

ARCSTONE



SOLUTION CASE STUDY

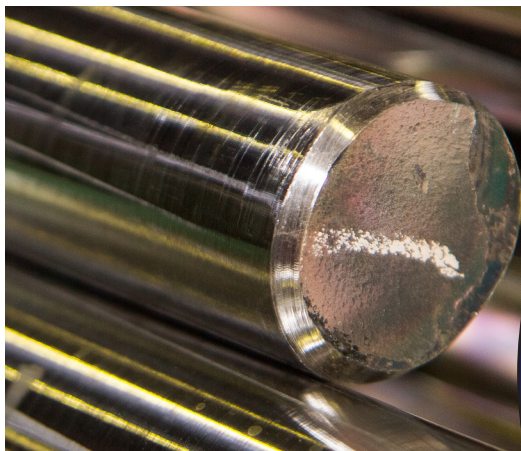
**MAINTENANCE PROCESS
REINVENTION FOR HIGH-PERFORMANCE
SEMICONDUCTOR PIONEER**



LUMILEDS

A DIGITAL TRANSFORMATION JOURNEY

Lumileds, a global lighting solutions company, started their digital transformation journey in 2018 as they prepared to scale their efforts to be a leader in the data-driven manufacturing space across their facilities globally. Lumileds is the leader in LED solutions, specifically in high performance LEDs for automotive lighting, general lighting and specialty lighting.



"Digitalization of our maintenance process would significantly cut the time taken for technicians to search and print out checklists, update soft copy versions as well as automate the release of the tool back in our MES system."

**- Justin Devakumar, Senior Manager
at Lumileds**

The transformation started at the Singapore and Penang locations that focus on wafer and die fabrication of Lumileds high performance LEDs. The business case for this digital initiative focused on productivity and time saved in terms of data analysis and ability to track historical performance.

CHALLENGES

Lumileds had difficulty managing maintenance due to the significant number of machines on each site and a heavy, paper-based maintenance process.



With 1,000+ machines in the Singapore location alone,

and each requiring specific and detailed care, a digital transformation was very much needed. The key issue was to digitalize this paper-based process and make the information accessible via any device. Other key aspects were on preventative care and maintaining efficiency.

OUR MISSION

TO ACCELERATE THE DIGITALIZATION OF THE GLOBAL SUPPLY CHAIN, ARCSTONE IS A MANUFACTURING SOLUTIONS COMPANY PROVIDING THE TOOLS FOR INDUSTRY 4.0 AND BEYOND.

"We had the opportunity to visit the Digital Capability Center and see firsthand the maintenance systems Arcstone had to offer on one of the demo tools there. It was then clear to us, this was the kind of solution we were looking for."

– Justin Devakumar



ARCSTONE AS A SOLUTIONS PROVIDER

COMPLETE MANUFACTURING TRANSPARENCY

across the entire supply chain is what Arcstone ultimately strives for.

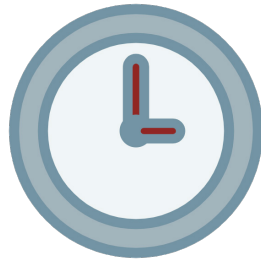
By digitalizing and integrating manufacturing operations from the shop floor right to the hands of consumers, Arcstone aims to enable a more **responsive, responsible, and sustainable manufacturing ecosystem** for us all.

BUSINESS AND QUANTITATIVE IMPACTS

Short Term Impacts



Reduced indirect workload by 14%



30% of workforce time saved



Decreased report creation time by 4 hours per day

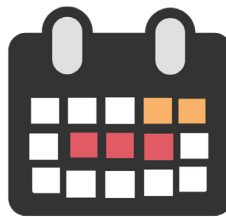


Decreased maintenance transaction time by 25% (minutes per machine)

Long Term Impacts



Increase in analysis quality



Improvement in preventive maintenance



Company wide transparency, communication and connection



Especially during COVID-19, the initiative has been extremely beneficial in managing equipment maintenance. As the amount of personnel in the factory at one time has been limited, digitalizing the system has made it easier for personnel to cross train, track performance, share tasks and coordinate some maintenance activities remotely to support production as well.

