

PV-300 Series

Solar Cell Firing Furnaces

The PV Series furnaces are optimized for paste burnout, metallization firing in the 750-950°C range, and BSF layer processing using Rapid Thermal Processing (RTP). RTP produces higher efficiency, lower cost solar cells.



Higher efficiency solar cells are achievable using RTC's PV Series furnaces. Unique technology features of the furnace assure fast heating, fast cooling and fast belt speeds. Rapid heating and cooling during metallization firing results in lower contact resistance and higher shunt resistance which improves solar cell efficiency and maximizes power output.

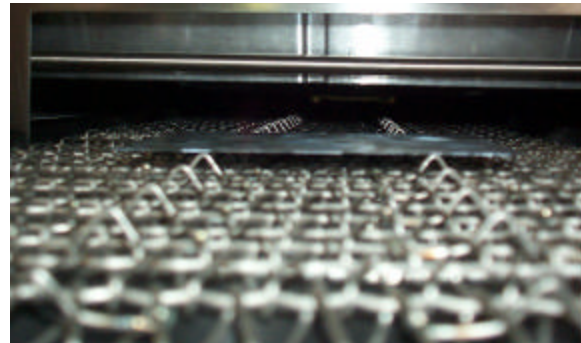
Lower cost solar cells are produced with faster processing speeds and improved equipment efficiency. With shorter processing time and faster belt speeds, one PV-300 Series furnace processing a single lane of parts can produce up to 15 MW of solar cells per manufacturing line. Costs for equipment, factory space and utilities are all lower.

Technology Benefits

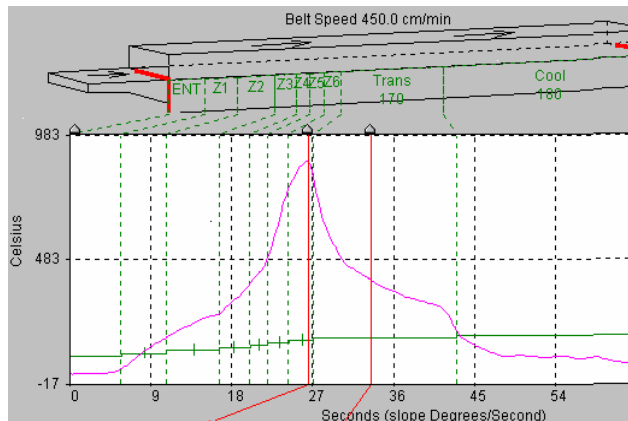
Fast heating is achieved with a higher density of IR lamps in shorter temperature zones. Heat up rates can exceed 75°C per second between 400°C and 875°C.

Fast cooling is achieved with water-cooled cold walls above and below the conveyor belt. The cold walls are separated from the last heated zone by a 13cm transition tunnel with CDA-fed curtain and baffles. Cool down rates can exceed 65°C per second between 875°C and 400°C.

Fast belt speeds transport lightweight solar cells smoothly. Belt vibration is minimized with a friction drive roller. Optional dimpled belts enable faster heating and cooling by reducing solar cell contact with the conveyor belt.



Dimpled belt holds solar cells above the belt




Uniform atmosphere with a laminar flow of pre-heated gas produces a broad process window. Clean dry air (CDA) is fed into the heating chamber through the top and bottom porous ceramic chamber walls (RTC patent).

PV-300 Series Solar Cell Firing Furnaces

| SPECIFICATIONS | PV-309 | PV-314 | PV-324 | PV-336 |
|--------------------------------------|--|--------------|---------------|---------------|
| Parts Clearance (in, cm) | 0.75, 1.9 (customer may specify other clearance height) | | | |
| Belt Width (in, cm) | 9, 23 | 14, 36 | 24, 61 | 36, 91 |
| Conveyor Speed (ipm, cm/min) | 12-120, 30.5-305 | | | |
| Load Station (in, cm) | 15, 38 | | | |
| Unload Station (in, cm) | 15, 38 | | | |
| Entrance Baffle (in, cm) | 15, 38 | | | |
| Heated Length (in, cm) | 30, 76 | | | |
| Number of Heated Zones | 4 | | | |
| Heat Up Time (minutes) | 15 | 15 | 15 | 20 |
| Maximum Operating Temperature | 1000°C | | | |
| Transition Tunnel (in, cm) | 5, 13 | | | |
| Water Cooling Length (in, cm) | 20, 51 | | | |
| Forced Air Cooling Length (in, cm) | 45, 114 | | | |
| Product Temperature at Exit | 40°C | | | |
| Atmosphere, CDA, typical (scfh, lpm) | 400, 188 | 600, 282 | 900, 423 | 1500, 705 |
| Process Exhaust, Venturi Assist | 2 | 2 | 2 | 2 |
| Electrical | 208-480VAC, 3 phase, 50/60Hz 4-wire (safety ground) or 5-wire (safety ground, separate neutral) | | | |
| Power (KW) Peak, Typical | 36, 14 | 55, 22 | 92, 36 | 99, 54 |
| Water (gpm-psi, lpm-Kg/sq.cm) | 5-50, 19-3.5 | 5-50, 19-3.5 | 10-50, 38-3.5 | 15-50, 57-3.5 |
| Overall Length (in, cm) | 148, 376 | 148, 376 | 148, 376 | 148, 376 |
| Overall Width (in, cm) | 43, 109 | 43, 109 | 51, 130 | 63, 160 |
| Overall Height (in, cm) | 68, 172 | 68, 172 | 68, 172 | 68, 172 |
| Weight Net (lb, Kg) | 1750, 800 | 1900, 860 | 2250, 1020 | 2800, 1280 |
| Weight Crated (lb, Kg) | 2700, 1240 | 2850, 1300 | 3400, 1540 | 4200, 1900 |

Options

- Air Purification System
- Dimpled Mesh Belt
- Lamp Element Monitor
- On-Screen Profiling System
- Over Temperature Shutdown
- Process Ready/Alarm Light Tower
- Ultrasonic Belt Cleaner with Dryer
- Uninterruptible Power Supply
- Exit Backlight for Solar Cell Pickup
- Controlled Atmosphere Firing

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| <p>Please visit our web site or call to discuss your specific requirements</p> <p>BITA ELECTRONIQUE S.A. 45 RTE D'ARLON LU-1140 LUXEMBOURG VILLE Ph. +352 450010 • Fax. +352 332643 e-mail: info@bita.lu • www.bita.lu</p> |  radiant technology corporation |
| | <u>RTC ISO9001</u> |