

DOWNSTREAM PLASMA SOURCE

This surface wave type of plasma source generates plasma in a dielectric material tube placed in a standard WR340 waveguide. This plasma source enables the ignition and sustaining of long plasma columns depending on the pressure, the microwave power and the gas nature.

The Downstream plasma source is ideal for working at pressures between 10^{-1} mbar and a few tens of mbar with dielectric tubes diameters between 30 and 50 mm; it can equally work at atmospheric pressure.

The Downstream plasma source WR340 is designed to be used in R&D laboratories and industry for a very large range of applications. Typical applications of such source are creation of radicals, surface activation, PECVD (dielectric materials, diamond...), gas abatement, gasification, sterilization, etching...

The Downstream plasma source could be used with an alumina tube but other low loss, high temperature resistant dielectric materials such as quartz, alumina sapphire could be used. 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/or in the high-power range, the dielectric tube can be air cooled and the downstream source can be water cooled.

MAIN APPLICATIONS

PLASMA APPLICATIONS

- Creation of radicals & reactive species
- Plasma Etching
- PECVD
- Gas abatement
- Gasification
- Sterilization
- Surface activation

KEY BENEFITS

DESIGN

- Water cooled fittings to the dielectric tube
- Air cooling of the dielectric tube for low pressure operation
- Compatible with sapphire and alumina tubes
- Wide pressure range from a few Pa to atm pressure

TECHNOLOGY

- Vortex gas injector and automatic ignition system for atmospheric pressure operation
- Automatic impedance tuning if used with Ai4S automatic impedance tuner



DOWNSTREAM PLASMA SOURCE

KEY SPECIFICATIONS

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|---|---|
| Reference | DOWNSTREAM WR340 3 XX* |
| Frequency | <ul style="list-style-type: none">• 2450 MHz \pm 25 MHz |
| Microwave power | <ul style="list-style-type: none">• Max. 10 Kw at atmospheric pressure, depending on the gas |
| Working pressure range | <ul style="list-style-type: none">• A few 10⁻² mbar to atmospheric pressure |
| Connections | <ul style="list-style-type: none">• Standard WR340 flange (UG 553 A/U, RG 112/U) |
| Discharge tube external diameter | <ul style="list-style-type: none">• 30 mm, 40 mm or 50. MUST be specified when ordering.• Tube not provided |
| Cooling | <ul style="list-style-type: none">• Water, quick connectors for OD 6 mm tubing• Air, quick connectors for OD 6 mm tubing |
| Weight | <ul style="list-style-type: none">• 2.7 kg |
| Material | <ul style="list-style-type: none">• Aluminum |

*XX = external diameter of the discharge tube

- Inlet and outlet chimneys are interchangeable and matched to the external diameter of the dielectric tube; additional chimneys for dielectric tube OD 30, 40 and 50 can be ordered.
- The use of a microwave adapted window (alumina, quartz) between the microwave generator and the Downstream 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.

DOWNSTREAM PLASMA SOURCE

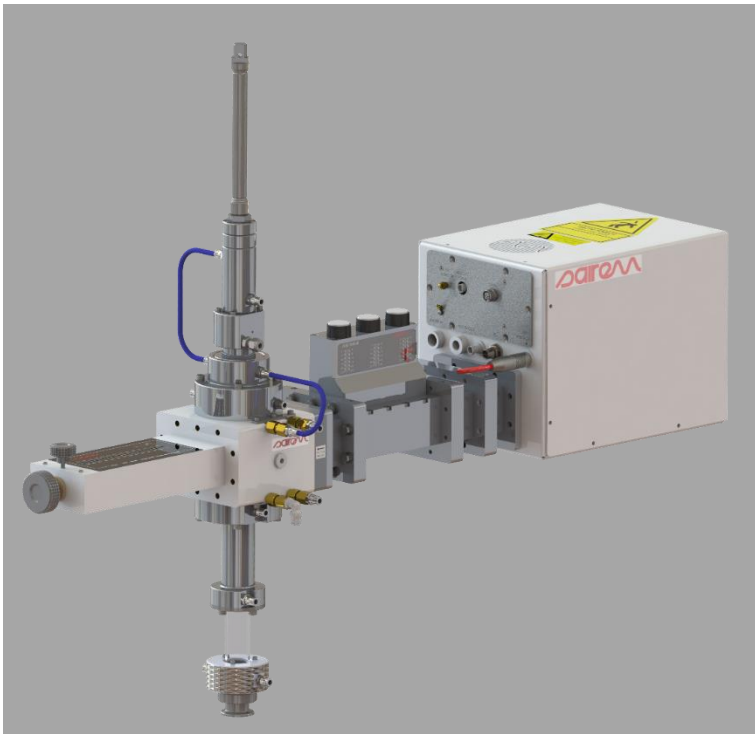
COMMON ASSEMBLY

The functionality of this plasma source is possible if the source is connected to a 2.45 GHz microwave generator and means of impedance tuning, e.g. manual short circuit, 3-stub tuner, iris etc.

