



CASE STUDY

Global EMS Manufacturer Reduces Time to Market Using PathWave Manufacturing Analytics

Achieving top-line revenue with the finest board quality and the highest possible production throughput is always a manufacturing goal. Launching a new product to market in a shorter time frame is a positive contribution to the top line revenue. However, when a high retest rate due to a false failure rate plagues the production testing, it negatively impacts the EMS provider as the time to market exceeds the launch plan.

Key Issues: Extended Time to Market and High Retest Rate

A global EMS company in Thailand manufactures aerospace boards for a leading original equipment manufacturer (OEM) needed to improve their time to market.

There are multiple builds before a product hits the mass production stage. During each build, in-circuit test (ICT) measurements are extracted, computed, and analyzed manually to improve the first pass yield (FPY) in the next build. These manual processes are tedious, time-consuming, and prone to human error.

Engineers review the results and fine-tune tests to improve the FPY. Identifying tests with the low Process Capability Index (Cpk) value is only the first step. Cpk is a statistical measure of its capability to produce output within specification limits. The EMS engineers modified the test with minimum information other than

PATHWAVE

Company:

- Global electronics manufacturing services (EMS) company building aerospace boards

Key Issues:

- Time-consuming manual computing of process results
- Inability to fine-tune tests
- Long time to market - 18 months
- High retest rate due to high false failure

Solution:

- PathWave Manufacturing Analytics

Results:

- Automatically computes process performance
- Ability to fine-tune tests
- Reduced time to market by 6 months
- Low retest rate



knowing it had a low Cpk result. Debugging without data led to extended system downtime on the production floor for test fine-tuning.

The entire process cycle of the production build from manual test measurements, collection, analysis, and fine-tuning downtime, had a significant negative impact to the product's time to market. Adding to the engineer's tasks was the management of tracking the high retest due to high false failure.

Solution: PathWave Manufacturing Analytics

While using Keysight's PathWave Manufacturing Analytics solution, the EMS company was able to take the ICT measurements in the data log files to seamlessly transfer into the PathWave Manufacturing Analytics' server. The engineer can review the Cpk results in a user-friendly GUI — and can select the project name and date range to get specific results. The Cpk results for all tests are available in a couple of seconds. The sorting capability for every column and intuitive search features enable the engineers to sort and filter the data. The scatter plot provides valuable insight into the measurement trend to enable making an informed decision during debugging.

The engineers and technicians can now easily debug the issues before releasing the test program for mass production.

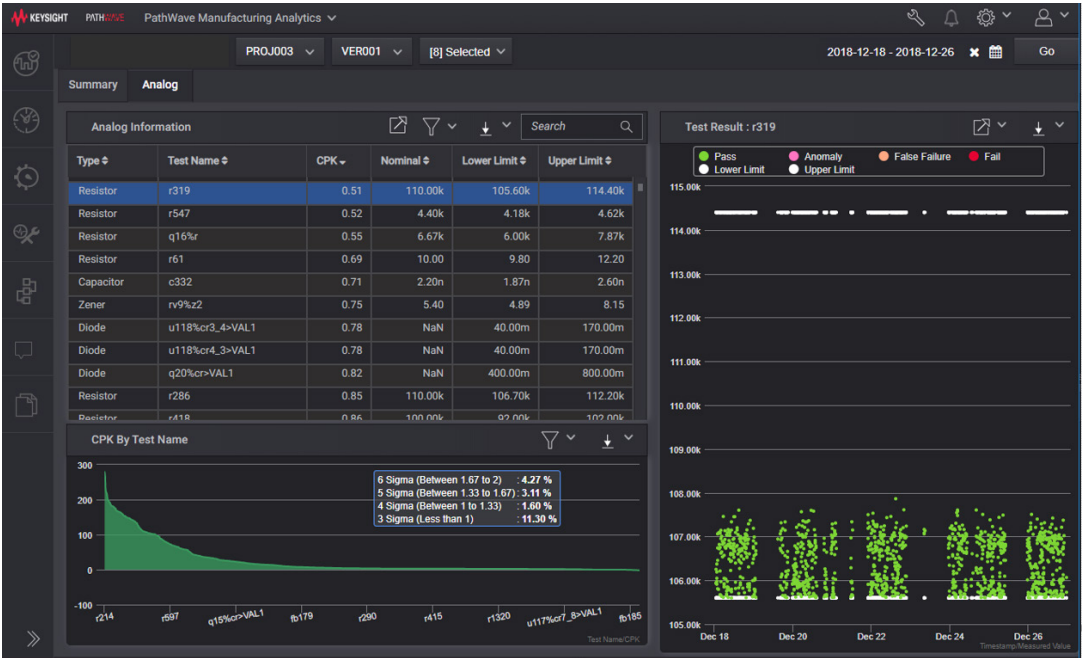


Figure 1. Automated Cpk table in PathWave Manufacturing Analytics

Results: Time to Market in 12 Months

The EMS company integrated PathWave Manufacturing Analytics to their production process for five months; running three NPI builds for five projects.

They are now achieving FPY above 90% for the five projects; and are confident of attaining FPY of above 97% for the next three NPI builds to occur over a span of 7 months. From their calculations, this shortens their time to market to 12 months; a reduction of 6 months from their typical 18-month cycle.

The engineers and technicians can now focus on tasks to improve production efficiency instead of spending hours to process the data. The false failure Pareto in PathWave Manufacturing Analytics direct the engineer to address and resolve the most problematic tests first. The results — a daily average of three hours of engineering effort savings per system.

