APPLICATIONS

- Starting wafer cleanup
- Photoresist descum and activation
- Activation of photoresist for vias wetting
- Preparation for plating
- Removal of various organic materials
  - Polyimide on glass wafer
  - Implanted photoresist on processed silicon wafer
  - Implanted photoresist on bare silicon wafer
  - Amorphous carbon on silicon wafer
- General aqueous processes
- Dielectric wet etch
- Metal liftoff
- Passivation of delicate surfaces
- Photomask cleaning
- Metal-to-metal bonding
  - Au - Au (as low as 100°C)
  - In - In (at RT)
  - In - metal pad (at RT)
  - In - Ag (at RT)
  - SnAg - Cu (at 175°C)
  - SAC - Cu (at 175°C)
  - SAC - SAC (at 175°C)
  - more
- Direct bonding
  - Semiconductor-to-semiconductor (at RT)
  - Oxide-to-Oxide (at RT)
  - Oxide-to-Nitride (at RT)
  - Oxide-to-Semiconductor (at RT)
- Surface activation
  - Preparation for deposition
  - Capillary underfill
  - Die attach adhesion
  - Medical module assemblies

ABOUT

ONTOS Equipment Systems is a leading supplier of atmospheric plasma machines designed to replace vacuum equipment and wet processing to produce contamination-free, highly-activated surfaces to enhance cost, yield, and throughput in microelectronics manufacturing. Our customers include RF, Optoelectronic and Defense market leaders. Headquartered and made in the USA with established world-wide distribution channels, sales and service is provided in more than 20 countries around the world.

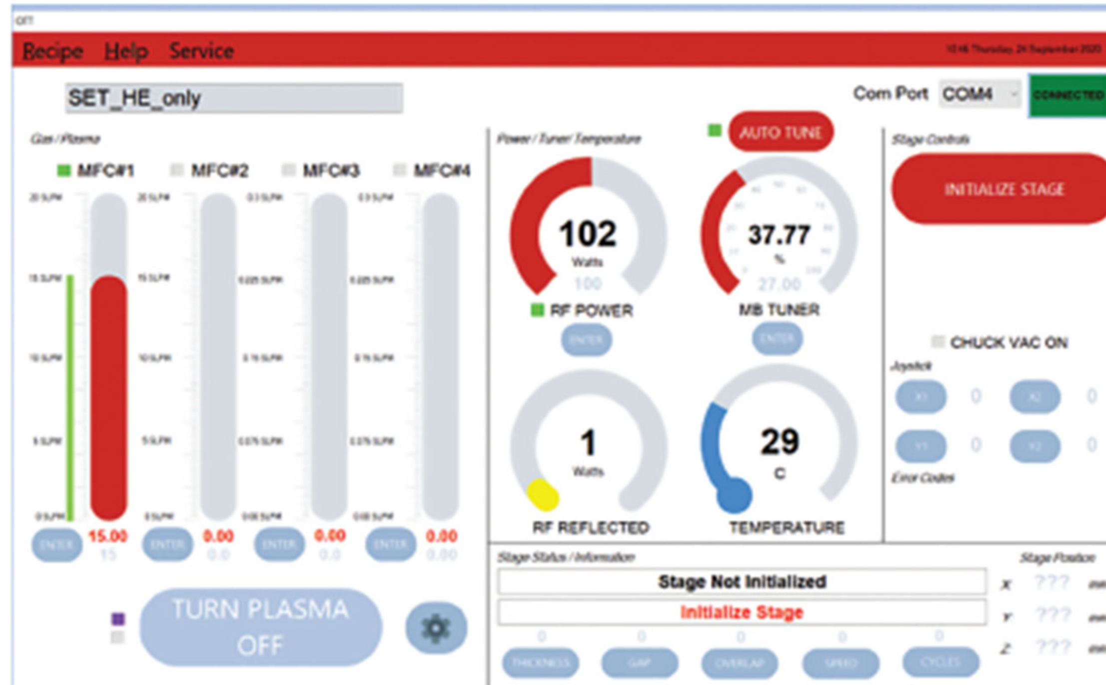
ABOUT Continued

- **2011**: Creation
- **2011**: 1st Ontos7 sale (discontinued)
- **2013**: 1st ONTOSIS into BESI bonder
- Over 60 Systems installed around the world
- Total surface of facilities: 1,400 ft²
- Clean rooms surface (ISO 4): 660 ft²
- Locations:
  – Manufacturing: Morrisville Vermont
  – Demo Lab: Morrisville Vermont
  – Demo Partners: FhG-IZM Berlin (D), CERTeM Tours (F), NIST- Colorado (US), Berkley - California (US)

SOFTWARE & SUPPORT

Our graphical user interface, with 15" touchscreen display, is designed with a strong focus on user friendliness, and easily navigates the operator through each process step. Support, individual user account settings and integrated error logging/reporting and recovery can simplify the user's daily operation.

