



Manufacture in a relaxed manner –
with a combined optical and
X-ray inspection



Case Study AOI/AXI

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The company Rommtech B.V. possesses more than 25 years of experience in electronics manufacturing. Already in the second generation, the company offers its customer support in the manufacturing of electronic assemblies. To this belongs, apart from the pure assembly, also an entire spectrum of engineering services. With the increasing complexity of the assemblies and the demand for in-circuit testing or X-ray inspection at customer end, Rommtech wanted to invest in an automated inspection. Interest in an AOI had already existed for a long time. After lengthy evaluations with different suppliers a decision was made in favor of the combined AOI/AXI-testing – and the Viscom X7056.

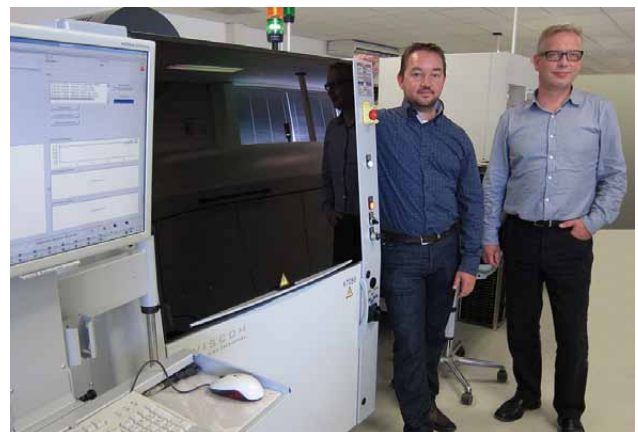
Rommtech B.V.: Manufacturing of assemblies from the development of ideas to the re-engineering

With the slogan “Head/Tail Solution”, the company Rommtech B.V. with its registered office in Halsteren in the Netherlands offers its customers comprehensive support when it comes to the development and manufacturing of assemblies. As a small EMS-service provider with 35 employees, Rommtech focuses on reliability and quality. When the current managing director, Erik Rommens, took over the company, it soon became apparent that for the customers it is increasingly also about engineering services. Apart from the assembling, Rommtech makes a comprehensive range of offers to its customers; from the development of ideas and the design to the SMD-manufacturing – including the holding of stocks, software development and re-engineering of a product. The company is also a specialist in the design of multilayer assemblies. Moreover, in order to be competitive in the low price segment, Erik Rommens has established the joint venture “Rommtech 3S” in Bulgaria, where mainly the large-scale production takes place. By this, Rommtech is able to offer the full range from the individual circuit to production batches of 50,000 units. One of the company’s large customer segments is the agricultural industry, for which Rommtech produces PC assemblies. Another major customer is a world market leader in the area of the flow rate measurement.

Optimal testing for complex, densely populated assemblies needed

As a result of the increasing complexity of the assemblies, even at Rommtech a reliable quality assurance became more and more difficult. So far, the monitoring

took place by means of the human visual examination. Due to the increasingly dense assembling and miniaturization, new solutions were required. Erik Rommens describes the situation as follows: “We got orders for assemblies of more than 1,400 components per printed circuit board. Our processes were fine, this we were able to understand. But if one takes only some of the likely possible failures for 1,400 components as a basis, these are trillions of possible failures of an assembly. For this, we needed a guarantee of quality, which we only could achieve with the automated inspection.” There is also the fact, that also customers, in particular from the automotive industry, demanded an automated inspection, either an in-circuit testing or an X-ray inspection. As the company had thought of employing an AOI-system some time ago, the combination of an automated optical inspection and X-ray control was the favorite solution.



F. l. t. r.: Erik Rommens, CEO Rommtech B.V. and Viscom Representative Ruud Bouwhuis, W&S

A team was built up for the selection process, which dealt once again with the different inspection procedures and possible suppliers. After a preselection, the companies in question have received visits and talks were held. Then, the practice tests followed. On this basis, at Rommtech a decision was made in favor of the combined AOI/AXI inspection by Viscom.

“We are not a very large company and did not want to employ two different systems for the examination tasks, but wanted to cover the AOI and the X-ray inspection in one inspection system, if possible. This costs us less floor space and we remain flexible. Moreover, employees do not have to deal with different software, but work with a consistent user interface”, explains Erik Rommens the advantages of the combined inspection.

