

## Transforming SMT Manufacturing Towards Industry 4.0 Readiness

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### Challenge

Our client is a Tier 1 (OEM) manufacturer for many of the world's largest digital camera brands and have been faced with numerous production issues in their manufacturing facility in Indonesia. Their customers continue to put more pressure on our client to provide better production updates and to improve product quality. Their production processes are split into two key areas:

- **Surface-Mount Technology Manufacturing:** Circuit boards are printed for the digital cameras across 15 lines and QA/QC checks are conducted at the end before sending to assembly.
- **Electronics Assembly:** Over 4,000 technicians manually assemble the components together for the digital camera to get it ready for packaging and shipping.

The manufacturer faced two key issues with their production:

- **No real-time visibility to the SMT manufacturing process:** All information from the SMT lines were being captured manually on paper and any data would need to be recorded, processed, and reported directly into Excel. This time consuming process would take at least 1 day to complete, thus leaving a gap in understanding production issues in real-time.
- **No integrated, end-to-end visibility to the entire production process.** There are disparate systems that are used to capture data from various parts of the production process, but the data ends up being held in silos and not connected with one another. Our client continued to engage in a time consuming process to manually configure their reports by collecting data from the different systems and continued to be challenged in understanding why there was a high reject count.

### Process

Through the consultation process, our software team worked closely with the engineers and senior management of our client to understand both the issues that they were facing within their SMT manufacturing and assembly processes and also how our client can quickly get real-time data visibility across their entire production to reduce their high reject count rate.

Our team of experts worked on the following areas:

- **Data acquisition from SMT lines:** We implemented *arc.quire™*, which is a data aggregation and parsing system that connects with hardware devices to pull in real-time data. We connected to each individual machine across the 15 SMT lines so that all data is being captured automatically and streamed directly into an open MS SQL database that is at the client's discretion to control.
- **Integrating the tools with existing ERP, Inventory, and Quality Control systems:** We implemented *arc.link™*, which is designed to integrate with other software systems easily to be able to stream and upload data in real-time. Due to the different silos in which various systems existing for our client, this tool is integral in ensuring a full end-to-end understanding of the entire production process.
- **Develop analytic tools to improve decision making:** Once the data from the SMT lines and assembly processes were being captured in real-time, our suite of dashboard and reporting tools has unlocked the client's ability to understand where products in production were sitting idle, determine fault rates, understand pick failures, and have a clean output rate to benchmark against to conduct meaningful internal analysis.

With Arcstone's modular *arc.ops™*, *arc.quire™*, and *arc.link™* products, this allows for maximum customization without compromising on speed or quality of delivery. We were able to successfully complete the deployment from first consultation to delivery in 4 months. This reflects Arcstone's commitment for time-effective consultation and implementation.

## Result

Producing data is not something new for the SMT manufacturing industry, but being able to understand a full end-to-end picture of every aspect of the production process in real-time is a pivotal step towards becoming Industry 4.0 ready. Satisfied with Arcstone's platform, the client has standardized its production operations with our solutions as the new norm. Some of the key results delivered include:

- Reduced the time to capture, process, and report data by 97%, which alleviated a significant portion of the engineering's team to focus on higher value aspects of production.
- Supervisors on the production floor are now able to respond not only more quickly to critical issues but also to provide more accurate solutions that are pertinent to the problems at hand.

- The reject count rate was substantially reduced within 6 months after delivery of the implementation. The client expects to further reduce the rate as additional insights are gained through capturing more meaningful data.
- Senior management in their global headquarters in Japan are able to remotely monitor and track the manufacturing facility in Indonesia in real-time.

## About **ARCSTONE**

Arcstone was founded to revolutionize the way data is utilized in enterprises. Giving purpose and meaning to data is fundamental in bringing an enterprise closer together. We provide management and workers an intuitive and powerful solution for running their day-to-day operations while also being able to forecast and plan for future growth.