

## VP1000

### Vapour-Phase Soldering Machines of the Newest Generation

ASSCON's Vapour-Phase Reflow Soldering machines set the benchmark in soldering technology.

The modern design of the machines and the physical laws of the process permit to defect-free soldering of the most complicated SMT assemblies even with lead-free solder pastes. Components such as QFPs, BGAs, Flip-Chips as well hybrid assemblies may be processed with high quality results.



*In-feed with work-piece carrier and a variety of assemblies*

The machine series VP 1000 is offered in three model variants for assemblies with maximum size of 400 x 400 mm, 600 x 400 mm and 600 x 600 mm.

The machines are particularly suited for users who process product with frequently changing assemblies in small and medium sized quantities. Universal work-piece carriers make the systems very flexible.

The physical laws during vapour phase soldering guarantees completely stable process conditions. The whole soldering process takes place in an oxygen-free atmosphere.

Overheating of assemblies, damage to components and de-lamination of printed circuit boards cannot occur, as the maximum solder product temperature cannot exceed the boiling point of the medium.

The heat transfer takes place during condensation of the vapour on the assembly. By adjusting the energy supply during the pre-heating and soldering process the temperature gradient is effectively programmable.

This ensures a homogeneous energy distribution for the whole assembly. Therefore three-dimensional assemblies may be processed without any problem.

Due to the high efficiency of the heat-transfer process the energy consumption is low.

The setting of the process parameters is limited simply to the input of the temperature gradients. The required soldering time and the completion of the soldering process is automatically controlled by the system.

#### Advantages

- Economical soldering system for highest technological requirements
- Oxidation-free pre-heat and soldering process
- Homogeneous temperature distribution on the whole assembly
- Overheating of the solder product is impossible
- No shadowing or color selectivity
- Reproducible process conditions
- No time-consuming generation of temperature profiles
- Low operating costs
- Universally useable for series and individual operation



## Machine Design

The machine's construction is self-supporting. The machine modules include in-feed and exit stations, soldering zone, cooling and control.

The key unit of the compact multi chambers machine is the process chamber made of stainless steel. Large area heaters mounted on the outside are insulated external heat radiation. Temperature sensors for heaters, fluid, vapour and cooling zone temperatures ensure constant process dependability.

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 integrated in the machine.

The machine also features an integrated exhaust system to remove vapours and odors that de-gas from the printed circuit boards outside of the process chamber. The controller is pre-programmed for the connection of an external blower.

The process cooling system is integrated in the base of the machine.

The machine's controller unit is located in an integrated control case and comprises switch, control, regulator and safety/fuse elements for all function units. The process is controlled and monitored with a failure message system via microcontroller with colour-touch-screen and intelligent operational panel.



Operational Panel (Colour-Touch-Screen)

## Soldering Process

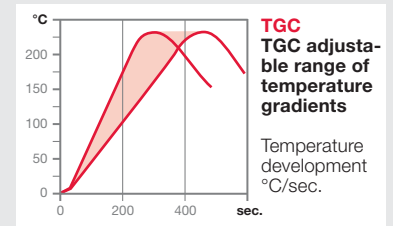
Using vapour as the heat transfer medium the solder product – independent of its size or weight – is homogeneously heated to pre-heat and soldering temperature. Geometric parameters, such as component form, packing density, are unimportant for the heating process. Due to the high density of the vapour the oxygen is displaced from the heating and soldering area. Consequently, no protective gases are necessary.



A Glance into the Soldering Zone of the Process Chamber with Work-Piece Carrier and Assemblies

### The ASSCON Process at a glance:

- User-friendly, intelligent SMT reflow soldering system
- Oxygen-free-process, oxygen-free pre-heating and soldering process
- Lead-free capable without restriction
- Optimum process reliability with the use of TGC, ASB and ETR



- TGC (temperature-gradient-control), adjustable temperature gradients in the pre-heating zone
- ASB (automatic-solder-break), automatic recognition of the completed soldering process
- OPC (optical-process-control), visual process control
- Storage of soldering programs
- Low operating costs due to efficient energy use

Type	max. Solder Product Format
VP1000-44	400 x 400 mm
VP1000-64	600 x 400 mm
VP1000-66	600 x 600 mm