ASSCON SYSTEMTECHNIK

VP800 vacuum

Vapour-Phase Vacuum Soldering System for Laboratories, Prototyping and Close-to-Production Process Qualifications

ASSCON vapour-phase reflow soldering systems are state-of-the art. They are the innovative response to modern soldering challenges. The physical principles of the process allow fault-free soldering of the most complex SMT modules in lead-free soldering pastes in virtually any arrangement.

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.

Vacuum Soldering Process

In the process zone of the vapour-phase soldering machine the assembly is preheated and soldered under inert conditions. The integrated vacuum module seals the assembly from its environment immediately after completing the soldering process 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 assembly gets cooled and can be removed through the unload lock.

Unload lock with evacuation unit

Typical Applications

- Soldering of cased power components on printed circuit boards
- Area reflowing of components on heat-sink plane
- Soldering of power chips on base substrate with paste or solder foils
- Soldering of 3D assemblies
- Making solder connections of large area electrical and mechanical components
- 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
- Hermetic soldering of high frequency penetrations
- Elimination of voids with through-holes or other leaded connections for components to improve heat sinking

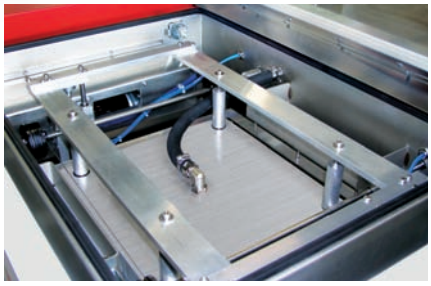
VP800 vacuum

VP800·vacuum with technique unit

Machine Conception

As the processing zone is separated from the vacuum module and cooling zone, it is possible to apply the soldering process in the VP800·vacuum system to the standard achieved by current production lines in a compact environment. Here, the system especially stands out by virtue of its simple handling, enabling each user to solder high-quality modules fault-free.

The vacuum module consists of the evacuation unit, which is mounted on cylinders and can be easily removed for maintenance. Vacuum pump, valves and sensors are installed in an monobloc technique unit, which is to be set up beside the reflow soldering system and contains also the cooling unit for the soldering system. Optionally, the VP800·vacuum can be equipped with a fluid filter system. The medium which is filtered at the start of the process is refed into the system cycle.



Evacuation unit

Process Sequence

Via the loading lock at the front, the solder piece is inserted into the system. The process is started. After the inner lock has opened, the soldering piece is lowered by an electric motor into the clearly defined vapour level. Depending on the selected temperature gradient, the solder piece is heated up to a predefined temperature. Upon reaching the soldering temperature, the soldering process is terminated and the solder piece is transferred to the evacuation unit. The vacuum process proceeds. After the vacuum process blowers grant an effective evaporation and cooling before the solder piece can be taken out of the unloading lock at the front. Termination of the process is indicated by an acoustic signal.

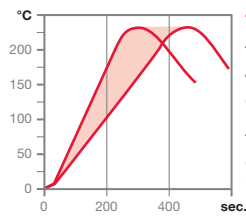
Typical Applications

- Laboratory
- Prototyping, Small batch series
- Close-to-production process qualification
- Research & Development
- Training, University

Technical Data	
Maximum solder piece format	320 x 300 mm
Maximum solder piece height	55 mm
Main voltage	400 V / 3 / PE / N -50 Hz
Connected load reflow soldering unit	5,5 kW
Connected load technique unit	3,0 kW
Fluid filling quantity	15 kg

VP800 at a Glance:

- User-friendly reflow soldering system
- Effective vacuum unit
- Adjustable vacuum ensures ideal void-free solder joints
- Automatic fluid identification
- Continuously adjustable temperature gradient
- Oxygen-free preheating and soldering process
- Lead-free soldering pastes can be used without limitation
- Optional fluid filter system including pump



TGC Adjustable Range of Temperature Gradients

Temperature development °C/sec.

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
- OPC (optical-process-control), visual process control

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