made available by PPB.

### Process Control:

Our engineers can provide your company with the ability to continually monitor the process and make proactive changes to the existing conditions to prevent problems before they occur. This includes the use of a database to create control charts and to monitor parameters for automated process control and troubleshooting.



## Testing Equipment

### Prooftesting Machine:

PPB can provide a prooftesting machine capable of operating at 2000 mpm with exceptional wind quality and no damage from whipping.

### Automated OTDR:

PPB's measurement engineers have developed a program which will read the OTDR trace from many generic OTDR benches. The computer code will then analyze the OTDR trace to find the length and loss data. Then, the software can perform non-linearity, sliding window, end-to-end and other automated tasks to screen the fiber for defects. This information can then be downloaded to a database and used to generate cut maps for prooftesting.



PTC Manufacturing Facility  
Zaltbommel, The Netherlands

The following equipment will be manufactured by **Production Technologies Center**, The Netherlands:

- ▶ Draw tower structure
- ▶ Preform feed unit
- ▶ Capstan
- ▶ Dual drum winder
- ▶ Laminar airflow units



This complete turnkey draw tower design is the product of the combination of equipment from **Production Technologies Center** of Zaltbommel, The Netherlands and **PPB Engineering & Systems Design, Inc.** of Roanoke, Virginia, USA. PTC has agreed to provide their systems to PPB for integration into the PPB tower automation and computer

control system. This arrangement allows PPB to combine the many years of experience in equipment manufacturing gained by PTC with the process knowledge of PPB to manufacture a complete turnkey system. This system will immediately perform to exceptional standards and will accommodate future needs when the time comes to increase process size, increase draw speeds, improve quality attributes and/or to draw another type of preform.

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