

Capturing Quality in a Can: REXAM Beverage Can Group



Six Sigma Black Belt, Pascal Lorquin (2nd from the right), and his team led an improvement project to reduce the variation in the coating weight of Rexam's beverage cans.

The can that kept your most recent beer or soda fresh and delicious just may have been manufactured by a company in Dunkerque, France—and it just may have tasted that much better thanks to Minitab Statistical Software.

The Rexam Beverage Can Group produces an annual volume of 55 billion cans in 50 plants around the world, making it the market leader. The company applies a protective coating to the interior of every can to help it maintain freshness, cleanliness and taste. But when the company detected variation in the weight of the coating applied on two of the company's production lines, with a combined production of 900 million cans per year, it initiated a Six Sigma improvement project powered by the data analysis capabilities of Minitab Statistical Software.

KEY FACTS

ORGANIZATION

REXAM Beverage Can Group

OVERVIEW

- World leader in metal beverage can manufacturing
- Employs 24,000 people in over 20 countries
- Group turnover of approximately €3.9 billion

QUALITY CHALLENGE

Reduce coating variation in cans

PRODUCT USED

Minitab® Statistical Software

RESULTS

- Average reduction in the quantity of coating required by 5mg per can
- Annual savings of €35,000

The Challenge

Variations in a beverage can's internal coating weight can create problems with porosity, excessive use of the epoxy coating, and poor capability results. These results are requested by Rexam Beverage Cans' customers—beverage manufacturers—who request quality assessments for the cans supplied to them.

To reduce the variation in the coating weight, the project team implemented the 5S methodology in the factory's varnishing area. They developed a process map to precisely analyze and detect any non value-added steps, and created a cause-and-effect diagram to identify possible reasons for the problem. They used statistical tests and graphs available in Minitab Statistical Software to define, measure, and analyze the problem, and then monitor the improvements.

How Minitab Helped

First, the Rexam team needed to assess the validity of the system that measured the coating weight. They conducted a measurement systems analysis using Minitab's Gage R&R Study and confirmed the reliability of the weight measurement system - their data could be trusted.

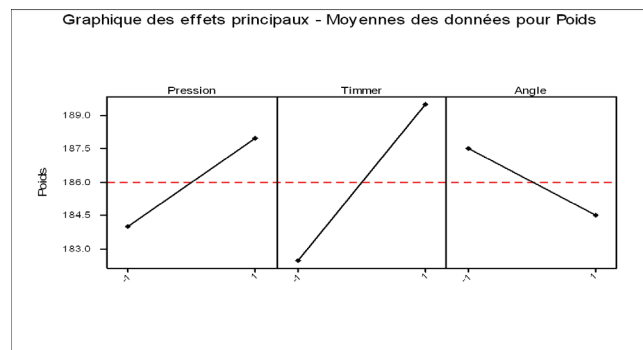
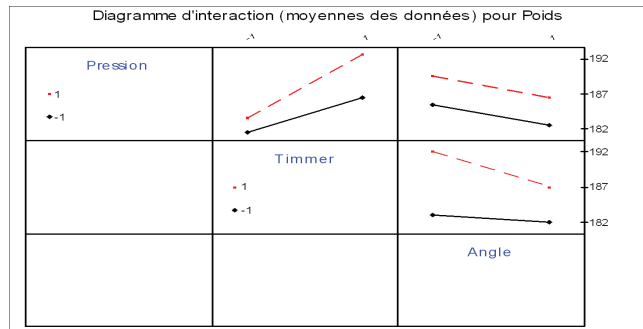
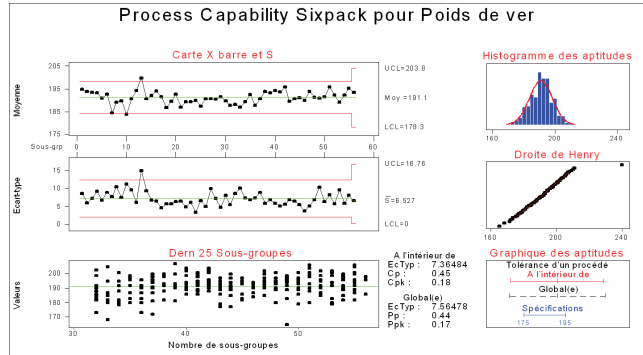
Then, data was collected from the production lines to establish a state of initial weight variability.

A power and sample size test followed to determine the number of samples that needed to be collected from each line to ensure the analysis would be able to statistically detect important factors if any existed.

The team then tested the impact of the lacquer-application machines on variability, and found that the distance of the nozzle which injects the lacquer into the cans was significantly impacting the coating weight variation. In response, the team adjusted the spraying distance of the nozzle.

Using Minitab's Design of Experiments (DOE) feature, the team was also able to run a study to determine the optimal settings for three variables, application duration, angle and pressure. They evaluated the effect of each of the three factors on the coating weight as well as the interaction between them. Using the results from the DOE, the team adjusted the parameters to obtain the desired coating weight.

Placing data collected after this adjustment in a Minitab control chart instantly revealed the improvements that were implemented could be sustained over time as a result of these changes.



Results

Rexam's improvement team reduced the amount of lacquer by 5mg per can without impairing the quality of the final product, which saved the company approximately €35,000 per year. They demonstrated their success with follow-up measurements of porosity and coating thickness, using Minitab to prove their objectives had been achieved.



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