

Model PTP-300

Plasma Temperature Process Oven

max. part size 305 mm x 305 mm x 25 mm



NEW!!
Plasma Cleaning
with parallel heating

- Applications:
- Fast ramp up heating of substrates and wafers parallel with plasma cleaning
 - Special surface treatment for wafers or substrates
 - Fluxless soldering
 - Flip chip process
 - Adhesive bonding
 - Solder bump reflow
 - Soldering of power devices
 - Prototype development

The PTP-300 is the result of a cooperation between PINK GmbH Plasma-finish and UniTemp GmbH. Both companies combined their skills and experience in the field of rapid thermal heating processes and plasma cleaning with micro wave plasma. The unique combination unit PTP-300 is perfect for a lot of applications - either for combined cleaning/heating processes or only for solder reflow processes for maximum part size (loading area: 305 mm x 305 mm x 25 mm).

When a gas is heated, its components get ionized when a certain temperature is reached. This state being reached is called a plasma. The components of the **plasma** are positively and negative charged ions, electrons, radicals and molecules. A plasma under atmospherical pressure is very hot. Generating a high-frequent field in the vacuum chamber, a **plasma** is being created, the temperature of which is according to room temperature. Nevertheless, the electrons have a high energy up to some 1000 K. Apart from the reactive particles also an ultraviolet radiation is generated, which can trigger photochemical reactions. In accordance to the stimulation GHz (microwaves) and the gas being used, different results can be achieved. The formation of volatile gaseous products is decisive for the cleaning and etching effect in plasma. Even treatment time of few minutes produce excellent results. A major advantage is that low pressure plasma can readily penetrate crevices. Even intricately shaped parts can be easily cleaned or etched in a plasma, because the gas can penetrate hollow spaces which can not be reached by liquids. The main characteristics of the plasma cleaning process are the following:

cleaning effect on a high extent, treatment at low temperature, penetration of finest gaps possible, no drying necessary, no residues on cleansing agents, suitable for all materials, low running costs (not suitable for thick layers of residues, residues with particles; e.g. metal spangles, many inorganic contaminations).

The system is an excellent tool for various reflow solder and semiconductor processes. Key features are precise controlled fast ramp-up and ramp-down rates. The **heating** is done by Infrared lamps with one heating zone at the chamber base.

The unit is equipped with a front loading system for manual load/unload (optional: automatic loading/unloading).

The process chamber (aluminium/quartz glass) does have one gas inlet from the front side. The Microwave plasma source is top mounted.

The vacuum coupling on the backside (DN25KF) allows the connection of a vacuum pump system (optional: various vacuum pump systems).

Two gas lines with Mass Flow Controllers and magnetic valve are default (additional MFCs are available on request).

Process control is done by a PLC-based control unit (PP420 by B&R) with a capability of 10 main processes each with 20 sub-processes. An LCD display monitor and an auto storage of the last 50 process runs is default.

PTP Plasma Temperature Process Oven Technical Data

PTP-300

Loading area	305 mm x 305 mm x 25 mm
Chamber height	25 mm
Chamber material	Aluminium (optional: Quartz glass chamber)
for wafer/substrate size	max. 305 mm x 305 mm x 25 mm
Vacuum connector	DN 25 KF flange
Vacuum capability chamber	up to 10^{-5} mbar (only with option PTP-HVP)
Temperature range	up to 650 °C
Heating	24 IR Lamps (18 kW)
Gas lines	2 Mass Flow Controllers
Interface	Ethernet
Maintenance	Ethernet
Process control	SPS Controller PP420 (B&R) with LCD display
Microwave generator	for plasma cleaning (*) or removal of oxyde resists 2,45 GHz, 600 W
Cooling	Water cooling required
Dimension outside	600 x 1850 x 880 mm (W x H x D) (23.6" x 72.8" x 34.6")
Weight	150-200 kg (**)
Voltage	3/N/PE; AC; 50/60 Hz; 230/400 V; 3x32 A; 18 kW

Options and accessories

PTP-AL	Automatic loading (customer specific)
PTP-MFC	Additional gas line with Mass Flow Controller
PTP-RVP	Rotary vane pump for vacuum up to 10^{-3} mbar with oil filter and vac. measurem.
PTP-HVP	Turbomolecular pump system for vacuum up to 10^{-6} mbar with diaphragm pump, gate valve and vacuum measurement
PTP-WC	Closed loop water cooling system

(*) Plasma operation only in the range of 0,1-1,5mbar

(**) depends on vacuum pump system

Technical changes preserved.

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