

AURA-WAVE

ECR Plasma Source

AURA-WAVE is an ECR coaxial plasma source that has been designed to be self-adapted once the plasma is ignited. A magnetic field combined to the electromagnetic wave allows the creation of plasma at low pressure.

AURA-WAVE is an Electron Cyclotron Resonance (ECR) coaxial plasma source. It has been designed to be self-adapted once the plasma ignited. A magnetic field combined to the electromagnetic wave allows the creation of plasma at low pressure due to Electron Cyclotron Resonance.

AURA-WAVE microwave plasma source has been designed to sustain microwave plasma over several decades of pressure, i.e. **from 10^{-4} mbar to a few 10^{-2} mbar** and from a few watts whatever the gas.

Equally, the coaxial plasma source was designed to avoid inside power-losses and has proved to be matched, i.e. no reflected power with no additional impedance matching system over 2 to 3 pressure decades, depending on the plasma gas. Plasma density up to a few 10^{11} cm⁻³ could be easily obtained in multisource configuration in different gases like argon, oxygen, nitrogen.

When combined with SAIREM solid state microwave generator, it is possible to control the power transmitted to the plasma Watt by Watt. Low mismatching that may appear in the operating conditions can be balanced due to the variable frequency of the solid-state generator and thus permits to extend the operating condition range of AURA-WAVE.

AURA-WAVE is designed to be used equally in R&D laboratories and industry for a very large range of applications. It is ideal for working in the low-pressure range i.e. with high energy particles.



MAIN APPLICATIONS

PLASMA APPLICATION

- PECVD
- Reactive Ion Etching & Deep Etching
- Creation of radicals & reactive species
- ALD
- Surface activation
- Surface treatment: cleaning ...
- Sterilization via reactive species / UV / ionic bombardment

AURA-WAVE ECR Plasma Source

KEY BENEFITS

DESIGN

- Distribution in the desired configuration: matrix, crown, hexagonal, straight line ...
- **No limitation** in the number of sources or plasma dimension
- DN40 KF flange – available in all CF flange
- Electrodeless: independent target and substrate bias voltage
- Possibility to use sapphire protection mask for pollution protection

TECHNOLOGY

- Matched plasma sources: **no impedance tuner required**¹
- **Automatic impedance adjustment**² using the variable frequency, allowing extension of the operating condition range

CONTROL

- **Automatic control of the transmitted MW power to the plasma** whatever the number of sources
- Each plasma source is connected to its own microwave generator
- Output power adjustable from 0 W to 450 W, with 1 W increment

PERFORMANCES

- **Over dense plasmas**, high ion & high active species densities
- **Uniform plasma** without limitation in terms of areas
- Wide operating condition range: several decades in of pressure from a few W to full power



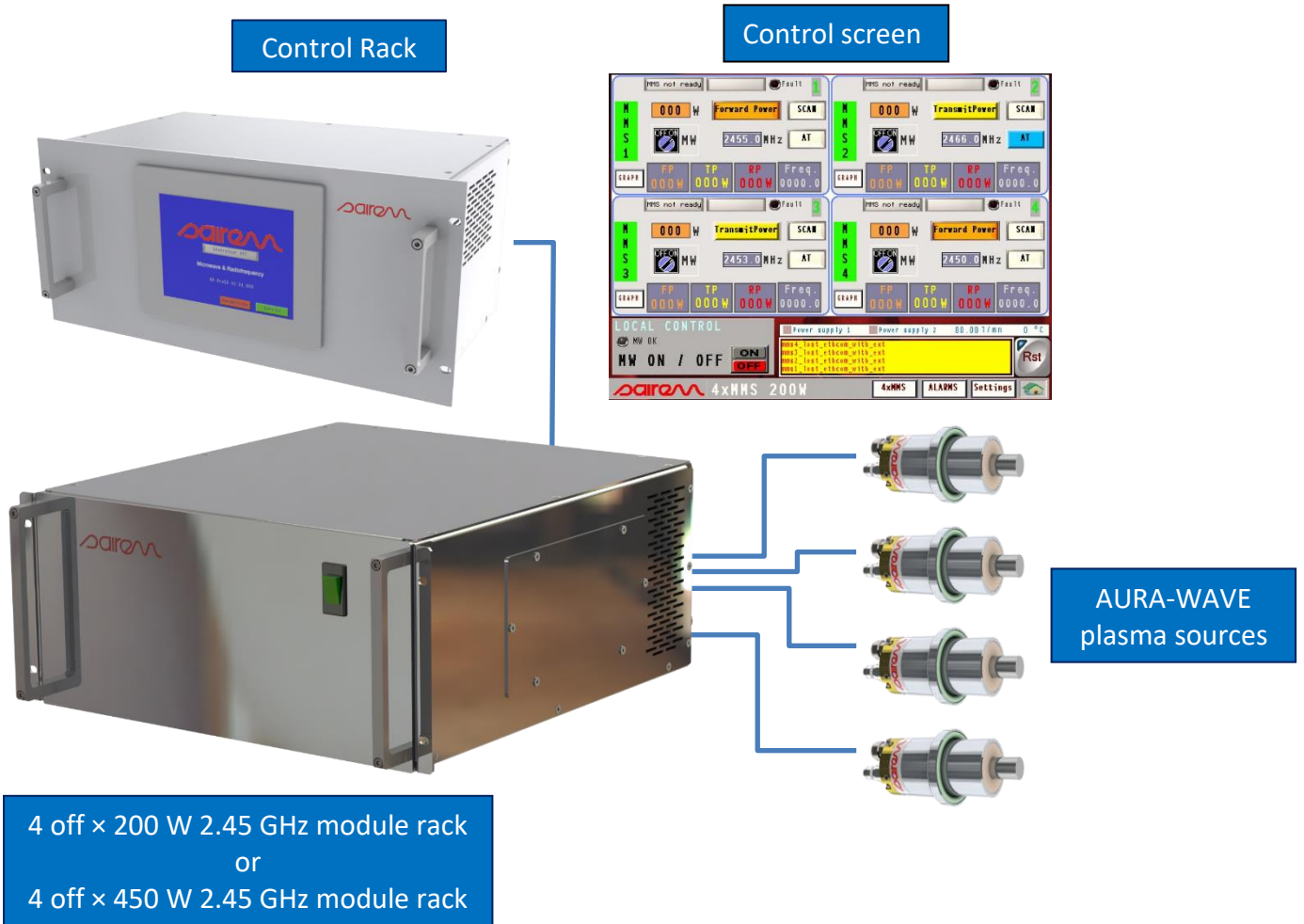
¹ SAIREM patent WO 2017/060611

² SAIREM patent WO 2012/146870

AURA-WAVE ECR Plasma Source

MULTIPLE SETUP

The control rack allows to control each AURA-WAVE with 1 W step.



To get the complete data sheet :

- full specifications
- technical drawings

CONTACT US !

