XRHCOUNT – THE REVOLUTION IN SMT COUNTING!

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Today, mass-market electronics are manufactured almost exclusively on high-performance assembly machines. Time is literally money. Therefore, two aspects are of particular importance: maximum quantities and minimum changeover time. When it comes to the necessity of counting components before or after the assembly process most manufacturers are still using the old-fashioned approach of manual counting devices.

VisiConsult, as a specialist for X-ray systems and automation, developed the XRHCount in order to speed up this time consuming process.

In times of an increasing demand for faster customer turnaround times and higher flexibility, almost every PCB manufacturer is trying to reduce the unproductive overhead to a minimum. While the accurate counting of thousands of tiny components with manual counting machines may seem trivial, the time it takes to perform these tasks without automation can be a bottleneck in the production chain. Even worse is the high amount of personnel bound just to perform these basic tasks.

The common workflow with a manual counting machine is that an employee takes a component reel and chucks it together with an empty reel into the machine. The next step is to thread the carrier strip carefully through the counting mechanic and to attach it onto the empty reel. As soon as this is complete the counting progress begins and the components are pulled through the counting mechanic from the old reel onto the empty reel. This takes more than two minutes and is obviously scaling linearly depending on the amount of components.

VisiConsult X-ray Systems & Solutions GmbH is a family owned company from northern Germany and a leading manufacturer of custom tailored X-ray test systems. Mainly based in the field of Non-Destructive Testing (NDT) of all kind of materials, VisiConsult was approached by a well-known PCB manufacturer with an inquiry to develop a system that speeds up the cycle time and accuracy of component counting through the use of X-ray technology and a completely automated software suite. The outcome was the XRHCount, where XRH stands for X-ray Handling System.

The workflow of the system convinces with pure simplicity. One drawer, one button and a clear output. The operator inserts the reel inside the drawer, presses the green start button and a few seconds later the result is shown on the display. Just in case of an automatic warehouse update, which is possible through a software interface, the user can scan the abstract warehouse barcode. Most manufacturers need to charge external customers and compensate external suppliers with in-house warehouses depending on the material consumption, which demands a counting before and after the assembly process. Even if that is not the case it is necessary to count at least after assembly in order to record correct stock numbers.

The uniqueness of the system lies in the world-first automated component estimation (ACE) system that makes a prior type selection obsolete. This decreases the handling time and leads to robust counting results. The consequence is that even new types can be processed by the system if a similar type is already implemented in the type database. The system will detect the similarity and automatically use the best solution. In the case of a completely new type, a warning is shown and a trained supervisor can easily add this into the system database in less than 15 minutes. With every new type the system efficiency increases as the self-learning neural network grows. It is also worth noting that the counting time of the XRHCount does not scale with the number of components – 50,000 components just take slightly longer than 5,000. This is a huge advantage over manual counting.

The result is a cycle time of approx 15 seconds – compared to over 120 seconds with manual counting, increasing the overall efficiency by a factor of ten! In the development reference project, this led to a reduction from 8 to 2 personnel responsible for counting which provides an organization with the opportunity to optimize their resource. As a consequence of this impressive performance the Return of Invest (ROI) for this system will be around 12 months dependent upon salaries and workload.

Due to its simplicity the XRHCount needs almost no maintenance. The small footprint of just 1.25m x 0.85m makes the setup very easy – just plug in the electrical connection and the system is ready. Of course TÜV, CE and other German standards are fulfilled, which guarantees a safe handling, no X-ray leakage and an ergonomic operator position.



Combined with an international service and sales network, every customer can count on reliable and fast support that guarantees a 24/7 system uptime.

As the next logical step, VisiConsult will develop a completely automated counting process where robots do the reel placement and the growing neural network of classified component types provides a solid decision base.

These are ambitious plans for the future – to see the present state, visit VisiConsult in productronica 2015, Munich, where you'll find a completely functional demo system on their booth A2 /138. The CEO, Hajo Schulenburg, and his team will welcome you and are looking forward to providing a demonstration and in-depth consultation regarding a possible use for your specific workflow processes.

"We've received overwhelming feedback and an impressive amount of interest from companies even before the official product launch. It seems like everybody wants to reap the benefit of being an early adaptor in order to get ahead of the competition." states Lennart Schulenburg, responsible for the international sales at VisiConsult GmbH.

Info about VisiConsult and further refererences:
VisiConsult GmbH is a family owned company located in Northern Germany and is a specialist for customized and standard X-ray NDT systems. All our products are developed and produced locally and delivered ready to use. This leads to cutting edge technology and a high flexibility. Our goal is to solve our customers' problems with tailored systems and guarantee a premium post-sales service. More than 25 years of expertise in Automatic Defect Recognition (ADR) and image enhancement for a broad variety of industries combined with experienced engineers result in solutions that set new industry standards.

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