Ontos systems provides real-time monitoring and control of the forward and reflected power, the helium flow rate, the head temperature and three process gas flow rates.



All Ontos systems can also communicate remotely. Thus, our service includes field-proven, real-time remote diagnostics and troubleshooting via a secured connection.

CUSTOMIZATION

Aside from other solution providers is our ability to work collaboratively with our customers to specifically tailor a system solution around their specific application and process requirements. This is achieved by continuously introducing, implementing, and integrating the latest, most advanced technology with proven robustness and reliability.

The ability to combine advanced technologies with innovation that provides the highest performance & throughput is unmatched and provides a significant advantage to our customers that deploy our system solutions.

With an in-house state of the art machine shop with CNC capabilities, we are able to quickly turn around proof of concepts which is key to achieving the shortest time to market for your custom-designed plasma system.

INDUSTRIES

- Semiconductor
- Automotive
- Aerospace
- Medical
- Optical

ONTOS Equipment Systems

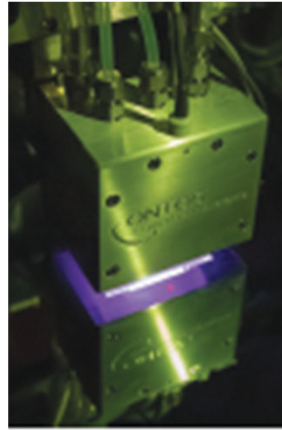
ATMOSPHERIC PLASMA SURFACE TREATMENT

ONTOS Equipment Systems
343 Meadow Fox Lane
Chester, NH 03036
USA

www.ontosplasma.com

ONTOS*IS*

- OEM Components for integration into customer equipment.
- Uniquely-designed atmospheric plasma system with 10mm, 25mm, 40mm or 105mm-wide standard process zone. The glow discharge-type plasma is entirely contained inside the source.
- The 13.56 MHz RF generator has a wide-range auto- tune matching network, system safety monitoring and computer control of forward and reflected power.
- Digital Mass Flow controllers provide precise digital control of gas flow to the plasma source.
- Designed for 24/7 operations
- Software Module. For integration into the buyer's equipment and PC (dedicated PC optional)

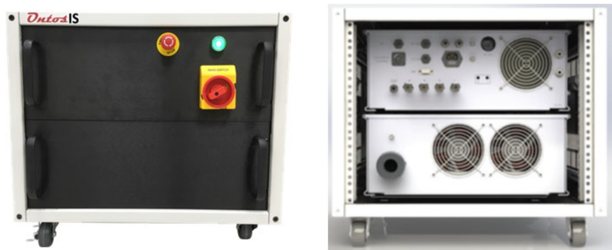


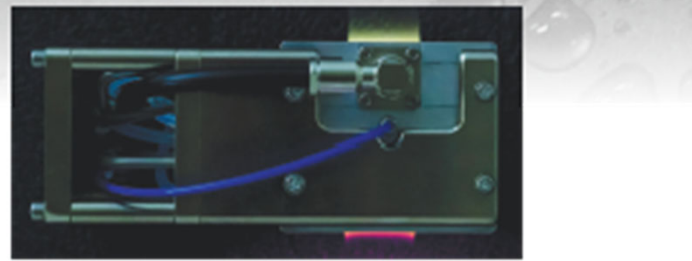
FACILITIES REQUIRED:

- Power: Single Phase, 110/240 VAC, 8/4A, 50/60Hz
- Gases: up to 6 channels of gas supply by 1/4" Teflon tubing; Swagelok compression fittings. (All gases are non-toxic, non-flammable.)
- Process Gases: Helium, Argon, Hydrogen, Nitrogen and Oxygen Optional Oxygen plasma configuration available upon request.

