

PPS – Preform Plasma Polishing System

Preform Plasma Polishing System uses an atmospheric plasma torch for polishing the outside surface of an optical fiber preforms or other types of quartz rods. Some optical fiber preform preparation processes require special surface treatment where conventional H₂/O₂ burners cannot be used. PPS was developed specifically for applications where OH⁻ ions, incorporated on the quartz rod surface during conventional polishing process are an issue. Using a pure oxygen plasma flame significantly mitigates this problem.

When fluorine compounds are added to the plasma flame, PPS can also be used for precise etching process. Customers can use PPS for control of the preform diameter, thus adjusting the core-to-clad diameter ratio (CCDR) to desired value. Preform diameter can be precisely measured during the process by using Camera Vision System, implemented in OptiFACT control system.



Description

PPS system uses a 10kW 2.4GHz microwave source with a rectangular waveguide system, isolator for protection from reflected power and a 3-stub waveguide tuner. A quartz glass torch is inserted through the waveguide at the standing-wave peak to ensure maximum power transfer from electromagnetic radiation to plasma column.

A small gas cabinet is provided to prepare desired gas mixture. The waveguide with torch is surrounded by a closed metallic chamber that ensures safe operation. It prevents microwave leakage and provides extraction of hot air mixed with chemicals into scrubber. PPS can be delivered as a dedicated stand-alone system or as an add-on device to an existing glass-working lathe.

PPS is delivered with a small control cabinet which includes an Industrial PC (IPC), safety PLC and all control I/O units. A UPS unit is provided to put the machine into a safe state in case of a sudden electrical power failure. PPS is controlled by OptiFACT system and software, offering advanced process control, extensive data logging, process data analyzer, recipe database, as well as remote update and servicing.

Options and services

Plasil offers the following options and services:

- H₂/O₂ burner with necessary gas cabinet for in-situ glass assembly preparation. This option is ideal for the stand-alone version.
- In case the customer desires to polish or etch glass tubes, an over-pressure is needed to prevent the tube to collapse during the process. Plasil can provide solutions with precise inner tube pressure control.
- Process training at Plasil's development lab.

For more information about PPS equipment and technology please write to info@plasil.si