GIGAbatch

FAMILY OVERVIEW

FRONTEND BATCH TYPE RESIST ASHING SYSTEMS



ABOUT THE SYSTEM

FRONTEND BATCH TYPE RESIST ASHING SYSTEMS
ADVANCED MICROWAVE PLASMA ASHING.

Every move from lab to fab puts a proven ashing process at risk. GIGAbatch scales one damage-free microwave plasma platform from 25-wafer table-top to 75-wafer production batch.

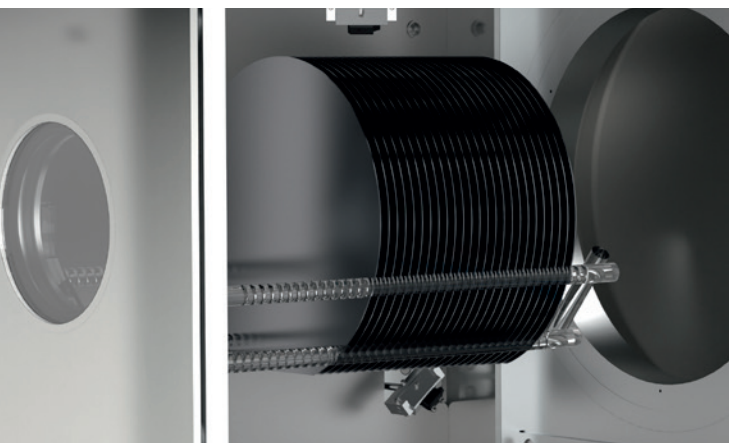
The GIGAbatch family comprises compact microwave plasma systems with horizontal wafer loading for resist removal and substrate cleaning. Designed for the production of semiconductor devices, High Brightness LEDs and MEMS devices at very low cost of ownership, the family ranges from an economical table-top system for universities and R&D labs to batch systems for the production environment. Microwave plasma is well suited for photoresist removal in advanced device manufacturing. Its high density of reactive species delivers fast ashing rates, while low ion energy at the wafer helps limit plasma-induced damage. Additionally, the systems are able to perform horizontal wafer and substrate plasma treatment. All systems handle various substrate sizes. Wafer or quartz boat support bars, custom-designed for the respective carriers, ensure secure positioning in the chamber. Wafers are always loaded without touching the plasma chamber, reducing loading errors and particle defects.

Damage-free microwave plasma ashing
High ashing rates from reactive radicals

Fewer loading errors, fewer particles
Loading without touching the chamber

One microwave platform from lab to fab
From R&D table-top to production batch

- Activation, photoresist removal & descum
- Resist stripping for semiconductor, HB LED & MEMS device manufacturing
- Removal of special resist materials like SU-8
- Optional process chamber out of ceramics for CF4/SF6 gas supply
- Horizontal wafer and substrate plasma treatment



Quartz boat holds wafers for contact-free loading into the chamber.

SYSTEM OVERVIEW

FROM LAB TO FAB.

GIGABATCH 310 M

FOR RESEARCH AND DEVELOPMENT

The GIGAbatch 310 M is a compact table-top system for resist removal in semiconductor applications, configured for universities and R&D labs and offered at an economic price level. Typical applications are the removal of photoresist after high dose implant as well as wafer and substrate cleaning; an optional SU-8 package extends the system to SU-8 removal. Wafers are loaded via a manual drawer door.



GIGABATCH 360 / 380 M

FOR MANUAL PRODUCTION

The GIGAbatch 360 M and 380 M are compact stand-alone batch systems for manually operated production. A pristine glass front qualifies the tools for the cleanroom environment, and a convenient drawer door, opened and closed manually, allows easy wafer loading. Both variants are identical in design and differ in maximum wafer size and chamber dimensions.



