



VP 6000

vacuum

Vapour-Phase Vacuum Soldering System

ASSCON's vacuum soldering process combines the advantages of the vapour-phase with the vacuum process.

Power components require a homogeneous metallic connection with the PCB to transfer the required current. Assemblies soldered in ASSCON's vacuum process exhibit greatly improved solder joints relative to void formation.

Particularly when using lead-free solders the wetting properties decrease and the solder joints exhibit an increased occurrence of voids and entrapments.

Through use of the vacuum process the developing inclusions are extracted before the solidification phase.

Vacuum Soldering Process

In the process zone of the vapour-phase soldering machine the assembly is pre-heated and soldered under inert conditions.

The vacuum module is integrated in the process zone. Immediately after completing the soldering process the vacuum module seals the assembly from its environment and starts the evacuation.

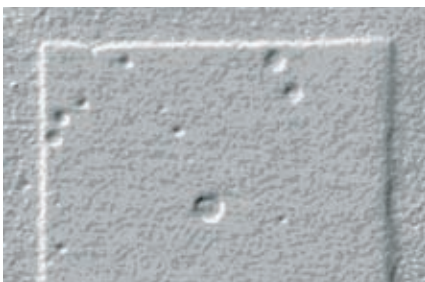
The negative pressure removes voids and entrapments from the solder which is still in liquid state.

The vacuum module is ventilated and opened again.

Subsequently the product moves through the cooling zone to the unload station.

Typical Applications

- Soldering of cased power components on printed circuit boards
- Area reflowing of components on heat-sink planes
- Soldering of power chips on base substrate with paste or solder foils
- Hermetic soldering of high frequency penetrations
- Making solder connections of large area electrical and mechanical components
- Elimination of voids with through-holes or other leaded connections for components to improve heat sinking
- Reflowing of large area SMDs or connectors on multi-layers
- Repair of SMDs or conventional connectors in high-count multi-layers
- Simultaneous soldering of active and power components
- Soldering of 3D assemblies



Conventionally soldered



Soldered in vacuum

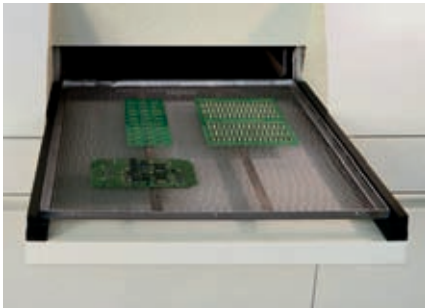
VP6000 *vacuum*



Machine Design

The machine structure is self-supporting. It consists of a load and unload stations, soldering zone, vacuum module, cooling and controller.

Through the use of the load/unload station the assemblies are moved to the process on a universal work piece carrier and after the automatic cycle is completed the assemblies are ready to be removed.



Feed-In with work piece carrier and a variety of assemblies

The key unit of the compact multi chambers machine is the process chamber made of stainless steel. The large area heaters are mounted on the outside and insulated against external heat radiation. High quality sensors for the heaters, fluid, vapour and cooling zone temperature guarantee utmost process reliability.

The vacuum module consists of the evacuation unit mounted in the process chamber where it is secured with quick-locks for fast and easy removal for maintenance. Pump, valves and sensors are integrated in the base.

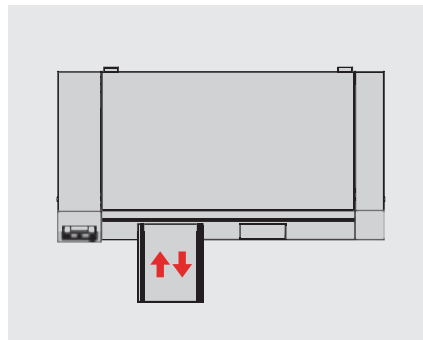
The efficient cooling zone of the machine is equipped with a special blower system, which circulates the medium and flux

residues, emanating from the assembly, through a cooling cassette and on to an internal filtration cycle.

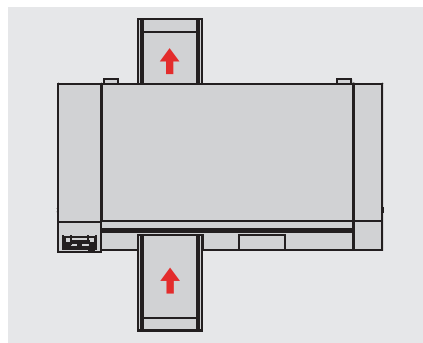
An automatic filtration system for micro-filtration of the heat transfer medium is available.

An integrated exhaust system is available to remove vapours and odours from areas outside the process chamber which occur during the de-gassing of the printed circuit board. The controller is preprogrammed to accept the connection of an external exhaust.

The machine controller sits in an integrated control box and contains the switch, control, regulators and safety/fuse elements for all functional units.



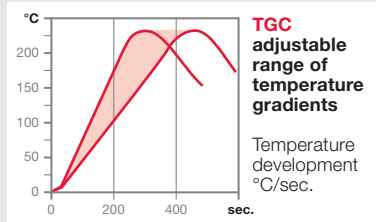
Basic machine



Inline capable machine (option)

ASSCON's Vacuum Soldering Process at a Glance:

- User-friendly vacuum reflow soldering system
- Oxygen-free-process, oxygen-free pre-heat and soldering process
- Lead-free capable without restriction
- Storage of soldering programs
- Low operation costs through efficient energy use



Optimum process reliability through:

- ASB (automatic-solder-break), automatic detection of the terminated soldering process
- TGC (temperature-gradient-control), selectable temperature gradients in the preheating zone
- ETR (energy-transfer-rate), complete control and full programmability of all process parameters

Technical Data	Max. Solder Piece Format
VP6000·vacuum	600 x 400 mm