



Schweitzer Engineering Laboratories (SEL) Case Study: *Delivering Value to the Company and Pride to the Operator*

By Brent Fischthal, Koh Young America

When you visit a factory with your film crew to shoot a testimonial you hope they're going to say something good about your company, your equipment, the service you've provided. But when we visited SEL, or Schweitzer Engineering Laboratories, we got more than we bargained for. What we got was a real insight into the intimate relation between man and machine underlining the importance of good equipment to operator moral.

Dr. Ed Schweitzer was a pioneer, an inventor, and creator of the first microprocessor based digital protective relay. In 1984 he started his company, Schweitzer Engineering Laboratories (SEL), in his garage. A company that now employs more than 5,000 people, is in 164 countries, leads its field, and covering a huge manufacturing, development, administration and logistic campus in Pullman, Washington. Dr. Schweitzer's innovation revolutionized the electric utility industry, making it smarter, safer, more reliable, and more economical.

SEL has nine lines in their Pullman and Lewiston facilities which run at close to capacity, placing millions of components on numerous product types. Their top priority when seeking a new AOI solution was quality control. With such a mission critical product, quality has always been top of the agenda for the production team at SEL. A big thank you to our hosts and interviewees at SEL, Engineering Manager, Daicheng Fu, Board and Component Factory Manager (Pullman), Tony O'Neill, Lead Process Engineer, Nick Swan, and Manufacturing Supervisor (Lewiston), Andrew Packwood, whose passion for the business and for quality production was abundantly clear.

In their quest for ever improved quality, and coincident with the addition of a new SMT line, SEL recognized the need for AOI inspection at the next level. They had previously invested in 2D AOI which, whilst improving results, was not catching a lot of faults and delivering way too many false calls. The result of too many false calls was a lack of confidence in the outcome and the equipment by the operators, something that was cause for genuine concern.

As Andrew Packwood explained, "When we first got the 2D AOI system, it was not highly thought of. It was a burden at that point. Now we see the 3D AOIs as a tool, as something that's helping SEL live their values of quality."

In the interviews that we carried out with the team at SEL, something quickly became crystal clear. The new AOI system was doing much more than just improving quality outcomes, which is important in itself. The new equipment was changing the relationship between man and machine, and affecting the operator's pride and satisfaction.

SEL took a single AOI system on trial to gauge its impact and make sure that their selection of Koh Young after exhaustive exploration of the market was correct. That meant they had the new Koh Young AOI on only one line for a few weeks before making an even better more informed decision company wide.



Tony O'Neill summed it up how the team felt about the equipment when he said "We brought in one 3D AOI and we put it on one of our product lines. And the funny story around that was several operators that we trained on this line loved the equipment so much that when I had them get to the point where they were going to rotate to another one of the production lines, I couldn't get them off the line because this machine was catching a lot of the defects and they didn't have a large failure rate for no trouble found."

Nick Swan added, "They were excited to see all the new features. They're used to just having a 2D picture flash in front of their face and having to make a call. And now they've all these measurements, they can rotate the part around and look at it and find a solder bridge or lifted lead. Very quickly it turned to, 'I just want to work on this line, I don't want to work on that other line anymore.' They want to be on the line that catches everything." Nick concludes, "Our direction is to make sure our internal customers, the people on the floor, the people doing the work, trust their equipment. Koh Young brought us to a point where they really trust the inspections."

When we hear that the operators trust the equipment and want to be trained to use it, plus that it is helping them live their values of quality, it is as heart-warming and satisfying for us at Koh Young as for our customers. That man-machine harmony is the essence of the successful smart factory of the future.

Feedback from the floor is important, but what did management think of the new inspection solutions. They presented their results and finding to Dr. Schweitzer and his response was assured and concise. He immediately instructed the team to get this AOI solution onto every line SEL has, resulting in an order for eight more 3D AOI systems. Koh Young delivered and installed these machines within a few short weeks. We pride ourselves on a quick seamless installation that minimizes downtime and disruption as well a simple training program to get operators up to speed quickly.

Tony O'Neill explained, "Training an operator was very quick. The machine itself is very self-directive on exactly what to look at and how to react, when to make a call to process engineering, when to make a call with the programming group. So, everybody came up to speed extremely quickly."

