

SURFAGUIDE WR340

SWPR WR340 3 XX

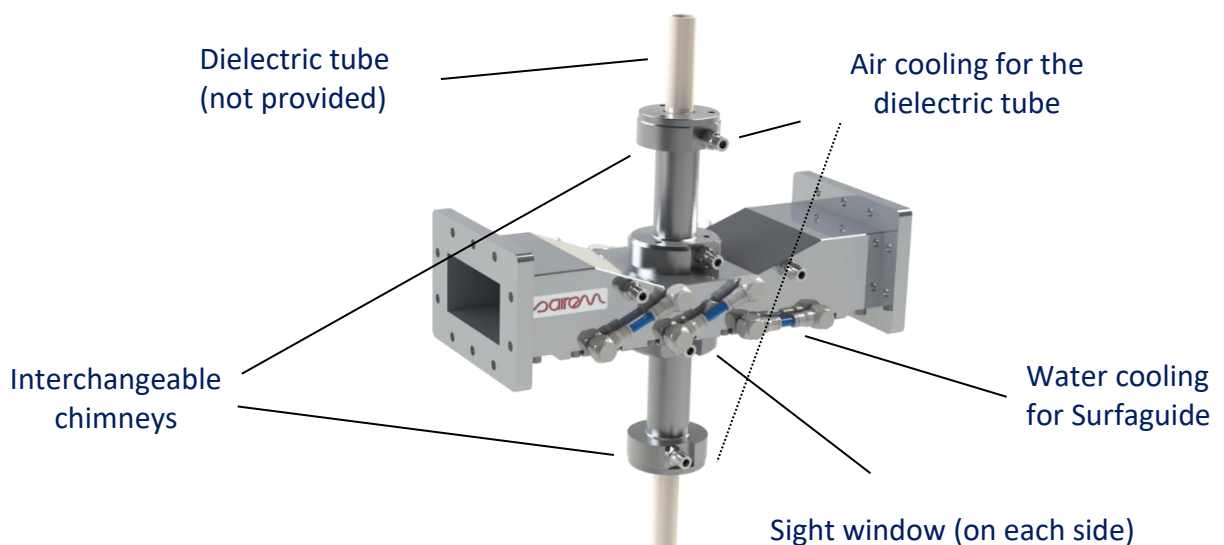
The Surfaguide is a waveguide-based electromagnetic-surface-wave launcher that allows sustaining long plasma columns using microwaves. The plasma is ignited and sustained in a dielectric tube that crosses a rectangular tapered WR340 waveguide. The reduction of the height of the WR340 waveguide allows to sustaining the plasma by increasing locally the microwave electric field, feature particularly important when working at atmospheric pressure and for external tube diameter that does not exceed 20 mm.

The Surfaguide is ideal for working in the atmospheric pressure range with dielectric tubes diameters between 10 and 20 mm and could equally work in the mbar range and down to a few 10^{-2} mbar.

The Surfaguide is designed to be used equally in R&D laboratories and industry for a very large range of applications. Typical applications of such source are atmospheric high temperature chemistry, nanopowder synthesis, surface activation, gas abatement, gasification, sterilization...

The Surfaguide could be used alumina tubes but other low loss, high temperature resistant dielectric materials could be used such as quartz, Pyrex™ or boron nitride. Inlet and outlet chimneys are designed to sustain and centre the dielectric tube. Moreover, in order to extend the operating conditions in the atmospheric pressure range and in the high power range, the dielectric tube has an air cooling possibility and the Surfaguide, water cooling.

Surfaguide plasma source WR340



Technical specification

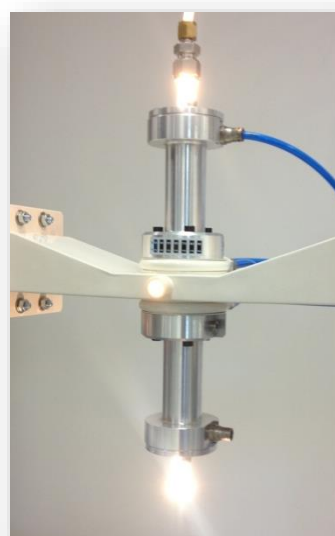
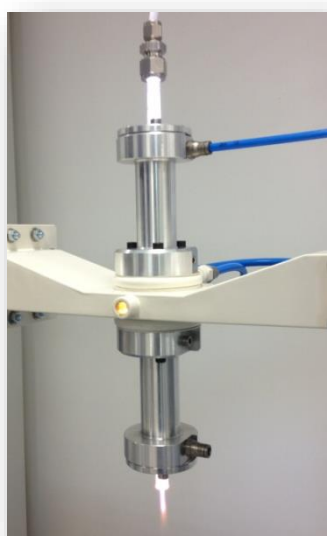
REF	SWPR WR340 3 XX
Frequency	2450 MHz \pm 25 MHz
Microwave power	Max. 6 kW (depending of gas nature, pressure, dielectric tube diameter...)
Working pressure range	A few 10 ⁻² mbar to atmospheric pressure
Connections	Standard WR340 flange (UG 553 A/U, RG 112/U)
Discharge tube external diameter	10 mm, 15 mm or 20 mm. MUST be specified when ordering <u>Tube not provided</u>
Cooling	Water, quick connectors for OD 8 mm hose Air, quick connectors for OD 6 mm tubing
Weight	cca 4.5 kg

*XX = external diameter of the discharge tube

OBSERVATIONS

1. Inlet and outlet chimneys are interchangeable and matched to the external diameter of the dielectric tube; additional chimneys for tube diameters 10, 15 and 20 mm can be ordered;
2. The use of a microwave adapted window (alumina, quartz) between the microwave generator and the Surfaguide source is strongly recommended - to prevent accidental arcing travelling back to the magnetron and equally to act as a barrier/seal to protect the magnetron against any debris/corrosive agents that could escape from the plasma source and cause irreversible damage to the magnetron and isolator.

Argon and Oxygen plasmas with the Surfaguide at atmospheric pressure



COMMON ASSEMBLY

The functionality of this plasma source is possible if the source is connected to a 2.45 GHz microwave generator (for the majority of applications 2 or 3 kW are enough) and means of impedance tuning, e.g. manual short circuit, 3-stub tuner, iris etc.

Standard Surfaguide set-up

