GIGA690

PRODUCT OVERVIEW

MULTIPURPOSE PLASMA BATCH SYSTEM



PVA TePla

ABOUT THE SYSTEM

TRUSTED PLASMA PROCESSING EXPERTISE.
AVAILABLE IN GHZ AND MHZ VARIANTS.

Cleaning and activating semiconductor components during the manufacturing process is essential to ensure the performance and longevity of modern electronic products.

The GIGA690 plasma system is a low pressure microwave plasma system specifically designed for chip packaging applications – particularly before die attach, wire bonding, flip-chip underfill, and encapsulation. Microwaves at 2.45 GHz are introduced into the vacuum chamber through a window, generating a mostly chemically reactive plasma. This process allows for very fast and damage-free plasma treatment. The system can handle magazines of any size and type. The plasma cleaning effect is driven by chemical reactions of reactive plasma particles (radicals) that are directed through the substrate or wafer carriers. The system is easy to operate in both manual and automatic modes, and its highly user-friendly software complies with SEMI standards.

Unmatched process performance for underfill
Best activation (smallest contact angle) for extremely small gaps and large chip sizes, e.g. for AI applications.

Maximum substrate flexibility
200/300 mm wafer (CoWoS), 310 x 315 mm panels (CoPoS), glass substrates, framed wafer.

- Activation before molding or underfill
- Cleaning before wire bond
- Surface activation before painting and coating

Plasma processing distinguishes between batch and single treatment. Treating products in a batch (magazine) allows the use of simpler tooling. Single product treatment provides a more uniform process result.



SPECIFICATIONS

TECHNICAL PARAMETERS

SPECIFICATIONS	
Process chamber	Material: Aluminum | 64 liter (opt. 91 liter) | 400 x 400 x 400 mm³ (opt. 450 x 450 x 450 mm³)
Microwave plasma generator	2.45 GHz (pulse free operation) | Continuously adjustable magnetron (air cooled)
Configuration Options	■ Choice of GHz or RF plasma generation ■ No electrodes inside chamber for GHz or Electrodes inside chamber for RF ■ Variable gas flow, depending on your application
Vacuum system	Vacuum connection: DN 63 ISO-K | Ultimate pressure: < 0.01 mbar
Control hardware	■ PC based system (Windows 10 IoT) controller with 10.4" touch-screen and graphical user interface ■ Ethernet, USB, RS232 interface ■ Light tower for system status R/Y/G with buzzer
Functions and Software	■ Graphical real-time operating system with process monitoring and recipe management ■ SEMI S2 and CE compliant ■ Process recipe warnings, alarm message dialogues and self test routines ■ Optical plasma intensity monitoring ■ Real-time monitoring of process data ■ Multiple recipe storage (1–10 steps each)
Safety	■ 2 Emergency off push buttons ■ Vacuum interlock interrupts plasma generation ■ User password level protection, software and hardware interlocks
Dimensions | Weight	1002 x 1945 x 707 mm (W x H x D incl. light tower) | approx. 195 kg
Gas supply	Process gas: 1–2 bar, ¼" Swagelok-connector Compressed air: 4–6 bar, connector 6 mm Festo, oil free
Gas channels	2 separate mass flow controllers, calibrated according to process requirements. max. 4 gas channels (2 more channels are optional)
Electrical connection (options)	■ **without pump:** 230 V AC, 1 PH, N, PE, 50–60 Hz, max. 15 A ■ **without pump:** 208 V AC, 2 PH, PE, 60 Hz, max. 15 A ■ **with pump:** 400 V AC, 3 PH, N, PE, 50–60 Hz, max. 25 A ■ **with pump:** 208 V AC, 3 PH, PE, 60 Hz, max. 32 A
Optional Features	■ Comprehensive **selection of vacuum pumps** (oil-sealed/dry) with varying pumping capacities. ■ **SECS-GEM host communication** for seamless integration into production environments. ■ Hydrogen process gas option, featuring a safety-certified gas box and an **integrated generator.** ■ **Customizable product carriers**, including multiple magazine sizes, wafer treatment configurations, and specialized part carriers. ■ **Chemraz sealing** for fluorine processes, enhancing organic removal efficiency.



APPLICATIONS

VERSATILE AND ESSENTIAL.
SEMICONDUCTORS AND BEYOND.

The GIGA690 plasma system is a versatile, high-performance treatment tool that is used in a wide range of industries. In semiconductor manufacturing, it enables essential backend processes such as surface activation prior to molding and bond pad cleaning. Beyond semiconductors, plasma surface treatment is an integral part of industries such as fine mechanics, jewelry, watchmaking, coating and painting.

Equipped with a sophisticated plasma chamber and advanced features, the GIGA690 ensures efficient and adaptable processing for a wide range of products.

CONFIGURATION OPTIONS

FULLY FLEXIBLE MACHINE AUTOMATION.