Having installed nine AOI machines across the Pullman and the Lewiston factories it became clear that the systems were delivering more than operator satisfaction and pride. They were delivering real results, actual incremental improvements in performance.

Tony O'Neill commented on the machines' performance, "If you look at our overall escapes out of the surface mount technology department, after bringing the Koh Young system in, and based off what it's able to catch, we've seen about a 15% improvement in yield. The lines are going down a lot less now. We ask why and try to figure out exactly what the root cause from the equipment upstream is, and we fix those issues. And many, many times those issues do not reoccur. So, the occurrences of having to stop down the line start to diminish and diminish over time. And our uptime is actually greatly increased."

Nick Swan summed it up, saying, "The impact downstream inside our plant is already been noticed. I've heard several people say, "Hey, we have troubleshooters that don't have much to do. Can we shift them over to another department for a few days?" You start hearing that in meetings more and more. You know that this is working!"



So, better performance, happy operators, what else? Well, as Tony O'Neill says, the equipment is delivering insight as well as performance. SEL are getting reports that previously took days to compile. Now with a click of a button they get the data they need, the results they need, the charts they need. Reporting is not just simpler, it is quicker and more reliable.

There are several reasons that SEL selected Koh Young from a very competitive field. One was technology. For SEL it was important to know that the vendor owned their own designs and was not outsourcing any elements of the technology or R&D. SEL are an innovative company that takes real pride in their technology. They see parallels with Koh Young in this area.

As Daicheng Fu says, "There is a similarity between our company and Koh Young. It started from an entrepreneur, an inventor! We had the cool technology first and so did Koh Young."

When you spend some quality time with customers like Daicheng, Nick, Tony, and Andrew at Schweitzer Engineering Laboratories, you quickly realize the importance of the equipment delivered and of the whole process from initial engagement through that ongoing partnership. SEL have been a great company to work with and it is gratifying to know we are delivering value for the company as well as a better operator experience for the team. I sincerely thank them for their time and hospitality, and leave you with a few words from them that sum up their experience.

Tony O'Neill, Board and Component Factory Manager (Pullman), concluded "It's made my life very, very easy, because we're all about quality. And I don't want to send any defects to my internal customers downstream, and this is pretty much obliterated those escapes."

Nick Swan, Lead Process Engineer, added, "SEL is always conservative when looking at equipment. We put the time and resources into evaluating the equipment. I think that the experience with Koh Young has been so easy and so good that there's really no question, what kind of SPI or other inspection equipment we're going to buy. If you're looking at inspection, save your time evaluating other equipment. This equipment is going to do everything you need it to do."

You can watch the full (nine minute) video testimonial we shot at Schweitzer Engineering Laboratories on the Koh Young YouTube channel here: youtu.be/SiDaEAg_KeU. They installed our Zenith AOI systems and you can find more data on our website here: www.kohyoung.com/en/product/detail/AutomatedOpticalInspection/Zenith.

Some highlights:

- 15% Yield Improvement
- Uptime Increased
- Greater Operator Satisfaction
- Increased User Pride
- Simplified Faster Reporting
- Near Zero False Calls
- Near Zero Quality Escapes
- Better Staff Utilization
- Quick Easy Training
- Fast Installation
- Intuitive Operation

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About Koh Young

Koh Young Technology Inc., the leading 3D measurement-based inspection equipment and solutions provider, performs an essential role for quality control and process optimization across a growing set of industries including printed circuit board assembly, machining and assembly process manufacturing, semiconductor manufacturing, and various medical fields. In addition to its corporate headquarters in Seoul, Koh Young has sales and support offices in Germany, Japan, Singapore, China, Mexico, and the United States. These local facilities ensure it sustains a close relationship with its growing customer base, while providing them with access to a global network of inspection and measurement experts.

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About Schweitzer Engineering Laboratories

SEL invents, designs, and builds digital products and systems that protect power grids around the world. This technology prevents blackouts and enables customers to improve power system reliability, safety, and cost. SEL, a 100 percent employee-owned company that is headquartered in Pullman, Washington, has manufactured products in the United States since 1984 and now serves customers in 164 countries. SEL provides unmatched technical support, customer service and a 10-year worldwide warranty.

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