GIGABATCH 360 P / 380 P

FOR THE PRODUCTION ENVIRONMENT

The GIGAbatch 360 P and 380 P are based on the M platform and consistently designed for the production environment. A stainless steel cabinet, a gas box with Pall particle filter and Nupro valves with VCR fittings throughout the gas supply minimize contamination sources. The motor drive for the chamber door helps to reduce particle defects caused by the wafers moving in the slots of the quartz boat during door movement. An optional wafer transfer unit (WTU) enables automatic loading and unloading. Specified particle and metal contamination levels – defined exclusively for the P versions – meet the cleanroom requirements of production.



Optional Wafer Transfer Unit (WTU)

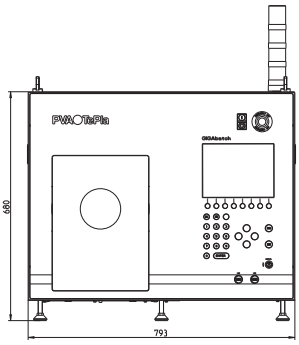
SPECIFICATIONS

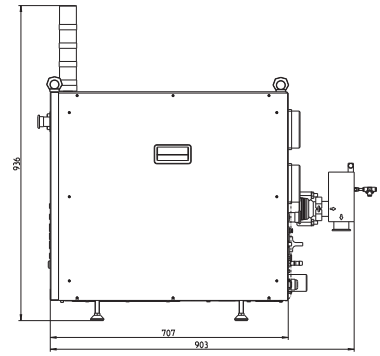
TECHNICAL PARAMETERS

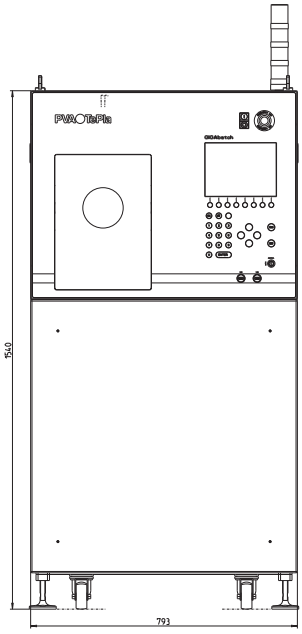
GIGAbatch SERIES	310 M	360 M	380 M	360 P	380 P
PLASMA					
Frequency	2.45 GHz				
Power	0–600 W	0–1000 W			
WAFER HANDLING					
Wafer size	up to 150 mm	up to 150 mm	up to 200 mm	up to 150 mm	up to 200 mm
Batch size	25 x 6" or 50 x 4"	up to 75 wafers, depending on size			
Wafer loading	Manual loading outside plasma chamber			Manual or optional automatic (WTU)	
Chamber door	Manual drawer door			Motorized door	
Wafer transfer unit (WTU)	–	–	–	**Option:** 50 wafers up to 150 mm	**Option:** 25 wafers up to 200 mm
VACUUM CHAMBER & CABINET					
Material	Quartz/Aluminum	Quartz	Quartz	Quartz	Quartz
Inner diameter	245 mm	245 mm	300 mm	245 mm	300 mm
Depth	395 mm	395 mm	395 mm	395 mm	395 mm
Volume	18 l	18 l	28 l	18 l	28 l
Approx. Dimensions (w/h/d)	795 x 660 x 710 mm	795 x 1,540 x 710 mm			
Weight	150 kg	190 kg			
GAS SUPPLY & UTILITIES					
Process gas channels	1 channel (+1 opt.)	2 channels (+2 optional)		2 channels (+2 optional)	
Process gas / Vent	1–2 bar, 1/4" Swagelok			1–2 bar, 1/4" VCR female	
Compressed air	Festo DN 6, 4–6 bar input				
Electrical connection	■ **without pump:** 230 V AC, 1 PH, N, PE, 50–60 Hz, max. 15 A **or** 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 **or** 208 V AC, 3 PH, PE, 60 Hz, max. 32 A				
Vacuum pump	Oil rotary-vane or dry pump, 65 m³/h or higher (recommended)				
CONTROL & PERFORMANCE					
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				
Measurement	EPD as part of SU-8 package	Infrared thermometer; optical emission EPD; plasma verification		Infrared thermometer; optical emission EPD; plasma detect	
Uptime | MTBF | MTTR	> 95 % | > 500 h | < 2 h				
Options	Comprehensive selection of vacuum pumps (oil-sealed/dry) with varying pumping capacities | Automatic pressure control | Hydrogen gas supply with H_2 generator | Faraday cage | Support bars for quartz boat loading and quartz boats | Horizontal loading plate | Process chamber out of ceramics | Chemraz o-rings instead of silicone | SECS/GEM connection				

