Hertzler Systems Inc.®

Turning Data into Knowledge

Calculating a credible ROI can be a daunting task. But the end of the day, "It just has to make sense."

Blending the right reasons with GainSeeker Suite to make a sensible investment

Calculating a credible return on investment (ROI) for a capital project in any industry can be a daunting task. But at the end of the day, in the words of one Quality Manager in a consumer goods packaging company, "It just has to make sense."

The engineering and quality leaders at this company saw an opportunity to increase throughput and profitability by automating the ingredient mixing process. While their proposed solution was backed by solid numbers, it also "just made sense." The new solution created a single automated, continuous batch mixing process to feed production on four fill lines in two adjacent manufacturing plants.

How good can we afford to be?

A few years prior to this project, the Quality Manager had led a Lean Six Sigma project that laid the foundation for the new automated process. In that project, the Lean Six Sigma team had eliminated a major source of process variation and rocketed the First Pass Yield for hand-made batches from 85% to 99% in a few months.

"At that time," said the Quality Manager, "we considered taking the process to true Six Sigma (less than 3.4dpm). We asked ourselves 'how much better could we make this if we automated the process?' At the time, we figured out how to automate it and increase the quality, but it wasn't worth it. There was no economic justification to make it any better. We hit a 99% First Pass Yield and thought we would live happily ever after."

Quality thinking creates vision for increased efficiency

However that planning exercise – thinking through how they would automate the process – paid dividends a year later when the team looked at how they could increase line efficiency (up-time) and throughput.

When the team analyzed the reasons the lines stopped running, they saw that each time they changed products they had to shut down their high speed lines for 5 to 10 minutes. While that doesn't sound like much, the company had a solid business incentive to push for smaller and smaller production lots. The company was changing batches several times a day, which added up to a significant amount of time when product could not be produced. And that number was likely to increase.

"During our ramp up to peak season," explained the Quality Manager, "we need to make every bottle count. When the line went down so we could

change batches, we weren't filling cans - a lot of cans. By not filling those cans we were adding all kinds of costs to the business. When you think of all those costs: people, equipment, utilities, lost sales opportunity… those 5 to 10 minutes add up pretty fast."

The Quality Manager and his team envisioned a wholly new, automated process. Instead creating thousands of batches each year by hand, they imagined a way to do it using computer controlled (PLC) equipment and software. This new process would wholly eliminate all of the manual processes and feed all of the production lines.

Formal and informal cost justifications

Curiously, the formal cost justification didn't come from the elimination of the connection time. In the end, the cost justification came from eliminating the costs of manually mixing one of the major ingredients to the company's product. Automating this process eliminated 25% of the workload in the mixing department.

The manual process involved manually mixing ingredients in a large tank and transporting the tank to a lab for testing. In the lab, a technician tested each batch and meticulously documented the test results before releasing the tank to production. The tank was transported to the line, and, at the right time, connected to the line using a number of quick release hose couplings. While the goal of reducing or eliminating the connection time triggered this effort, it was reducing mixing costs that actually funded the project.

"When you add up just those costs," said the Quality Manager, "It was easy to justify the expense of this project. By automating the mixing of this one ingredient we could either cut staff or free them for value-added tasks. Either way it meant we could eliminate a significant non-value-added expense."

When the team added up all the costs for the investment and weighed them against the easiest to defend benefits, they came up with an eight month payback period. "In our company, major capital expenditures like this have to payback in 18 months," explained the Quality Manager. "Our formal ROI calculation – which didn't include some of the benefits that we expected to see but were a little harder to defend – blew that out of the water. Everyone understood the other benefits were out there too, and that is what made it such an easy decision. It just made sense."

Solving one problem... and creating new problems

While automating the process made sense from a financial and engineering perspective, it created a new problem for the Quality Manager. "We're tightly regulated," he explained. "And the manual mixing process let me sleep at night because I knew our product had the correct formulation. Incorrect formulation could impact the long term stability of our product, and it is my job to make sure that doesn't happen."

But the manual process gave him something else that helped him sleep at night: documentation that met the requirements placed on him by federal regulators. "When we went to an automated process, I lost that documentation. That's when I turned to Hertzler's GainSeeker Suite."

