

## Multi Vacuum in-line soldering system Asscon VP7000 delivers optimum reflow quality in high-volume production environments

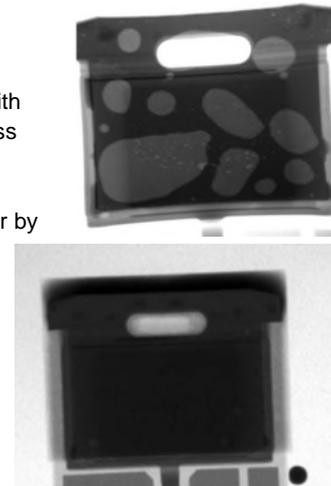
November 05, 2015 – Asscon Systemtechnik-Elektronik GmbH, Germany-based specialist in vapor-phase soldering technology, will be launching its next stunning innovation at the productronica trade fair in Munich from November 10 to 13, 2015, at booth 265 in hall A4. The novel multi-vacuum in-line soldering system VP7000 is indeed the only one of this type of equipment on the market that operates without workpiece carriers. VP7000 is designed for the void-free large-scale production of highly complex PCB assemblies, including sophisticated 3D-MID configurations, for continuous operation (24/7) with void rate below 1%, and can also be used for small series manufacturing with the highest quality requirements. The size of the PCB assemblies processed can measure to a maximum of 1000 x 450 x 60 (L x W x H in mm).



Especially in the lead-free process, the vacuum treatment during the reflow phase ensures void-free solder joints. Thanks to the benefits of the advanced Asscon vapor-phase soldering technology, combined with Asscon's patented Multi Vacuum treatment of the PCB assembly before and after the soldering process, the void-free quality level achieved is unsurpassed to date. The system is also impressive due to its strikingly reduced energy consumption of 60 % (on average 3.5 kW/hour) and the correspondingly minimized operating costs, as well as the notably high operational reliability and user simplicity.

Asscon's managing director Claus Zabel underlines the system capabilities: "Void-free soldering is particularly important in many applications, for example, take the case of power modules with their extensive energy burden carrying solder joints. All in all, our new Multi Vacuum in-line soldering system VP7000 provides the perfect answer to all production applications requiring the highest quality".

Besides the void-free solder joints achieved by the multi-vacuum treatment of the PCB assemblies after the reflow, the novel vapor-phase in-line soldering equipment excels with even more advantages and features. Among these is the oxidation-free soldering process without the use of costly nitrogen in the oxygen-free vapor-phase area, the precise adjustment of temperature gradients during the entire heat-up, the absolutely secure prevention of over-heating or damage to the PCB assemblies, no shadowing whatsoever by components, the uniform heating across the entire assembly, as well as the precisely reproducible temperature profile even with very diverse board designs. Furthermore, the heating-up phase is remarkably short, and the machine features a user-friendly micro-processor controller system, an ingenious system for control and malfunction monitoring (with optical process control), and finally clear and unobstructed access for maintenance and service activities. The highest possible process reliability is ensured by the functionality of TGC (temperature-gradient control) throughout the soldering process and by ASB (automatic solder break) at the end of successfully applied soldering.



Standard machine interfaces allow for integration and automated operation in all kinds of manufacturing lines. Another interface (option) supports the application in production lines in accordance with QS system ISO 9000. The machine can also be operated independently of an external cooling water supply by the implementation of an internal cooling system (optional). The user-friendly soldering procedure is also facilitated by Dynamic Profiling – a function for the automated control of the soldering profile during large-scale production.

### Backgrounder vapor-phase soldering

Vapor-phase soldering is regarded as the ideal procedure for today's demanding electronic board assemblies manufacturing, because the use of vapor as the transfer media for heat energy is one of the most efficient technologies for heating-up PCB assemblies. The coefficient of performance is much more higher than traditional convection heating. Using a special liquid (GALDEN®) an oxygen-free sphere is provided in the chamber in which the complete preheat and soldering procedures take place without any oxidation. Electronic board assemblies can therefore be soldered error-free, practically regardless of design. Easy and flexible adjustments of temperature gradients ensure the optimum, perfectly reproducible temperature profile for every product. This renders time-consuming and costly programs of experiments and set-up procedures of manufacturing lines superfluous – right from the prototyping up to high-volume production. Subsequently, a remarkable amount of time and money can be saved and, at the same time, continually high product quality is achieved.

## **Backgrounder Multi Vacuum technology**

In the multi-vacuum soldering process PCB assemblies are subject to a subsequent series of vacuum treatments during soldering. The Asscon Multi Vacuum system provides the opportunity to utilize vacuum procedures both before and during the reflow of the solder paste.

When applying vacuum treatment before paste liquidus is reached, this step can be particularly useful for removing encapsulated voids even before the soldering paste is totally reflowed. Such encapsulated voids can emerge in the course of processing the solder materials, for example, when the squeegee unnecessarily scoops paste from solder pads during the printing stroke across the PCB. Using vacuum treatment before reflow eliminates the potential for the formation of voids before heating-up occurs. In the subsequent production process diverse outgassing products from components, printed circuit boards and base materials are therefore the remaining main causes for gassing-related voids. Another source can be reactive gas released during the removal of oxidation by fluxer application. To remove the voids from the still liquid solder joints in multi-vacuum systems, an electronic board can be subjected to several independently controllable vacuum treatments in short-term sequences. Multiple successive evacuation steps help to move the encapsulated voids in order for them to reach the solder-joint periphery, where they can escape very effectively. Especially in the case of large solder joints this technology enables the successful elimination of a significantly greater number of voids in contrast to a single vacuum operation alone. The multi-vacuum process in particular enables optimum void-free soldering for products with an above-average outgassing potential, as it is generated by high-number multilayers, large processor chips, etc. Gas molecules entering a solder joint in the first vacuumizing step can also be effectively removed from a still liquid solder joint by subsequent vacuum stages. In a nutshell: The multi-vacuum soldering process provides the answer to the challenges of future electronics products and is another of Asscon's milestones in vacuum soldering technology. It pushes the boundaries of today's soldering methods and initiates the future development of electronic board manufacturing