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AX2600 & AX2700

MICROWAVE PLASMA DELIVERY SUBSYSTEMS

The AX2600 and AX2700 Series Microwave Plasma Delivery Subsystems are complete and highly reliable solutions for the cost-effective generation and safe delivery of atomic species to the wafer. Available in 3 kW, the highly reliable, field-proven AX2600 and AX2700 Series plasma delivery subsystems deliver highly concentrated atomic species. Suitable for multiple chemistries, the high speed and precision of this plasma system's automatic tuning guarantees immediate ignition and fast transition from plasma conditions for high productivity. Robust closed-loop control ensures high accuracy, precision, and optimal repeatability of the process from wafer to wafer and system to system.

The AX2600 Series is a fully integrated, "packaged" solution designed for easy on-chamber integration. The AX2600 system includes the AX2500 SmartPower® Microwave Generator, SmartMatch® Tuner, Isolator, and the patented AX7610 Microwave Applicator.

The AX2700 Series, provided in kit form, consists of all components necessary for microwave plasma processing and is ideal for customers looking to optimize placement of the individual components on a system. All AX2700 system components are highly reliable, factory tested, and field-proven.

Features & Benefits

Performance

- Fully automatic for hands-off operation
- Accurate power measurement, closed-loop control and automatic plasma tuning ensure high accuracy and repeatability for improved yield
- Precise microwave generator with closed-loop control power regulation for optimal wafer to wafer processing
- Power Accuracy: < ±1.5% of maximum power (20% - 100% P_{out})
- Delivers high productivity with fast tune times < 1 sec in various chemistries

Flexibility

- Microwave plasma sources, available for fluorine or non-fluorine chemistries, are designed for high power with multiple gases, flows and pressure ranges
- Subsystems are lid mountable and configurable to accommodate available chamber real estate

- Process changes are handled by the flexible system software and require no hardware modification.
- Quartz and Sapphire version to adapt multiple chemistries

Reliability

- MKS microwave plasma subsystems are fully integrated and tested for true turnkey implementation
- Components have been optimized for long life, reducing CoO
- Based on MKS's highly reliable, field-proven technology, MTBF exceeds 100,000
- Secure operations with analog control and remote only versions

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Specifications and Ordering Information

Max Power Output	1.8 or 3.0 kW
Frequency	2440 - 2470 MHz
Regulation	Better than 1% of output power (line and load)
Output Accuracy	±1.5% (from 20 - 100% of max. power)
Total Gas Flow	1 – 7 slm
Time to Match	< 2 sec
Operating Pressure	2 - 8 Torr
Chemistries	O_2, N_2, H_2O, Ar, NF_3, CF_4, C_2F_6, NH_3
Applicator Material	Quartz, Sapphire
Remote Control Option	Analog, RS485, DeviceNet™ EtherCAT®
AC Power Input	200/208 VAC ±10%, 3 phase, 50/60 Hz
Compliance	CE, ETL, SEMI S2-93A, SEMI F47

Please contact your local MKS sales office for price and availability information.
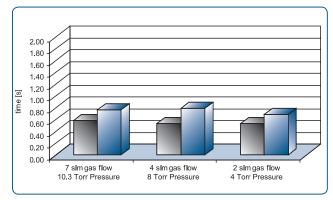

Figure 1 — SmartPower® System Performance
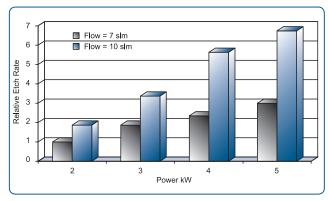*SmartPower system performance with 50% NH_3 / 50% N_2 plasma at 3 kW*

Figure 2 — Relative Strip Rates
Relative strip rates for quartz applicator with oxygen plasma, compared to 7 slm flow @ 2 kW

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