

ResMed: Real-time SPC Solutions with Minitab



ResMed trusts Minitab Statistical Software to perform the data analysis necessary to make the best decisions for product improvement.

KEY FACTS

ORGANIZATION

ResMed

OVERVIEW

- Global leader in solutions for sleep-disordered breathing and other respiratory disorders
- Annual revenues over \$1 billion
- Over 3000 employees in 22 countries
- Received Forbes' Best Small U.S. Company award for 10 straight years
- Association for Respiratory Technology & Physiology award winner for Manufacturer of the Year

QUALITY CHALLENGE

Use statistical process control to improve manufacturing processes and reduce quality issues.

PRODUCTS USED

Minitab® Statistical Software

RESULTS

Minitab macros enabled real-time data analysis that:

- Identified a potential production issue
- Enabled component change that improved the product
- Ensured processes were in statistical control
- Provided proactive quality improvement options
- Provided an efficient alternative to a paper-based process

ResMed is a global leader in making medical devices that help people with sleep-disordered breathing (SDB) and other respiratory disorders. Characterized by the interruption of normal breathing patterns during sleep, an estimated 18 million people in the United States suffer from SDB symptoms. Dedicated to discovering innovative solutions, ResMed invests 7% of its net revenues in research and product development. Furthermore, the company has over 3,000 patents and design registrations granted or pending. In its ongoing quest for continuous improvement, ResMed trusts Minitab Statistical Software to perform the data analysis necessary to make the best decisions for product improvement and uses Minitab macros to execute real-time statistical process control.

The Challenge

ResMed wanted to refine the manufacturing process for its best-selling masks and machines as part of its continuing efforts to improve product quality. They hoped that this initiative would reveal how to maximize the efficiency of their manufacturing efforts, raise the visibility and boost understanding of the process, identify changes in production that could improve product quality, and showcase the benefits of statistical process control to others in the company. To accomplish this, ResMed set out through a pilot to measure continuous parameters such as flow, gain, and pressure, plus attribute data such as error codes.

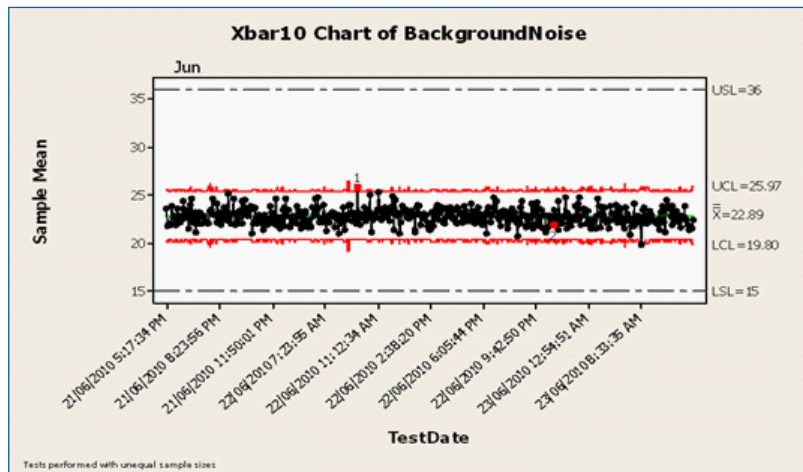
How Minitab Helped

The idea for using Minitab macros came to ResMed after using the software's Open Database Connectivity (ODBC) to query test data—efforts that just happened to coincide with a

Learn how Minitab software can help you improve quality at www.minitab.com.

Minitab Tips and Tricks workshop, where they learned about using macros. The solution they designed is simple:

- Test data from the production line is stored in a database.
- Microsoft Scheduler schedules Minitab to run every 30 minutes with a startup file that launches a macro.
- Minitab queries the data, creates the control charts, and saves them to a designated directory.
- ResMed's SharePoint site retrieves the graphics and displays them for review
- The SharePoint site automatically refreshes data every 10 minutes.



ResMed used Minitab individual control charts to monitor daily production, Xbar charts to monitor weekly production, and P charts to monitor yields.

Throughout the pilot, ResMed used Minitab individual control charts to monitor daily production, Xbar charts to monitor weekly production, and P charts to monitor yields (number good units over total units made). They also used Minitab to create real-time Pareto charts which display the previous day's codes to line operators.

Results

ResMed reaped several benefits from this quality improvement effort. They can now quickly and easily demonstrate that their processes are in statistical control. They gained greater understanding of test parameters and results, and manufacturing can proactively make changes in production before they end up with product that may not meet the company's strict quality standards. During this pilot, for example, the manufacturing team detected a downward trend involving a particular tool cavity. A quick preliminary investigation showed that the cavity had become eccentric. Although the process still made product that was within specification, over time it could have produced nonconforming product. To avoid this issue, the tool cavity was replaced and the process was improved. In addition, instituting the new process will eliminate a legacy paper-based system—freeing up workers to address other matters. Looking ahead, the company anticipates long term benefits in improved product quality and fewer customer complaints.

From their start with Minitab's basic statistics, control charts, and process capability tools to their current use of macros in their pilot for real-time monitoring of production processes, ResMed's trust in Minitab continues to pay dividends in terms of quality and efficiency.