UNITEMP
Universal Temperature Processes

Model VPO-300

Vacuum Process Oven
up to 300 mm dia. or 300 mm x 300 mm substrate size

- **For substrate size up to 300mm x 300mm**
- **Ramp up rate up to 40 K/sec.**
  Ramp down rate up to 200 K/min.
- Control **SIMATIC**® with 7" touch panel
- **Vacuum up to 10^{-3} hPa**
  (optional up to 10^{-6} hPa)
- **Process gas line with MFC for N_2**
- **Temperature up to 1000 °C**

Technical and design changes reserved

FEATURE

- Precise ramp up and fast ramp down rates
- Up to 4 gas lines
- Heated by 48 IR Lamps
- 50 programs with 50 steps each
- Top and bottom heating (selection by Software)
- Small foot print

APPLICATION

- Implantation/Contact Annealing
- RTP, RTA, RTO, RTN
- Operation with inert gases, Oxygen, Hydrogen, Forming gas
- SiAu, SiAl, SiMo Alloying
- Low k dielectrica
- Crystallization & densification
- Si-Solar Wafer Cells on glass by Si-Wafer bonding

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- **Vacuum Process Oven**
- **Programmable temperature profiles**
- **Record of process data**
- **Process in different gas atmospheres**
- **Perfect lab tool due to small dimensions and weight**

APPLICATION

The **VPO-300** Reflow Solder System is an excellent tool for various semiconductor up to 300mm wafer or 300 mm x 300 mm substrate size.

Some examples for applications: Laboratory furnace for all kind of developers implementing and researching new processes, prototype research, environmental research purposes and for small pre-series or series.

PROCESS GASES

The VPO-300 can be used with standard process gases, like Nitrogen, Oxygen, Forming Gas. The chamber is sealed and can easily be cleaned.

FLOW METER

One gas line with Mass Flow Controller (MFC) for Nitrogen (5 nlm = norm liter per minute) is default, three more gas lines **(Option: MFC)** are possible.

VACUUM

The system is vacuum capable of up to 10^{-3} hPa (optionally up to 10^{-6} hPa)

HEATING

The maximal achievable temperature is 1000 °C . Key features are precisely controlled fast ramp-up 40 K/sec) and excellent ramp-down rates (depend on temperature and loading).

TEMPERATURE DISTRIBUTION

The VPO-300 allows an excellent temperature distribution and homogenity. Optionally a graphite suzceptor can be inserted on the quartz bottom plate.

PROGRAMMING

The VPO-300 is controlled by SIMATIC SPS controller. A 7" touch panel allows a very comfortable programming and control of the process. There can be saved uup to 50 programs with 50 steps each (unlimited programs can be down- and uploaded from an external data storage).

PROCESS CONTROL

The software allows the permanent monitoring, read- out and analysis of

>temperature
>process gas flow
>cooling water level status
>pressure value and status

COOLING

The cooling of the parts in the quartz chamber is realized by Nitrogen gas which will be led through the chamber. For chamber cooling we recommend a closed loop water cooling system.
(Accessories: WC III or WC IV)

OTHERS

An interlock function as well as an Emergency-OFF-Button (EMO) are default.

SPECIAL

This oven can also be integrated into a production line. The chamber open/close is realized by push button operation. Optionally we offer the adaption into a fully automatic open/close system is possible (remote control by interface and robotics system).

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SPECIFICATION

Max. part size	300 mm dia. or 300 mm x 300 mm
Chamber material	Aluminium chamber (chamber area: 350 mm x 350 mm) inclusive quartz glass bottom plate
Chamber height	50 mm (optional: 120 mm)
Vacuum capability	Up to 10^{-3} hPa (optional up to 10^{-6} hPa)
Temperature max.	1000 °C (for max. 10 sec)
Temp. uniformity	≤ 1% of set temperature (on a 200 mm wafer) (e.g. +/- 3K @ 300 °C)
Heating	Bottom Heating: 2 x 12 IR lamps cross aligned (18 kW) Top Heating: 2 x 12 IR lamps cross aligned (18 kW)
Ramp up rate	40 K/sec
Ramp down rate	T= 1000°C > 400°C: 200 K/min, T= 400°C > 100°C: 30 /min
Flow Controller	One Mass Flow Controller for 5 nlm (=norm liter per minute) as default, up to 3 more MFCs are available as option
Controller	SIMATIC® 50 programs with 50 steps each
Chamber cooling	By external water cooling system
Substrate Cooling	By Nitrogen Gas

