

Mattec ProHelp® EPM drives continuous improvement at Johnson Controls

"We used to run 3-4% scrap. Last month we were down to 1.37%. You can't get much better than that; that's world-class and is largely attributable to Mattec. It's the tool that gives us the numbers we need to make good decisions."

Kenzie Beard
IT/IS Technical Service Specialist
Johnson Controls

Customer Spotlight

At-a-glance

Manufacturer of plastic battery cases for automotive OEMs and aftermarket
Florence, KY
www.johnsoncontrols.com

Key Challenge

- Manufacturing environment - 44 injection molding machines
- SPC and SQC enablement
- Reduce scrap
- Increase machine utilization
- Goal of doubling production efficiency (38-second vision)

Solution

- ProHelp® EPM – Mattec's production and process control system

Key Benefits

- Decrease scrap from 4% to 1.37% (reduced start-up scrap by 23% and running scrap by 27% in last 7 years)
- Decrease machine downtime by 3.1%
- 13% improvement in conversion cost (cost to make each unit) • 8% increase in overall productivity
- 50% reduction in changeover time
- Annual cost of quality reduced by \$600,000

"We were the Flintstones. Now we're the Jetsons." That's the metaphor Dave Rose, Quality Engineer at Johnson Controls, uses to illustrate the difference Mattec ProHelp EPM has made in his plant's production, process and quality monitoring capabilities.

Rose is talking specifically about how the process of setting control limits for fill times and cycle times on his plant's 44 injection molding machines has evolved since Mattec's implementation "In the old days we couldn't do true SPC, because we need material, pressure, heat and mold temperature data from 300 cycles before we can set up the control limits. It's impossible to do that manually with the amount of equipment we have," he says. "All we do now is query Mattec after 300 cycles and it sets the control limit. I monitor the real-time screen from my desk or at home and I can see how each machine is performing against those control measures."

Prior to Mattec, Rose's group would collect data only once per shift, requiring 3-4 shifts before he could perform statistical analyses on the processes. "Now, I take a snapshot of every cycle to see if the process is in control. Mattec's just an awesome tool."

From a quality standpoint, Rose analyzes key part dimensions, such as weight, setting up target values in Mattec. Each shift then does a part check against those targets. Significant deviations could point to a problem with the mold or lead to machine shut-down. "I haven't gotten to true SQC yet. Our parts don't vary by much, and we've got 4 people measuring dimensions, so there's some natural variation. We're looking at getting a coordinate measuring machine, which will interface with Mattec, allowing us to do SQC."

Mattec's reach extends throughout entire organization

Mattec is deeply integrated into nearly every aspect of the plant's daily operation - monitoring machines and production processes, as well as synchronizing and monitoring robot-controlled packing, labelling and transfer processes within the facility. Rose hosts a morning meeting with representatives from 8 different operational disciplines, where he reviews Mattec scrap reports from the previous day and previous shift to see if known issues have been resolved, and if not, assign resources to take further action.

The result, by Rose's measure, is a scrap rate on the threshold of world-class. "We used to run 3-4% scrap. Last month we were down to 1.37%. You can't get much better than that; that's world-class and is largely attributable to Mattec. It's the tool that gives us the numbers we need to make good decisions."

Looking deeper into scrap statistics, Rose says his company has reduced its start-up scrap by 23% and running scrap by 27%. "That's a testament to the people here, the concepts we have in place and the way we use the tools at our disposal, and Mattec is the primary tool."

Kenzie Beard, Johnson Controls' IT/IS Technical Service Specialist, agrees. "Mattec gives you the black and white; good or bad. It provides snapshots of machine settings, and when you graph those snapshots out you can identify problems early and go straight to the problem rather than using the old-school trial and error. It lets us be proactive and fix a problem before we make a bad part."

Productivity up, costs down

According to Beard, this ability to identify trends early has allowed Johnson Controls to institute more effective preventative maintenance procedures, decrease machine downtime by 3.1%, increase productivity by 8% and decrease by 13%, the cost to produce each unit. Particularly in challenging economic times, such continual improvement is critical to remaining viable in the automotive industry. "We can't just run product, have dead money sitting in our warehouse and wait for our ROI. Mattec has helped us automate, downsize and get lean, not just in production, but throughout the organization." Beard estimates that Mattec is monitoring between 250-300 machines and processes at Johnson Controls, from the injection molding machines to final product bagging.

The company's most important productivity initiative at present is what Beard terms the "38-Second Vision". Johnson Controls has recently moved from using single-cavity to double-cavity molds. Historically, using the single-cavity molds the company could move one part every 38 seconds through every work station in the production and handling process. Their vision is to produce 2 parts in the same 38 seconds. Using Mattec to monitor all equipment involved in part production, picking, hot stamping, handling and pressure testing, Beard says they've reduced the time to run double the parts from 54 seconds to 47.5 seconds - less than 9 seconds from their goal.

Transforming cost into profit

At the same time, the company's annual cost-of-quality - the cost of ensuring a quality part, which includes raw materials, labor, customer credits issued for bad product - has decreased by over \$600,000 annually. That cost is typically figured into the price charged to the customer.

As counter-intuitive as it seems, cost-of-quality has actually become a profit center for Johnson Controls, thanks in part to Mattec. "Part of the cost is raw material - plastic - but Mattec helped us determine that we could make a quality part containing a certain amount of reclaim material, material from recycled scrap," says Beard. "So with the money we save on raw materials we justified purchasing a grinder to grind scrap, and because we have excess capacity on the grinder we contract with other companies to grind their bad parts. We're using that material and putting it back in the system."

Whether speaking of specific initiatives like this, or of company-wide continuous improvement Beard believes Johnson Controls' success lies in individuals, with ideas, using tools like Mattec to inform their decisions. "Mattec is the crutch we lean on whenever we decide what we want to do."

.