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 Photo (JPEG) X2 AXI System



Economic inspection of double-sided printed circuit boards

Dachau, Germany November 2nd, 2007 – Particularly in connection with the established transmission (2D) X-ray analysis, the new Slice-Filter-Technique (SFT) by MatriX features a very economic solution for the inspection of solder joints of double-sided PCB- assemblies. In doing so, SFT provides excellent inspection results without object superposition and thus leads to a significant increase in the testing depth. This software is an interesting solution especially for companies which check double-sided PCBs (2 x reflow process) in the in-line production where high speed is required.

Transmission x-ray images deliver photos with high contrast and definition values, because the complete object information is included. Versus existing 3D-laminography techniques, where several slice levels are needed to get the equivalent object information.

But up to now - the quality advantage of a transmission image have a downside: the overlapping effect of multilevel objects in the x-ray image. To eliminate now the disadvantage of the object superposition, MatriX Technologies has developed the patented SFT solution in cooperation with renowned research institutions.

The method is based on a new image processing algorithm which separates the image data of the first and second printed side. The method also qualifies for the efficient filtering of disturbing shrouds or radiating surfaces in the X-ray image. SFT maintains an intelligent locating algorithm by using dedicating pattern matching methods for the solder joints and the components.

Especially the auto-adjust locating requires high precision motion, which is realized by linear motors. The result is notable: the precisely fitting and reproducible positioning of the test items in order to ensure the subsequent and exact reconstruction and transformation of the data.

The master-SFT technology is perfect for prototypes and small batch production. One master X-ray image of the first reflow side of the reference board is sufficient here. Afterwards, it is possible to test and verify the complete batch and/or the complete series of the product type for the upper side and bottom part with SFT.

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Better suitable for the series operation (High-Volume) is the Dynamic-SFT operation mode. Here, the second printed side is offset against the corresponding first printed side of the same component. This operating mode has the advantage that it is possible to compensate potential process variations between the images of the two reflow processes to a large extent.

The SFT-results may also be optimized for complex tasks. It is e.g. possible to increase the luminosity in order to obtain better visual information in shadowed areas for the reconstruction. It is also possible to actively support the filter function by means of grayscale calibration procedures depending on the absorption density of the object.

The latest innovative extension of the SFT-method is an intelligent readjustment of the component and soldering joint position (Joint Navigation and Matching). Potential position differences – caused by process variations – between upper and bottom side of the images are automatically corrected for the SFT-calculation.

The Slice-Filter-Technology (SFT) is available on all models of the MatriX X2 and X 2.5 series and is also offered as upgrade package for the previous MX model. The In-line X-ray inspection systems of MatriX Technologies are designed for an inspection area of up to 460x350mm and a variable inspection window of 10x10mm to 30x30mm. The resolution goes down to below 5µm, the inspection time is 4 images/second.

About MatriX Technologies:

MatriX Technologies is a global supplier of innovative solutions for x-ray inspection and non-destructive testing (NDT). The MatriX systems are based on leading-edge x-ray and vision technology and ensure the fulfilment of customers' quality requirements. The MatriX Technologies product portfolio encompasses real-time failure analysis, including standardised systems for manual and automatic x-ray inspection, as well as customised, fully integrated inspection solutions with a broad range of x-ray applications. The MatriX client base includes leading manufacturers in the electronics and automotive industries. More information about the company you will find at www.m-xt.com.

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