“But it was also important for us to have a local contact person with sufficient experience. This was the case

with Ruud Bouwhuis from W&S in the Netherlands. We knew that with him we have a competent partner, if we need help. He thinks too that a medium-sized company will realize the most profit, if it makes use of the market knowledge of large customers: "Another additional asset was the good reputation of Viscom on the market. For us, it was interesting to see, for which system large OEM-companies opted in very extensive selection procedures. If there the decision is made in favor of Viscom, this benefits us too, e.g. in the form of new patterns for assembly inspections and software add-ons," said Rommens.

With the combined inspection the company is able to detect every failure reliably, whether or not these are faulty BGAs, THT-connections, QFNs, a faulty assembling or open solder joints. With the periodical software updates, which constantly expand and improve the testing software the company is always up-to-date. The new releases are available to all Viscom customers free of charge.

Inspection with the X7056: Advantages of the combined AOI/AXI-testing

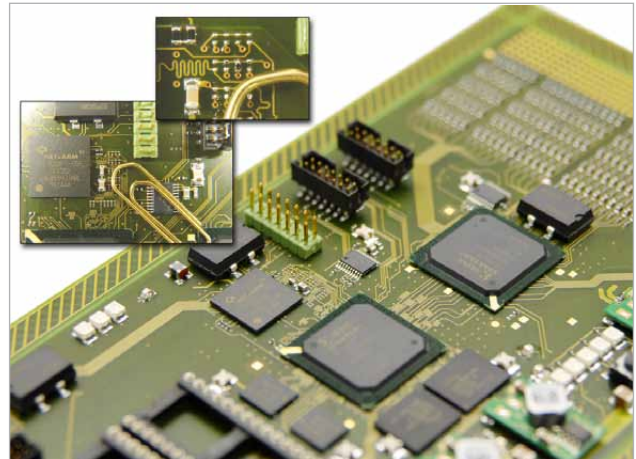
If, in the beginning, Rommtech focused mainly on the AOI-testing, as it is easily visually pursuable, this changed in the course of the intensive work with the technology. More and more the strengths of the automated X-ray control are used. "We have recognized that some faults are found easier with the AXI than with the pure AOI, e.g. the heel of a SOIC. With the help of Viscom's application engineers, we have succeeded in the effective employment of the automated X-ray inspection," Rommens said.



Inspection System X7056 at Rommtech in Halsteren

AOI is widely used where faults in the assembling or the soldering are clearly visible for the cameras and can be reliably detected by orthogonal or angled testing. The angled AOI-testing is the right choice for, e.g. a lifted leads in the fine-pitch range.

Usually with AXI it is tested in such places, where, as a result of coverings, the pure optical testing is not sufficient to secure the quality of the assemblies at 100 per cent. For example, this is the case for BGAs, for QFNs and DFNs or at the measurement of the filling level of THT connections. Depending on the object to be tested, the resolution of the X-ray inspection can be switched to either 5, 7 or 10 $\mu\text{m}/\text{pixel}$. It can be employed in 2-D, 2.5-D or 3-D.



Rommtech Product Example PCB

The X7056 testing system gives Rommtech a great flexibility in the manufacturing. The shares in AXI or AOI are tailored to the respective assembly; by this the highest test coverage and testing speed are reached. Moreover, the combined testing offers the major advantage of keeping the radiation exposure of individual components at the lowest level possible. With the consistent user interface for both testing technologies the system operators have no additional effort at the preparation of the testing programs. The AOI and AXI libraries are fully compatible and can also be employed at other Viscom-systems, e.g. at other locations worldwide. Optionally, communication with MES-systems for process monitoring, a statistical data collection (SPC) or offline programming belongs to the range of services.

Erik Rommens comes to the conclusion: "In the end we can save time and money with the system and can improve our delivery quality. But the greatest benefit for me is the fact, that I can sleep easy," he says and laughs at the same time. "As I know that our products are faultless, when they are delivered to our customers. And this is the most important point for us. This is why we are now testing all our products with the X7056."

Are you interested in more details on this application or do you have any question regarding combined inspection?The Viscom SP Division will be glad to help you.

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