TECHNICAL DATA

Dimension oven	505 mm x 504 mm x 830 mm (W x D x H)
Weight	100 kg (estimated)
Electrical connection	2 x [400/230V, 21 kW]

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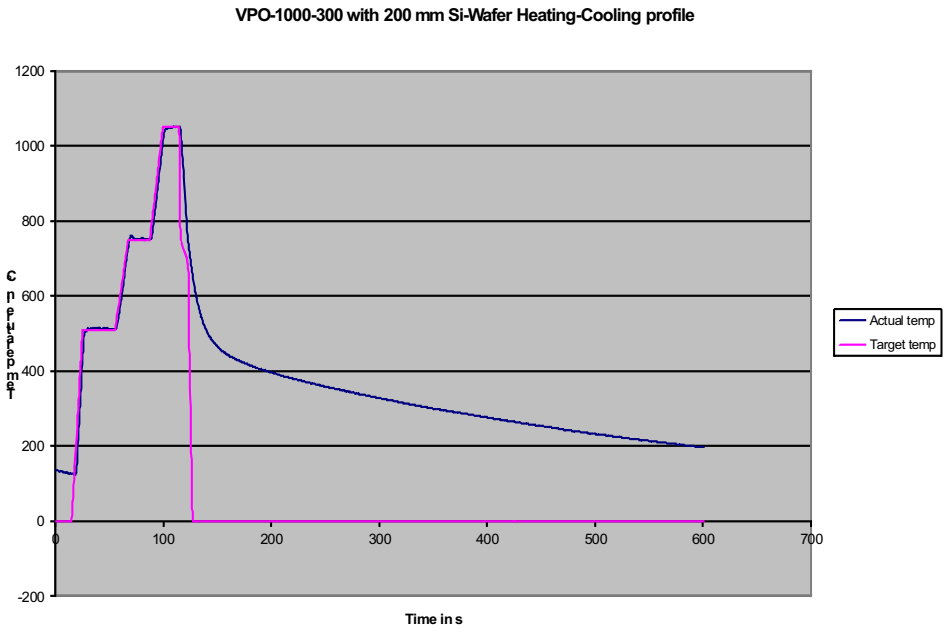
OPTIONS

VPO-CAB	Floor model with cabinet and integrated Universal Heat Exchanger (UHE)
VPO-MFC	Additional gas line with Mass Flow controller (total: max 4 gas lines)
VPO-EH	Chamber height 120mm (instead of 50mm) with viewing window (60mm diameter)
VPO-SS	Chamber made of stainless steel (VA 1.4305) polished, instead of aluminium 50mm
VPO-GP	Graphite Plate or Susceptor
VPO-TC	Additional thermocouple to measure on device (plugged in chamber) (max. 4 pcs)
VPO-QP	Quartz glass plate (5 mm thickness) for sealing the top lamp field
VPO-SI	Serial interface between VPO system and external PC
VPO-RC	Remote control of top cover opening and closing
VAC I	Basic Vacuum up to 3 hPa, Vacuum sensor, vacuum valve excl. pump
VAC II	Comfort Vacuum up to 10^{-3} hPa, Pirani Sensor, vacuum valve, excl.pump

ACCESSORIES

We offer a lot of different kind of closed loop water coolers
and different pumps from e.g. Pfeiffer, Edwards, Leybold,
Agilent. We recommend the correct configuration for your system.

VSS-300 with cabinet



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