

# Supplier's change request in less than 10 minutes

## Overview

Data analysis and validation can be a massively time-consuming process, and often need to occur in a tight timeframe.

To accurately accelerate statistical analysis and validation, Lowell™ created the PQ-it™ macro, a new tool for Minitab that can deliver results in at least 90% less time than manual statistical analysis.

## Situation

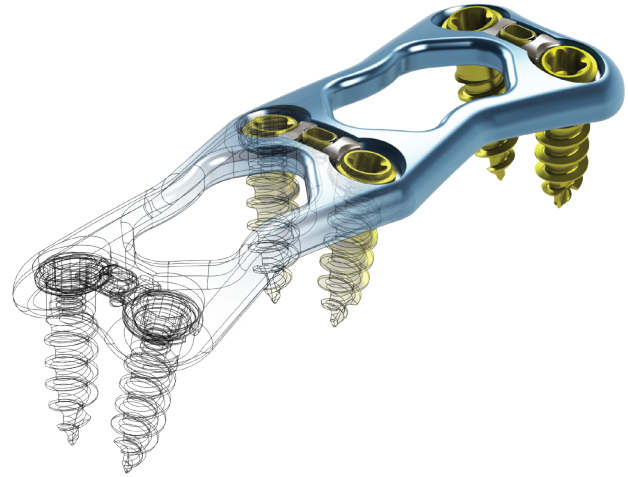
A customer required an engineering change request (ECR) before Lowell changed the machine on which one of its best-selling products was manufactured.

For this ECR, the new machine would manufacture three batches of 30 parts each. All 90 parts required 100% inspection and statistical analysis to give the customer confidence in the new machine's ability to consistently manufacture conforming parts.

The amount of data to analyze quickly added up:

- Each of the 90 parts had 48 features to measure, and each feature required a Ppk value.
- Because the 90 parts were split into three batches of 30, there were 144 columns of data that required statistical analysis.
- To obtain the Ppk value, three tests needed to be run on the 144 columns of data, equaling 432 tests.

It would require a massive time commitment to analyze all of the data and complete the ECR. Lowell thought there needed to be a better, automated way to deliver the results.



## Solution

Research to find a faster way to conduct the data analysis and build the report came back empty. Every tool that existed required manual data analysis and report building, making the overall time savings minimal.

Along with a team of experts in statistical methods and software development, Lowell created the PQ-it macro, a productivity tool for Minitab designed to generate at least 90% time savings when conducting process qualifications.

The typical process for determining Ppk value includes:

- A normality test to ensure the data is normally distributed and in control
- An outlier test to ensure the data does not contain any outliers
- A capability analysis to obtain the Ppk value

Rather than manually running these tests separately, the PQ-it™ macro tests normality, outliers, confidence reliability, and capability, all with a single mouse click.

Lowell put all the data from the customer ECR into this tool and, within one minute, all of the analysis was complete. The charts and graphs were ready to explore, and the reports were built.

In addition, the PQ-it macro exported all of the charts, graphs, and reports to PowerPoint, Excel, and Word formats, ensuring the customer could easily access the data and information in variety of formats.

## Results

After getting the raw data from the inspection department, the Lowell team only needed five minutes to determine the capability of the new machines used to manufacture their customer's parts.

Lowell managed to save hours of work while still delivering the same results to the customer. Because the PQ-it macro captures and handles the data independently, human errors in the analysis and reporting were also minimized.



MACHINING COMPLEX MEDICAL IMPLANTS

The PQ-it™ macro was developed by Lowell, Inc. a precision machining contract manufacturer based in Minneapolis, Minnesota. Founded in 1964 Lowell, Inc. is a leading contract manufacturer of implantable medical devices and instruments for the Orthopedic and Cardio/Vascular markets.

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