

Plastics Business

Strategies for Today's Plastics Processors

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A Quality Responsible Business Model Leveraging Embedded Quality Control Processes for Improved Performance

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The vast majority of plastics manufacturers view their quality control department as an essential tool to ensure quality, precision and consistent, reliable performance. In its traditional role as the quality watchdog, the quality control department is the ultimate gatekeeper, checking to make sure the highest quality standards are maintained and any mistakes or products that don't live up to those standards are caught well before they head out the door to the customer.

There is another approach, however—one that turns that traditional model on its head. A handful of forward-thinking manufacturers are proving that when comprehensive quality control measures are implemented throughout the manufacturing process, there is no need for subsequent quality monitoring and reviews. This type of embedded approach, however, requires a commitment to quality control as an ongoing priority, as well as a willingness to leverage new technologies and automated processes. But the results can be astonishing. Far from compromising quality standards, a quality-first approach actually can help plastics manufacturers achieve new heights in consistency and precision.

Appreciating both the theoretical and practical foundations of such a strategy—and understanding the specifics of how to implement a plastics manufacturing process with robust and repeatable baked-in quality control elements—begins with familiarizing yourself with its challenges, key considerations and best practices.

Don't look back

The key to operating without a quality control department is broadening your perspective about what the term “quality



At PRISM Plastics, all of the company's machines are identical, uniform and interchangeable across all of its facilities in Michigan, Pennsylvania and Texas.

control” means. Traditional quality control looks in one direction: backward. It is inherently reactive, reviewing products and materials after the fact to search for errors or lapses in quality. Plastics manufacturers who wish to shift their quality control paradigm need to flip that around and start implementing quality control efforts throughout the manufacturing process. Be proactive instead and commit to a quality-first approach, designing policies, processes and procedures focused on getting it right the first time. This requires some extra resources and investment on the front end, but will ultimately yield greater efficiencies, consistently higher quality outcomes and potentially dramatic savings down the road.

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Make it a mindset

A quality-first approach demands the participation and contributions of every employee. Essentially, you are creating a mandate that every single employee takes personal responsibility for maintaining quality at every step in the process. That includes sales, engineering and manufacturing personnel, of course, but also employees from other departments in the organization. This new mindset also may mean you have to be more selective about the types of projects you take on, evaluating feasibility with quality standards and capabilities becoming your prime concern. Consider setting standards that exceed industry minimums and establishing variability parameters that significantly exceed client expectations for precision.

Become process-driven

Consistency and quality are heavily dependent on process. While every plastics manufacturer will have its own specific way of doing things, we've found that successfully shifting to a quality-first approach requires processes that are:

- Repeatable (to minimize variation),
- Simple (to reduce complexity and make it possible to use uniform and interchangeable equipment and materials),
- Automated (to allow for rigorous monitoring and precise controls) and
- Intelligent (processing real-time data to track production and further refine existing processes).

Prioritize controlled manufacturing environments

The layout, design and maintenance of the manufacturing/production facility can have a profound impact on quality outcomes. Cleanliness is essential: Strive to make manufacturing environments more like operating theaters than industrial facilities. Precise climate controls can minimize temperature and moisture variables. Some plastics manufacturers have monitoring systems so sensitive that even something as innocuous as an open door can trigger environmental alarms.

From an operational standpoint, avoiding complexity

should be a priority. More modest-sized facilities with fewer machines and standardized equipment can streamline and simplify production, reduce errors and unlock efficiencies. The goal is, ideally, to hone in on a few key products in consistently designed and tightly controlled environments.

Use metrics and measurables

This type of embedded quality approach requires vigilant monitoring of processes and outcomes, using sophisticated metrics and measurables to monitor quality and consistency. Gathering that detailed information about process and performance is the first step in a method that should include not only ongoing reviews of existing operations, but also a bigger picture analysis connecting that data to KPIs.

“The key to operating without a quality control department is broadening your perspective about what the term ‘quality control’ means.”

Leverage automation and technology

No one is perfect. Even the most dedicated and diligent professionals make mistakes. Consequently, reducing or eliminating the human element as much as possible should be a part of any quality-first manufacturing approach. Automated processes reduce variation, which is the enemy of quality and consistency. Some advanced plastics manufacturers use premier machines and robots, as well as pneumatics and optical detection, to ensure mold integrity. CT scanning allows engineers to operate within extremely tight tolerances and with even the most complicated cavitation. It can help with part validation, performing wall thickness and void/inclusion analyses, and can make precise part-to-CAD and part-to-part comparisons.

Ultimately, when you make quality control an ongoing priority, the results can be extraordinary.

Rod Bricker is co-founder and president of Chesterfield, Michigan-based PRISM Plastics, which manufactures tight-tolerance critical use functional components, primarily lifesaving safety parts for the automotive industry. PRISM Plastics produces and ships over half a billion parts annually, with a defective rate PPM of less than one. That is a high level of quality achieved on the basis of a quality-first mindset and embedded quality control process. PRISM operates three automated facilities in the US, located in Michigan, Pennsylvania and South Texas. For more information, visit www.prismplastics.com.
