

5 Reasons For Small To Mid-Size Manufacturers To Leverage PLM For Enterprise Quality Management

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By implementing a Product Lifecycle Management (PLM) system, companies both large and small benefit by simplifying and shortening each phase of the product development process. Due to their focus on product development and engineering, discrete manufacturers in the small-to-medium sized space (SMB) typically adopt a PLM system to support best in class engineering processes and to address challenges with continual new product introductions, shorter product lifecycles, and shrinking profit margins. Yet, due to budget restraints, quality processes are often managed manually with in-house tools such as Excel spreadsheets. The result is tight engineering and design processes with costly quality issues that can surface downstream.

This article is based on data from a recent LNS Research report titled, *An Enterprise Approach to Quality for SMB Discrete Manufacturers*, and focuses on the key reasons SMBs should consider leveraging PLM for quality management. Taking this approach can help manufacturers produce higher quality products, gain a significant competitive advantage, and meet their overall quality objectives. To support the research, LNS performed a Quality Management Survey and asked SMB executives a number of questions regarding strategic objectives as well as top challenges as each pertain to the quality management space.

Based on the survey responses, executives in charge of quality for their businesses ranked 'reducing the cost of quality' and 'reducing non-conformances in manufacturing' as the top two quality management objectives. When asked about the challenges they face in trying to reach their objectives, the majority of executives cited 'effectively measuring quality metrics' and 'disparate quality systems and data sources.' It is evident from this survey that quality managers for SMB discrete manufacturers need tools to automate quality processes and properly track and manage information in a centralized system in order to meet their objectives. The need is even greater in highly regulated industries such as Aerospace and Defense, and Medical. PLM technology can provide a viable solution with the ability to automate paper-based processes, supply a single system to

manage both product and quality information, and simplify the aggregation of data for reporting and analysis.

PLM was designed to manage product data throughout the product life cycle. A PLM system is crucial during the design phase, where engineers need instant access to product data including specifications, engineering parameters and documentation. PLM tracks and manages component data, BOMs, product documentation, engineering changes and revisions as well as compliance data and centralizes all of this information for easy access by all team members. Extending PLM to encompass quality management allows manufacturers to link quality information to the product record all within a single database. This provides a mechanism to automate quality processes, streamline quality data, and enhance visibility into quality information across the organization.

According to LNS, many organizations are already using PLM to deliver quality management functionalities in the engineering and design stages. Examples may include the use of PLM to conduct risk management with tools such as Failure Mode and Effects Analysis (FMEA), using simulation tools to help companies quickly and cost-effectively implement changes, employing Design for Reliability (DfR) to tie upfront quality (pre-build) to the back-end (post-build), and enhance the overall quality process and change management capabilities that allow organizations to effectively manage engineering and product data changes over time. Leveraging PLM to deliver Enterprise Quality Management System (EQMS) functionalities that streamline, standardize, and centralize quality process data and content takes these existing functionalities to new levels.

PLM as a quality platform can help SMBs address the challenges noted in the survey as well as provide some additional benefits with the ability to:

1. Reduce Independent Systems and Separate Silos of Data

PLM provides a central location to track and manage all product related information such as component data, Bill of Materials (BOMs), product documentation, engineering changes and revisions, quality issues, and compliance data. PLM reduces the number of manual/home-grown systems that are commonly used by SMBs such as Excel spreadsheets, network files and folders, and paper process.

By using PLM as a platform for quality management, SMB manufacturers are able to develop a unified information management system for engineering and quality. This offers a single point of entry for all product and quality information and eliminates the duplication of data in various systems. Streamlining independent data sources delivers more accurate product information, improves knowledge sharing, supports better design processes, and provides improved visibility into quality information.

2. Provide a Holistic View of Quality Metrics

Many SMBs rely on relationships with a number of suppliers to help bring their products to market. As a central hub, PLM facilitates the secure sharing of product information among internal and external team members, streamlines the communication of information such as new products, changes, revisions, Corrective and Preventive Actions (CAPAs), and product configurations, and provides automated alerting and approval tracking processes in a closed-loop system.

PLM also provides reporting capabilities for performance metrics and trend analysis to easily identify areas of improvement across all product lines and support continuous improvement initiatives. SMBs can be assured that accurate product and quality information is available in real-time across the enterprise.

3. Facilitate Adherence to Growing Compliance Requirements and Industry Standards

Regulatory requirements such as RoHS (Restriction of Hazardous Substances), REACH (Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals), FDA (Food and Drug Administration), and ISO (International Organization for Standardization) standards create additional pressures for SMBs. These companies are faced with the challenge of how to handle their product design and development to meet existing and impending guidelines while maintaining product quality.

PLM ensures that SMBs have the proper processes in place to be in compliance. PLM systems facilitate compliance management by storing all compliance data, automatically tracking all product changes, managing all quality items such as CAPAs, and providing the necessary audit reports. This helps SMBs to alleviate the cost of managing compliance data and ensure proper processes are in place for successful audits. A documented compliance process makes proving compliance much easier, supports a smoother audit process by having all information readily available and lowers the cost of compliance.

4. Help Improve Product Design to Gain a Competitive Advantage

PLM delivers key functionality to streamline each phase of a product's lifecycle from product conception and design, to manufacturing and support, which reduces time-to-market, decreases product costs, dramatically reduces waste and rework, speeds New Product Introduction (NPI) cycles, and improves product quality. Implementing a quality system at the product concept stage in PLM gives SMBs early visibility into how products will be designed and built, which can help avoid potential manufacturing issues before the build stage. Creating a system where engineering and quality are integrated allows engineers to have direct access to the "voice of the customer." This information helps engineers to make better design choices and ultimately design better, more effective products. PLM can help position an SMB to

gain a competitive edge over larger competitors by helping to bring new, high quality products with enhanced customer-driven features to market faster.

5. Lower the Cost of Quality

As reported by LNS, catching and resolving quality issues before they become a larger problem is vital to maintaining a low cost of quality. Identifying quality issues in the design phase can drastically improve the customer experience, new product introduction cycles, the cost of quality, and long-term profitability. PLM provides a holistic approach to managing data. This helps to better identify key problem areas/bottlenecks with the ability to aggregate quality data across multiple product lines and throughout the supply chain. With PLM, SMBs are able to adopt continuous improvement practices that result in efficiencies such as higher quality products from suppliers, fewer product returns and shorter time-to-market, which contribute to a lower cost of quality.

About the Author: *Chuck Cimalore, the CTO and Co-founder of [Omnify Software](#) [1], is an expert in business-ready PLM solutions for small to mid-size businesses. Prior to founding Omnify Software, Mr. Cimalore held positions as application engineer, software engineer, engineering manager and vice president of engineering since 1994. Mr. Cimalore's years of electronic design and manufacturing process knowledge and his keen awareness of industry needs, has brought Omnify Software to the forefront of the product lifecycle management technology market. Chuck can be reached at 978-988-3800 or ccimalore@omnifysoft.com. www.omnifysoft.com*

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