DOOR TYPES



Manual hinge



Manual pull-out door

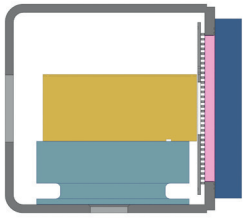


Motorized sliding door



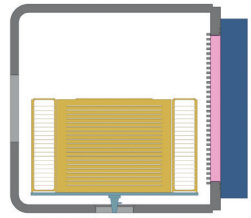
Motorized pull-out door

MODES



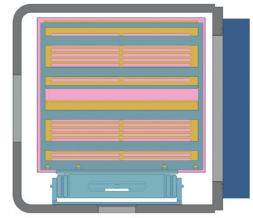
Downstream mode

- For closed magazines
- Remote plasma generation
- Magazines drive pressure difference
- Top to down penetration of radicals



Rotary table mode

- For slotted magazines
- Remote plasma generation
- Magazine rotation improves uniformity

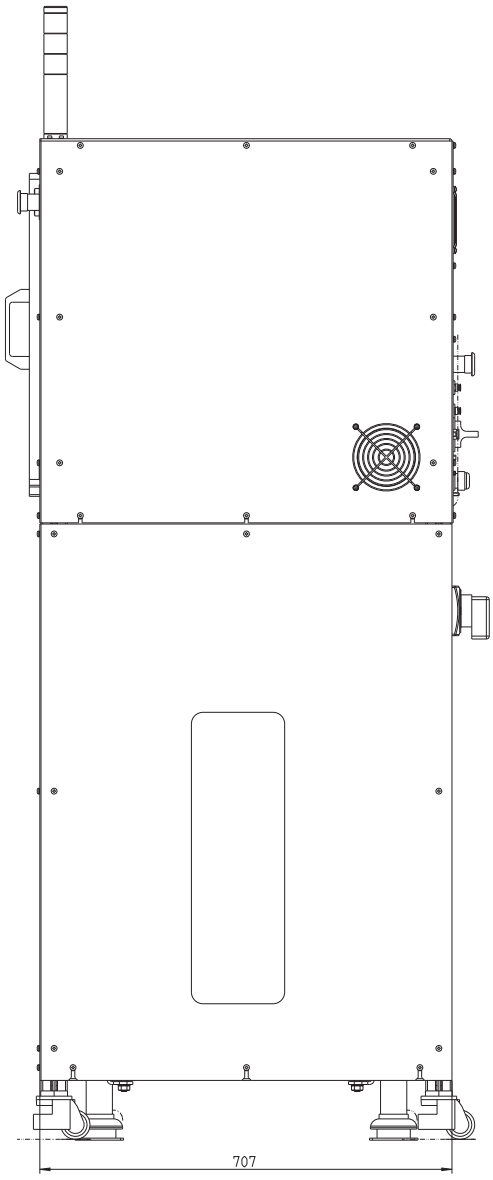


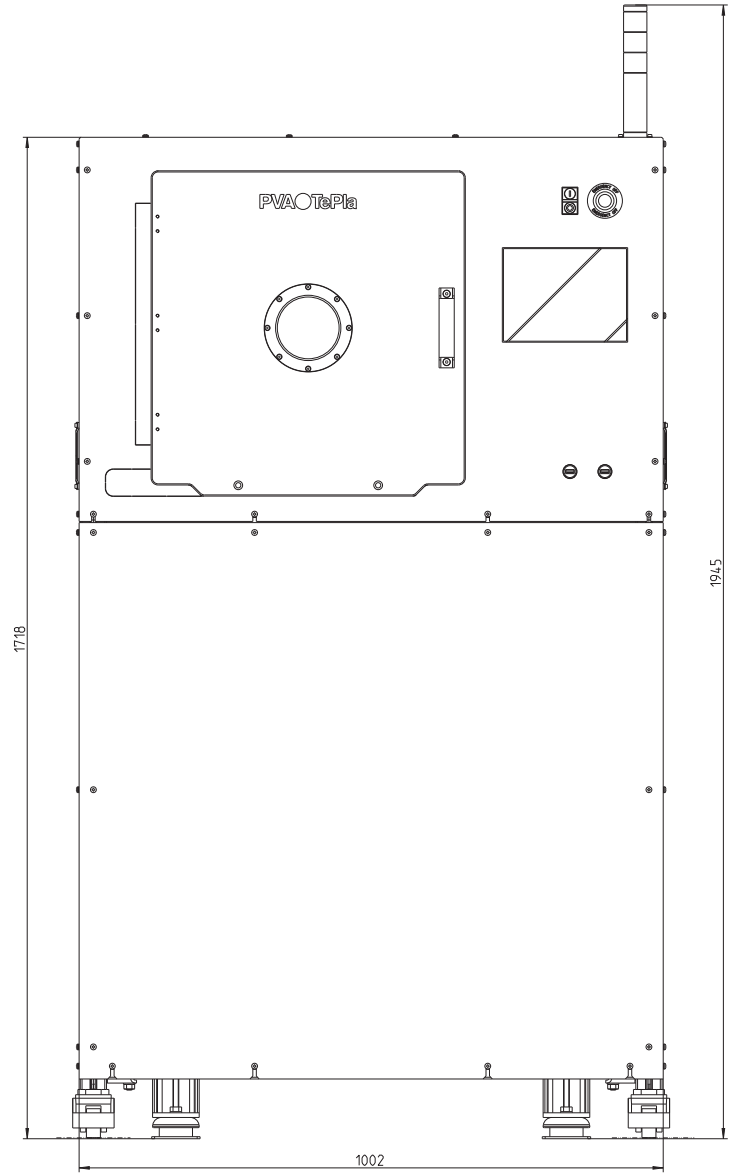
ECR mode

- For slotted magazines
- Controlled plasma generation within the rack
- Optimized plasma uniformity within the rack

SPECIFICATIONS

DIMENSIONS





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