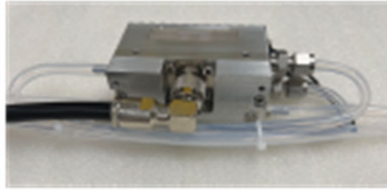
PLATFORM REQUIREMENTS:

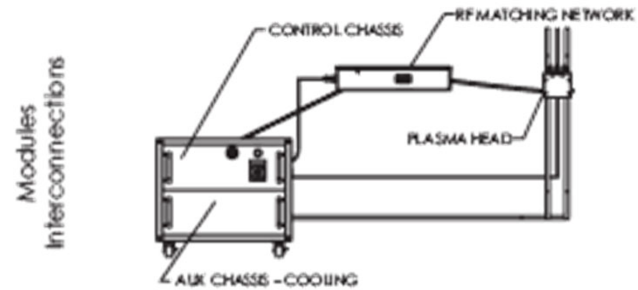
- X, Y and Z Substrate positioning
- Scan Gap: 1-5mm with ± 0.05mm parallelism
- Scan Speed: 1-5 mm/sec.

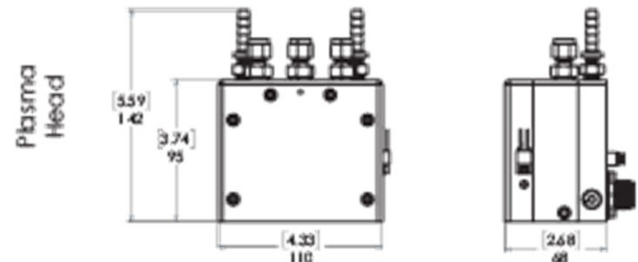


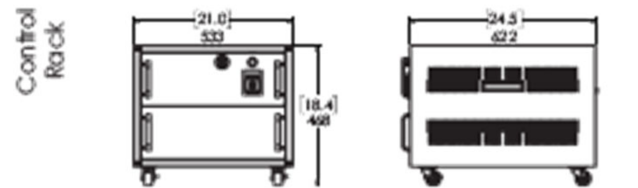


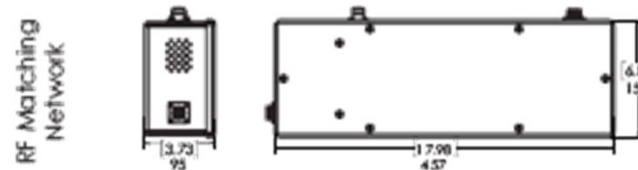
Example of integration
Double Plasma Head
(facing up and down)











ONTOS CLEAN

- ONTOS CLEAN is a Semiautomated system for Surface Preparation using a patented Atmospheric Plasma with a unique design enabling without any modification using oxidizing or reducing chemistry.
- Ontos performs Cleaning, Eliminates the Organic Contamination, Activates Surfaces and Remove Oxidation.
- An Innovative Process applies a gaseous passivation that delays the re-oxidation of the metallic surfaces. Standard Plasma Head 25mm, 40mm, and 105mm.

Versatile Chemistry

ONTOS *CLEAN* uses Helium or Argon as the carrier gas because of it's metastable energies. Customers can choose to introduce Oxygen (cleaning and activation), Hydrogen (oxide removal) or Nitrogen (cleaning and PASSIVATION) chemistry.

Simple, Effective and Safe Process

Simple process — no vacuum chamber.
Fast — precision x
y/z stage completes process in a few minutes.
Downstream radical chemistry only.
Ultra-clean – no particle adders or contamination.
Safe for devices and personnel.

- No arc discharges, ions, bombardments, redisposition, or spalling particulates.
- CMOS safe, compound semiconductor safe.
- Non-toxic, dry process. OSHA- and EPA-friendly.
- CE-Mark (third party inspection)

FACILITIES REQUIRED:

- (All gases are non-toxic, non-flammable.)
- Optional Oxygen plasma configuration available upon request.
- Exhaust: 15~20 cfm (424~566 l/min), 3" connection.
- Lab vacuum: 0.85 ~ 0.95 bars (2 ~10 SLPM).
- Example of integration Double Plasma Head (facing up and down)

Industry Leading Features:

- Plasma head 25, 40, 150mm
- 300 mm dicing frame.
- Fleet of Gases
  (up to 6 MFC's)
  - Helium,
  - Hydrogenated Helium
  - Argon,
  - Hydrogenated Argon
  - Oxygen
  - Nitrogen

Pre/Post treatment analysis

- In-Situ Ellipsometry
- In-Situ Goniometry
- Heated Chuck
- Nitrogen environment
- O2 Cleaning