

Teledyne Microwave Solutions

drives improvement at the point of production



“Using WinSPC, we can detect flaws long before the product is fully assembled, which prevents scrapping or reworking a very expensive product.”

Charles Brown, Six Sigma Master Black Belt at Teledyne Microwave Solutions

BACKGROUND

A worldwide leader in radar, telecommunication, and electronic countermeasures, Teledyne Microwave Solutions manufactures high tech products that are helping advance United States military objectives around the globe. While 85% of Teledyne’s business is with the military, it also serves industries from aerospace to meteorology to wireless communication.

CHALLENGE

Teledyne’s components are highly engineered, and they’re quite expensive as a result. Because of this, reworking or scrapping a component is extremely costly.

Prior to using WinSPC, production data was used after-the-fact, mainly to validate the product’s critical characteristics, rather than to proactively detect and control process changes in real-time to reduce waste. And discovering the causes of this waste was no easy task, given the complex web of interaction among hundreds of design characteristics and performance indicators.

Additionally, given the sheer volume of product data captured, much time was being spent gathering paper check sheets and transferring data into Excel. Extracting a subset of data for analysis or producing statistics requested by a customer was not a simple task, and often required searching through filing cabinets full of check sheets. In short, the data wasn’t immediately accessible and actionable.

BENEFITS

DETECTION and CONTROL

of process changes in real-time to prevent failures downstream

SCRAP and REWORK reduction:
\$250,000/ yr. savings related to a single product characteristic

The ability to quickly **SEARCH** and **ANALYZE** production data to drive design improvements that increase production yield

EASY ACCESS to centralized production data



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ACTION

The objectives were clear. To lower costs, Teledyne needed a way to:

- Detect and control process changes at the point of production to prevent failures downstream
- Analyze production data to drive process and design improvements that increase yield
- Manage quality data centrally and digitally for easier access

To accomplish these objectives, Teledyne decided to install statistical process control software on the shop floor.

After comparing several applications, WinSPC was selected because production operators and engineers found its administration, data collection, and analysis capabilities easier to access and use.

RESULT

Teledyne has greatly expanded and improved its use of statistical process control, and now applies SPC across the factory on live production data using WinSPC software.

WinSPC has facilitated solutions right on the production line, preventing performance failures that would otherwise be detected up to three months later during testing, at a time when fixing failures would be much more expensive. Teledyne now monitors production using a live collection screen, instantly detecting process shifts using SPC tests. Through this real-time monitoring, and by taking corrective action initiated by triggered alerts, Teledyne has markedly reduced the volume of costly rework it performs—and more beneficial still—it scraps fewer assemblies.

Said Charles Brown, Teledyne's Six Sigma Master Black Belt, "Using WinSPC, we can detect flaws long before the product is fully assembled, which prevents scrapping or reworking a

very expensive product. Because of this, our quality efforts easily pay for themselves."

Teledyne has also lowered its costs by optimizing both processes and product design through diligent analysis of its production data.

Using WinSPC's live histograms, distribution analysis, and performance statistics, engineers are now able to clearly identify the processes, equipment, and practices which have the most room for improvement, and prioritize improvement efforts in those areas. In addition, by evaluating data distributions over time, target values can be adjusted to reduce the number of non-conforming components manufactured and increase yield.

Streamlined by WinSPC's ability to quickly filter and share data with external applications, Teledyne has also paired WinSPC with an in-depth regression analysis tool to better understand the complex relationships between its products' mechanical inputs and electrical performance outputs.

In one case, by applying regression analysis, it was found that one characteristic of a helix-shaped component had a direct impact on a key electrical performance indicator that was drifting out of statistical control, resulting in failures.

By adjusting the helix characteristic specified for design, and controlling the characteristic in real-time using WinSPC, the related performance indicator returned to a state of control and the amount of scrap and rework generated dropped dramatically. In a year's time, Teledyne realized a savings of \$250,000.

Finally, because production data is now centralized in a database, Teledyne spends drastically less time administering its SPC program, analyzing and searching its data, and producing reports. By applying a few search criteria, engineers can quickly isolate subsets of data for analysis to drive improvement. And, using WinSPC's standard reports, they can easily generate validation documentation to satisfy customer and ISO requirements.