SOLUTION PROCESS AND IMPLEMENTATION

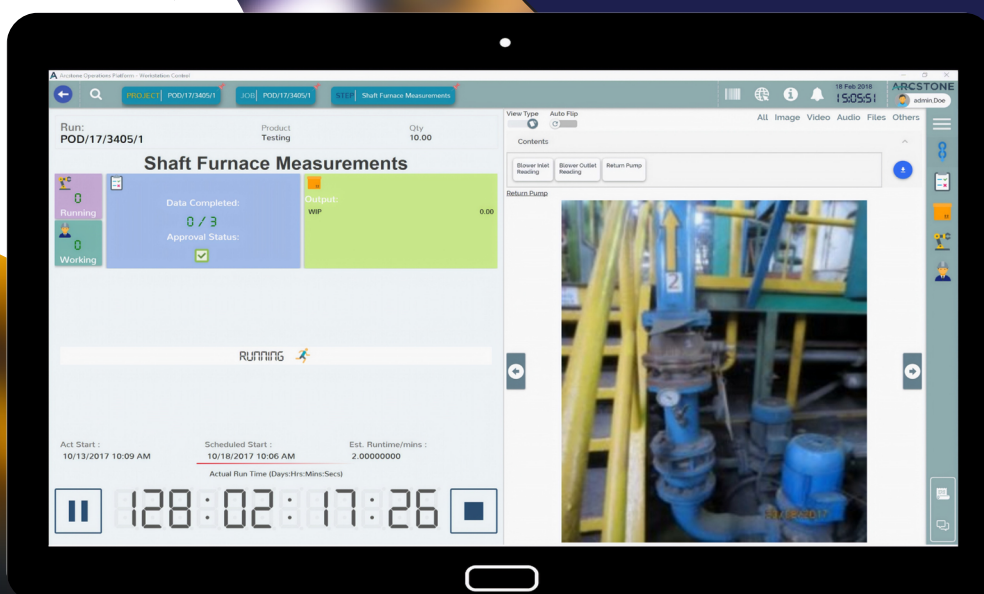
PHASE 1

To digitalize the existing paper process, **a digital workstation** was created and implemented at each location. Users can access the interface on a portable tablet anywhere in the factory. The portability and familiarity of mobile devices has eased the transition into our digital workstation.

"The whole idea of using a mobile device like a tablet appealed to us because a lot of the transaction time also involved back-and-forth movements of the technicians from computer terminals to the machines, which translates to motion waste."

– Justin Devakumar

DIGITAL WORKSTATION



A huge value-added section to this first phase is the E-Checklist builder. This tool has helped Lumileds eliminate the risk of technicians using old checklists, having to create new ones every time and allows for seamless updates to all end users. It has helped cut transaction time and automatically checks for incorrect formatting or unusual data entry.

The screenshot displays the 'E-CHECKLIST BUILDER' interface within the ArcOps system. The interface is titled 'Checklist Items' and includes a table with columns for 'S.No', 'Checklist Item', and 'Detail'. The table lists various inspection steps and their corresponding data fields, such as 'Job Detail', 'General Inspection', 'Consistency', 'Color', and 'Audit Log'. Each row includes a 'Detail' column with a list of input fields and their types (e.g., Database Field, Boolean Y/N, Text Input, Verification, Range, List(Single/Multi Selection), Text Instructions, Result, Supervisor Signature, Time stamp, Inspection Result File, File Upload). The interface also features a sidebar with navigation options like 'Checklist' and 'Checklist Items', and a top navigation bar with icons for home, settings, and user profile.

As deployment began, interest in better visualization and reporting rose. Lumileds existing solutions had limited custom visualization capability.

PHASE 2

For this phase, Arcstone integrated our solution with the client's existing MES to consolidate **machinery data** and **created custom reports and visualization tools**. Customizable dashboards featured on the digital workstation to allow for real-time traceability to insights that were not readily available previously.

EXPANSION



After the success of these two phases, the Singapore site decided to expand their digital transformation by electronically implementing their calibration process and automating machine data collection. Arcstone deployed the E-Calibration module and arc.quire, our solution for data collection to integrate and streamline a multitude of data input and collection channels.

BEST PRACTICE SHARING

Best Practices



As digital transformation is relatively new, finding a stable solution provider who works with your company like a business partner is essential.

ENDNOTES

After this success, **Lumileds** will continue their journey to take steps towards building a SMART Factory that focuses on digitalization of manufacturing interactions using smart devices and the implementation of IoT.

“Having a solution provider that is willing to partner with us in our digitalization journey has been key. Strong supplier collaboration and cross learning is crucial for success in digital transformation, you need a good team to work with and solution providers who will go through the paces with you.”

- Justin Devakumar



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