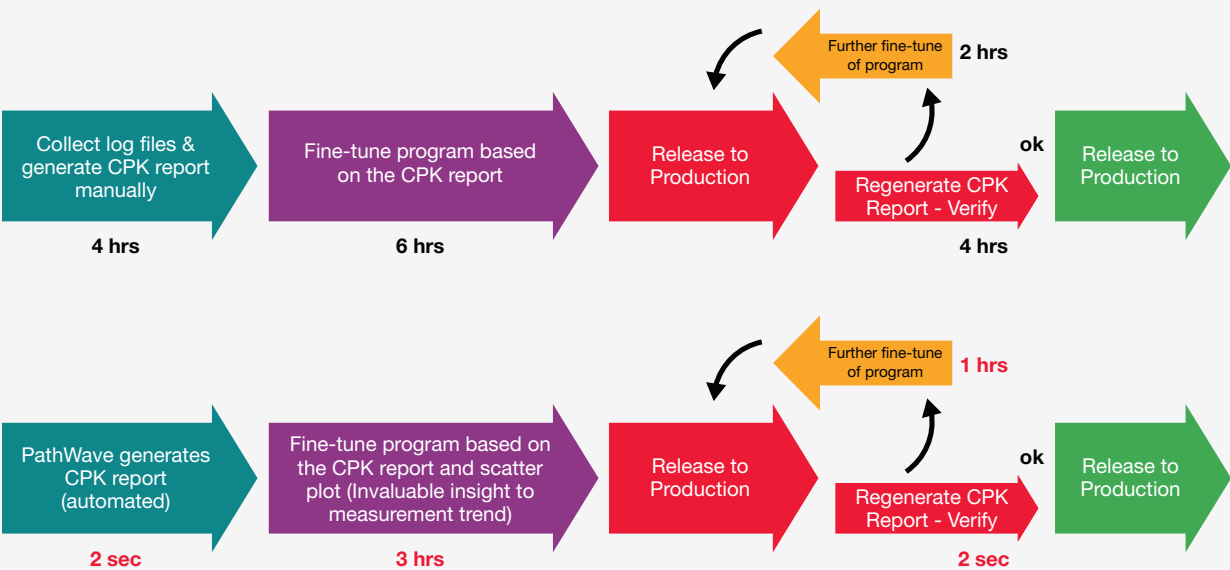
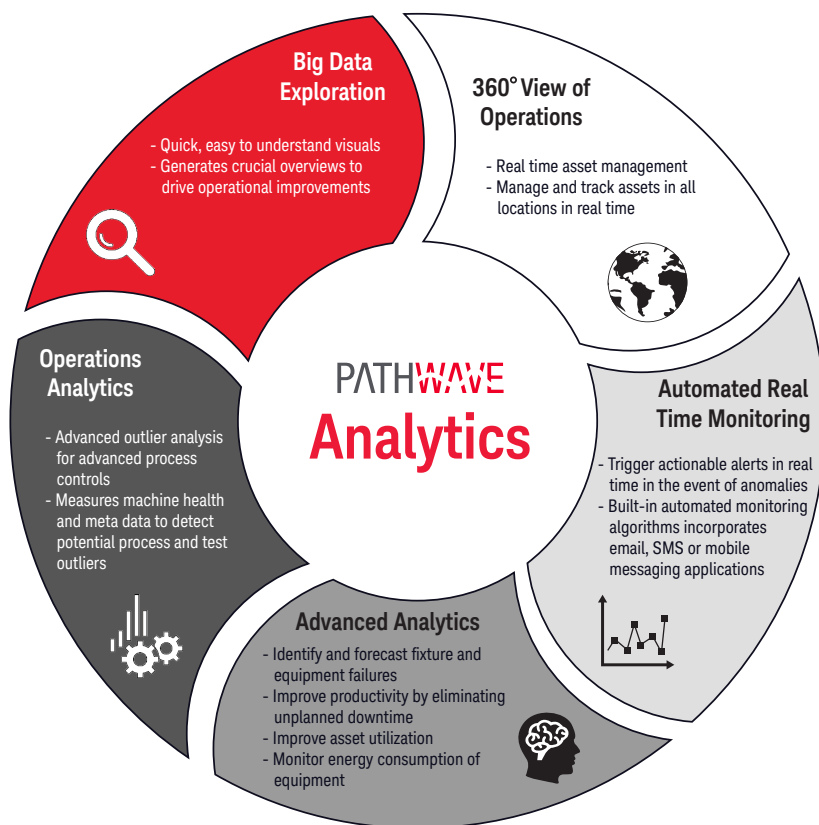


Figure 2. An average of 8 engineering hours are saved for each test debug iteration when using PathWave Manufacturing Analytics

The real time automated result analysis and anomaly detection in Keysight's PathWave Manufacturing Analytics reduce engineering time and effort significantly, empowering the EMS company to release the product into the market sooner.



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Integrating PathWave Manufacturing Analytics into our existing process has helped shorten our products' time to market cycle. Reducing engineering effort by facilitating a daily debug routine allows my engineers and technicians to focus on value-added tasks; thus improving our manufacturing efficiency. Adopting big data analytics has moved our company a big step toward a SMART factory, toward Industry 4.0 ready.

Test Director, EMS company

Going Forward

The real time automated result analysis and anomaly detection in Keysight's PathWave Manufacturing Analytics will reduce engineering time and effort significantly. The EMS company now has the tools to release their product into the marketplace six months earlier.

If you would like to talk to someone about PathWave Manufacturing Analytics, call your Keysight representative or go to www.keysight.com/find/contactus

Related Info

To find out the latest on PathWave Manufacturing Analytics, go to www.keysight.com/find/pathwaveanalytics

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