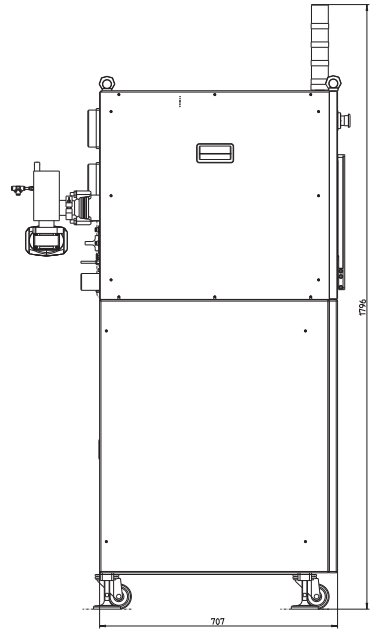
SPECIFICATIONS

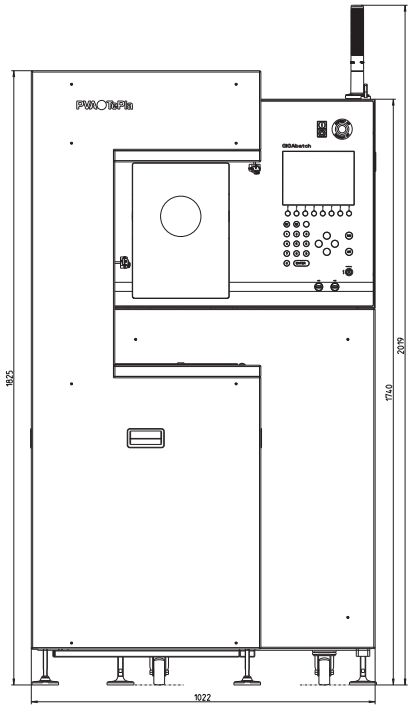
DIMENSIONS

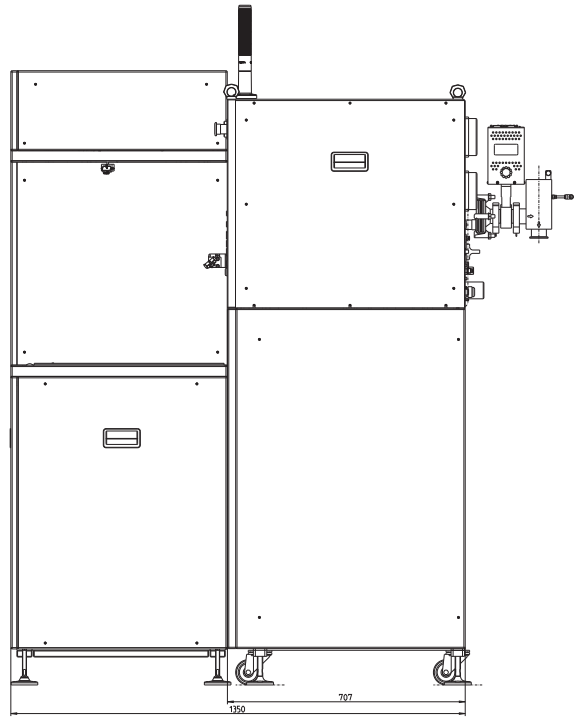












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