"Personally I was pretty comfortable with the automated mixing process because it was PLC (Programmable Logic Controller) controlled. But even the best controller can fail, and we needed a safety net. And worse than that, the data wasn't stored for more than a few hours before it rolled out of the system. I had no documentation. If the regulators came knocking or if we had a recall, I couldn't prove anything."

Automatic data collection and real-time alarms

The Quality Manager used GainSeeker Suite to collect data automatically from the PLCs that control each of the three flow meters that feed the ingredients into the mix. Where the PLCs report data down to the finest detail, that data wasn't very useful for the Quality Manager. He needed to take into consideration all the data for each fill cycle and calculate weights and percentages of the various ingredients. He set up GainSeeker to calculate and store all of those values.

"Once I had all of this data," he explained, "I set up real-time alarms so I could spot trends automatically. I set up GainSeeker so that if any one of the ingredients started to trend, the software would automatically call the Quality Engineer and the Process Engineer and leave them a voice mail message telling what was off. They can respond instantly."

This real-time information, along with the GainSeeker data historian, helps him understand and improve the process. "It is a great system," he said, "because if a pump is having trouble keeping up with the required flow, I can see it trending. That trend is masked in the PLC. I know far more about our processes than our engineers do, because I have the data that matters over time. GainSeeker gives us all kinds of clues."

"Having automated real-time data gives us time to respond to changes before they become major problems and shut down the line."
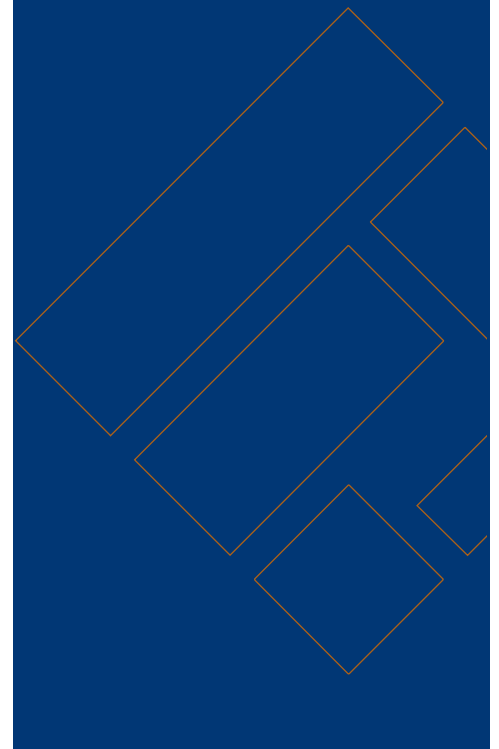
The Quality Manager went on: "Having automated real-time data gives us time to respond to changes before they become major problems and shut down the line. It also helps us with our Preventative Maintenance program. We have knowledge that can help us plan for repairs before wear and tear causes the line to go down."

So far, the Quality Manager hasn't been audited by the regulators, or required to produce documentation to support the safety and efficacy of his company's products. But, he explains, "I don't want to wait for a knock on the door. I get all the financial benefits of what real time data can do for our business, and when the regulators come I'll be ready for them. I can pull it out of the system at a moment's notice."

All of this adds up to an investment that just makes good sense.

About Hertzler Systems

Hertzler Systems provides seamless, accurate data acquisition solutions for your business enterprise. We have been in this business for over 20 years.

We have a large and diverse customer base in service, transactional and manufacturing environments, including Consolidated Biscuit Company, Darden Restaurants, Pactiv Inc., McCormick & Company and Hormel Foods. Our customers buy software and services from us because it is a good investment. With our assistance, they can easily acquire data in any process, analyze that data in real time, and instantly notify process owners of process variation. These capabilities help them reduce costs, cycle time, errors and defects, and increase profitability and customer   .

These are our core competencies.

We turn data into knowledge.

Hertzler Systems Inc.®
Turning Data into Knowledge

2312 Eisenhower Dr. N.
Goshen, IN 46526
Phone: (574) 533-0571
Fax: (574) 533-3885
Email: info@hertzler.com

"I get all the financial benefits of what real-time data can do...and when the regulators come, I'll be ready for them."