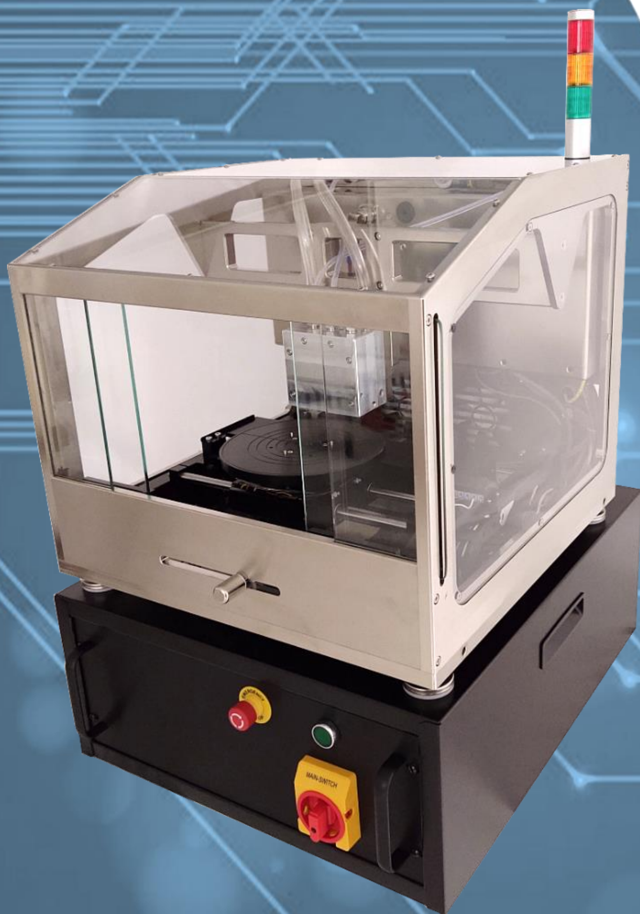
ONTOS*TT*

Atmospheric Plasma Surface Treatment

- Removes native oxide from metallic and semiconductor surfaces
- Engineered surface termination inhibits re-oxidation
- Removes residual organic contamination films
- Fast, non-toxic, dry, atmospheric process
- Low-energy surface chemistry – CMOS safe
- Ideal surface prearation for direct bonding
- Compact table-top configuration
- Automation compatible



Surface decontamination

Native oxides and organic contamination on surfaces can disrupt subsequent processes such as solder bonding, wire bonding, thin film deposition, hybrid assembly, plating operations, wicking of underfill, and related processes.

Fast, simple solution

The Ontos System utilizes a fast, atmospheric process to reduce oxides and organic contamination, providing advantages over traditional methods such as wet etching, fluxes, or vacuum plasma treatment. The tool can also provide engineered termination of the surface dangling bonds to temporarily inhibit re-oxidation while not interfering with subsequent processes. Surface is highly activated for direct bonding.

Clean and Green

The Ontos-patented process and equipment utilize commonly available semiconductor-grade gasses and an atmospheric plasma source to provide local chemistry right at the surface of your part, with zero hazardous by-products, waste or particle adders.

Ontos Equipment Systems, Inc.

343 Meadow Fox Lane ● Chester, NH 03036, USA

www.set-na.com

ONTOSTT

Atmospheric Plasma Surface Treatment

SYSTEM DESCRIPTION/SPECIFICATIONS:

- Uniquely-designed atmospheric plasma system with 25mm or 40mm-wide standard process zone. The glow discharge-type plasma is entirely contained inside the source.
- Computer-controlled X-Y-Z stage. Standard vacuum chuck accommodates die or wafer from 2 to 200mm (300mm on OntosTT-300mm). Substrate thicknesses up to 20 mm.
- 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.
- ESD-safe, interlocked enclosure; Exhaust for process gases (no scrubber required).
- Semi-automatic system controlled by Windows® Laptop computer or tablet. Menu-driven interface with user-configurable recipe libraries.
- Lift-Pins enable eventual pass-through for automated handling.

Facilities required:

- Power: Single Phase, 110 VAC-8A / 240VAC-4A.
- Gases: 4 channels of gas supply by ¼" stainless or Teflon tubing; Swagelok compression fittings. (All gases are non-toxic, non-flammable.)
- Optional Oxygen plasma configuration available upon request
- Exhaust: 3-5 cfm, 3-Inch connection.
- Lab vacuum: 20-25" Hg for stage vacuum.

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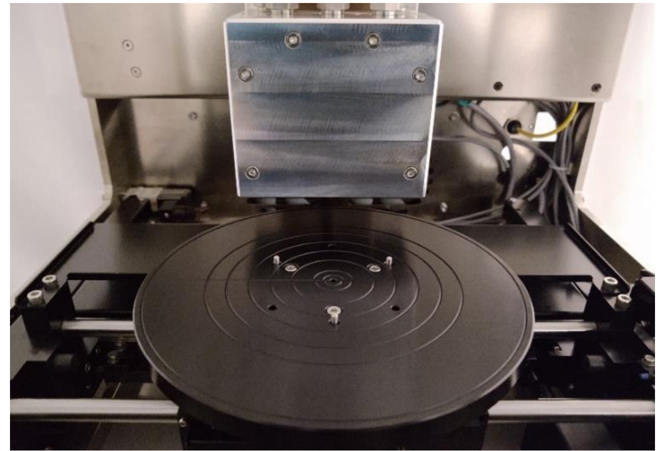
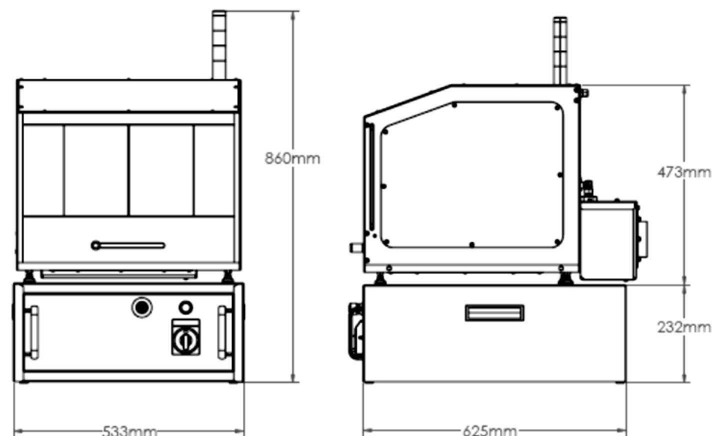


APPLICATIONS:

- Reduction of oxides and contamination to promote adhesion and/or ohmic contact for flip-chip, thin-film deposition, wire bonding, adhesive bonding, soldering, hybridization. Shown effective on: Nickel, Copper, Tin, Indium, Gold, Silver, and alloys of these metals.
- Enables new metallurgies for room-temperature and low-temperature soldering.
- Particle-free surface activation for direct bonding, plating and wicking of underfill.
- Preparation of sensitive semiconductor surfaces to reduce metastable oxides and active contaminants prior to passivation.
- Removal of thin photoresist "scum" without oxygen (ideal for lift-off metallization, ohmic contact).



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Data, design and specifications depend on individual process conditions and can vary according to equipment configurations. Illustrations, photos and specifications in this datasheet are not legally binding. Specifications are subject to change without prior notice.