

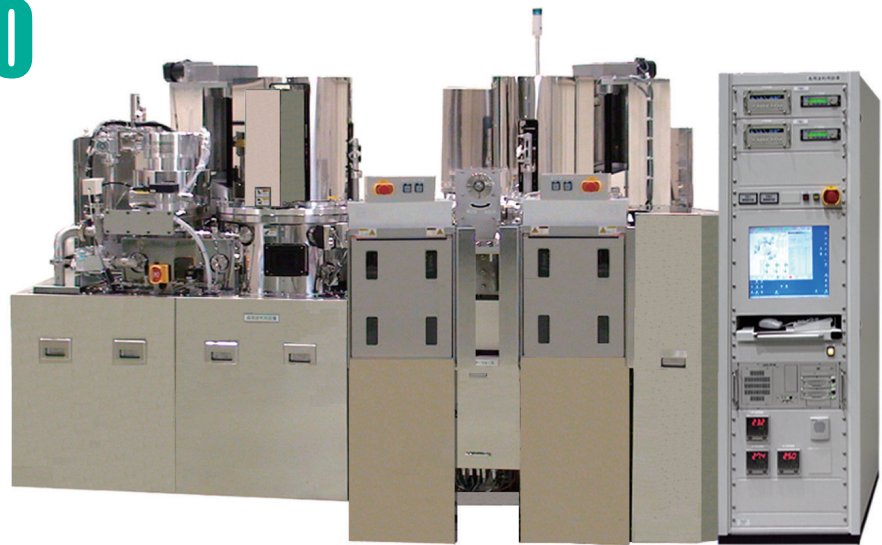


— We aim to be a one-of-a-kind manufacturer. —

Solid-Source ECR Plasma Deposition System

## AFTEX-9000 series

More than 100 Solid Source ECR Plasma Deposition Systems has been introduced into production lines since they can form high-quality nano-thick thin films at low temperature and with low damage. Equipments of AFTEX-9000 family for max. 200mm $\phi$  samples can be equipped with up to three ECR plasma sources allowing simultaneous film deposition using all of them, which realize extremely high throughput.



### Product Features

- Automatic carrier system with 200 mm $\phi$  samples, 3 ECR plasma deposition room (max.)
- High throughput by simultaneous deposition with the 3 ECR sources
- By setting recipes, desired multilayer is automatically produced.
- Sample rotation and inclined ECR-source installation provide excellent uniformity and coverage.
- Option: Spectrometer to measure film thickness and refractive index (NEW)
- Need no waste gas processing system by using the solid source (target) and safety gases, such as argon, oxygen, and nitrogen.

**Large variation of materials and layers:** Various oxides and nitrides can be deposited by using various target materials and the safety gases, such as argon, oxygen, and nitrogen.

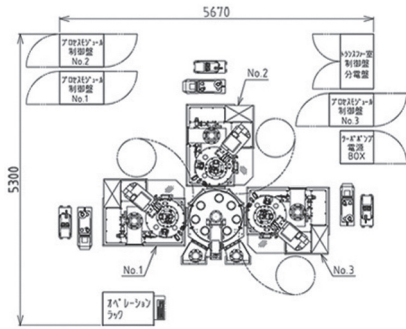
**Controllability of refractive index:** The solid source (target) and the dry gases, such as oxygen and nitrogen provide a high controllability for refractive index of the films.

**Deposition chemistry:** The ECR plasma stream promotes a high reactivity between the materials from the target and the safety gases, providing high-speed reactive sputtering deposition.

**Low temperature, less damage, surface treatment:** The ion energies (10-30 eV) in the ECR plasma stream present a high-quality and less-damage deposition. Cleaning or ultra-thin oxide/nitride film deposition is available by using ECR-plasma-stream irradiation on the sample surface.

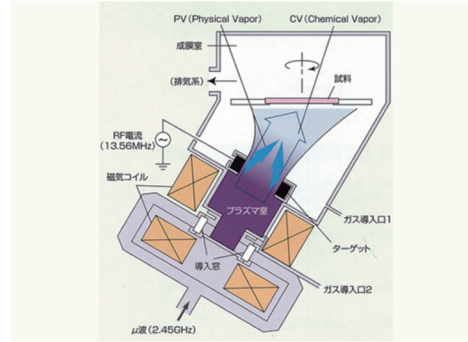
# AFTEX-9000 series

## Dimensional Drawing



▲ For more details

## Conceptual Diagram



▲ For more details

## Standard Specification

Items	Specification	
Residual gas pressure	Process room: <math><3E-5\text{ Pa}</math>, Transfer room: <math><9E-5\text{ Pa}</math> Load-lock room: <math><3E-4\text{ Pa}</math>	
Evacuation system	Process room Turbo-molecular pump: 1300L/s, Rotary pump: 500L/min Transfer room Turbo-molecular pump: 450L/s, Rotary pump: 250L/min Load-lock room Turbo-molecular pump: 450L/s, Rotary pump: 250L/min	
Load-lock room	Automatic open/close door, Cassette: 12 samples, Sample detection system	
Transfer room	Robot arm system, Sample detection system, Face-down carrier, Additional small room (option): max. 2 units	
Deposition room	Available room	Max. 3 units
	Substrate size	Max. 200mmφ
	Substrate holder	Rotation and up/down mechanism Temporary cradle mechanism
	Deposition	Upward
	Substrate heating	Max.300°C
ECR source	Quantity	1 unit for each deposition room
	Type	Microwave introduction method coupled with divided microwaves
	Plasma chamber	Inclined installation
	Target	Cylindrical target Inner diameter: 125mm

Items	Specification	
Gas system	3 lines, controlled by mass-flow controllers for each deposition room Gaseous species: Ar, O <sub>2</sub> , N <sub>2</sub>	
Operation	Automatic evacuation, carrying, and deposition by recipes	
Controller	Microwave source:2.45GHz, 1kW, 1unit Microwave auto-tuner Magnet coil power supply:DC 1.5kW, 2units Sputtering power source:13.56MHz, 1kW, 1unit RF auto-matching controller Computer and sequencer	
Utilities	Foot print	7x6m (including working space)
	Electric power	3φ200V, 75A, max.4 lines
	Cooling water flow	20L/min (room temp.), 0.3-0.4 MPa (inlet), max. 3 lines
	Weight	About 7000kg

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