



VP 450

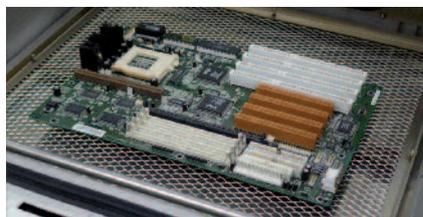
Vapour-Phase Soldering Machines for Laboratory and Single Piece Production

ASSCON Vapour-Phase-Reflow-Soldering Systems set the benchmark in soldering technology. The physical laws of the process permit defect-free soldering of the most complicated SMT assemblies in any required geometry even when using lead-free solder pastes. Components such as QFPs, BGAs, Flip-Chips as well as hybrids are processed with very high quality results.

The VP 450 Series is designed to be used in the laboratory and for prototype production. Due to its compact design the machine may be used at any place and without preparatory set-up even at different workplaces. With an integrated closed cooling system installed only a 230V/120V supply connection is required to operate the unit.

Machine Design Concept

The machine is impressive due its simplicity, ease of use and providing the ability to solder high quality assemblies defect-free. Integrated in the self-supporting structure is the process zone with electrically operated lift-unit and the work piece carrier. The electronic control includes temperature sensors for the heaters, fluid and steam



Work piece carrier with assembly at feed-in position

temperatures and therefore ensures absolute process reliability. An automatic measuring cycle recognizes the process fluid used. As a standard the machine is designed for connecting to external water supply.

The machine can be delivered with an integrated closed cooling system as well as an automatic integrated control of the process fluid level. The whole process can be observed through a sight window. A quick start function reduces energy consumption during stand by mode and guarantees operational readiness for the next solder cycle within the shortest time.

Process Sequence

After opening the machine cover the solder product is placed on a work piece carrier. The process starts. An electric motor moves

the work piece carrier with the assemblies to be soldered into soldering position. The SPS controls vapour production according to the set temperature gradients. Having reached the soldering temperature the work piece carrier is moved to the cooling position. The inner lock between process and cooling zone closes. The solder product is cooled by an effective blower system. After the cooling time has expired, a signal indicates release for removing of the work piece. An electromechanical guard locking prevents from opening the machine during production process.

Typical Applications

- Laboratory use for qualification and testing soldering processes
- Establishing temperature profiles
- Reliable SMT soldering of single assemblies
- Soldering of small series
- Quality control of solder pastes and printed circuit boards
- Assembly repairs, desoldering and resoldering of components



Technology

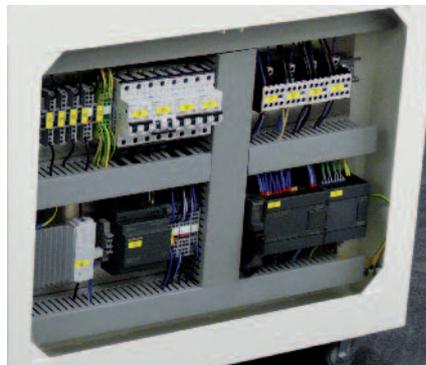
The physical law during the vapour-phase soldering process ensures extremely stable process conditions.

Using vapour as a heat-transfer medium the solder product, independent of its size and weight, will be heated to preheat and peak temperature levels in an absolutely homogeneous fashion. Geometric parameters such as the form of components or packaging density do not influence the heating process. Due to the high density of the medium oxygen is displaced from the heating and soldering zone. The whole process takes place in an oxygen-free atmosphere.

Overheating of the assemblies, damage to components or de-lamination of printed circuit boards can not occur, as the maximum possible solder product temperature can never exceed the boiling temperature of the medium. E.g. 230 °C when using a lead-free process.

Any transfer of heat energy occurs during the condensation of the vapour on the assembly. Due to the control of the energy supply during the heating and soldering process the temperature gradient may be set.

The energy distribution across the whole assembly is homogeneous. Therefore three-dimensional assemblies may be processed without any problem.



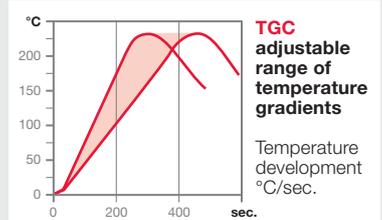
Cooling unit and control box



Operational panel

VP 450 at a Glance:

- Conveniently operating laboratory reflow soldering system
- Automatic process procedure
- Automatic process fluid recognition
- Continuously adjustable temperature gradient
- Energy-saving by quick start function
- Process fluid recovery system with pressure compensation and filtration unit
- Electromechanical guard locking
- Prepared for use of a temperature profile measuring system
- Oxygen-free-process, oxygen-free heating and soldering process
- Lead-free capable without restriction



Optimum process reliability through:

- ASB (automatic-solder-break), automatic recognition of a completed soldering process
- TGC (temperature-gradient-control), adjustable temperature gradients in the pre-heating zone
- OPC (optical-process-control), visual process control

Technical Data

Work piece carrier size	450 x 450 mm
Maximum solder piece height	100 mm
Electrical Supply	230 VAC / 50 Hz
Power drawn	3,2 kW
Medium quantity	3,0 kg