STANDARD DOWNSTREAM SETUP

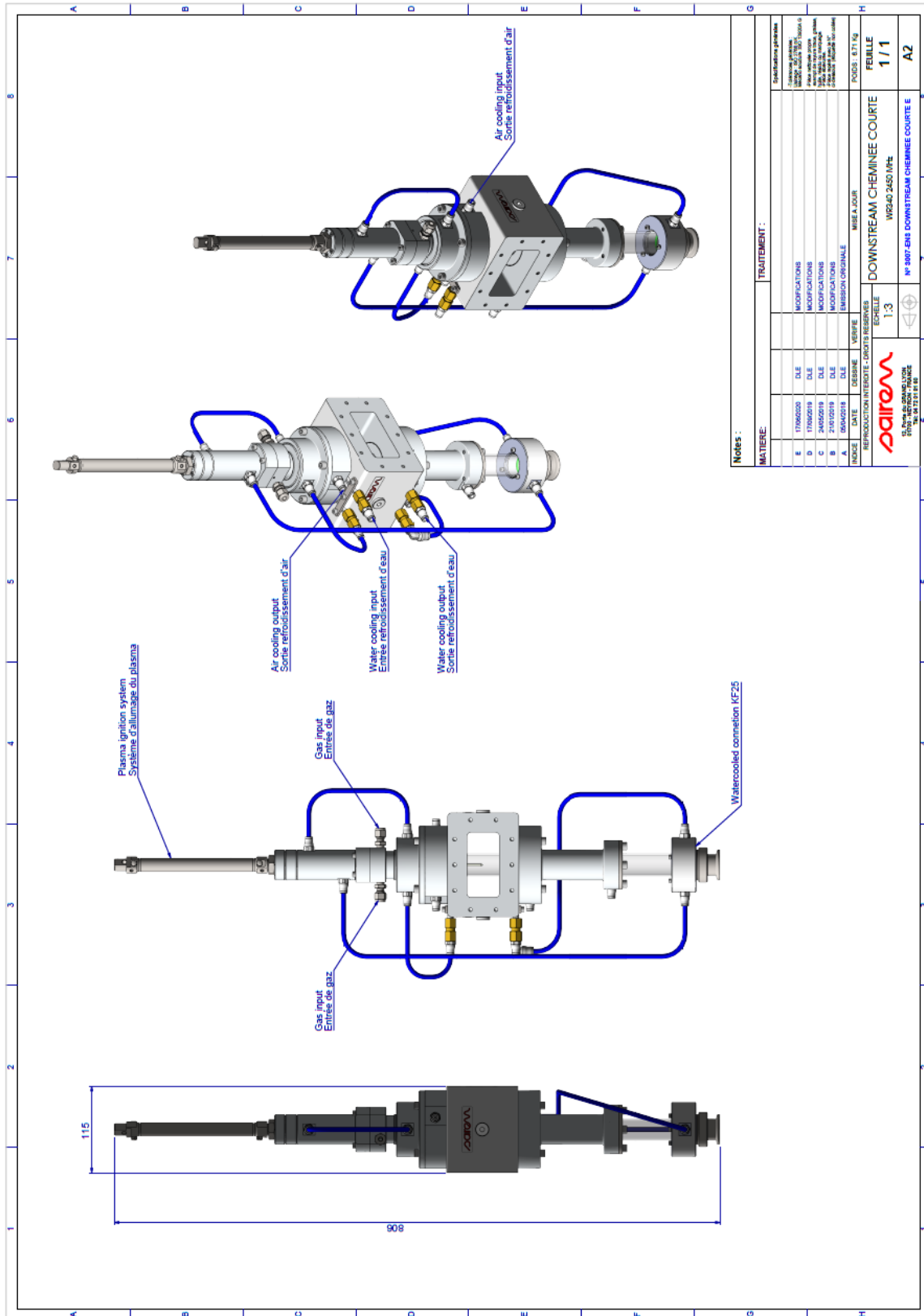


Switch mode power supply



DOWNSTREAM PLASMA SOURCE

DIMENSIONS



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6 KW SETUP DIMENSIONS

