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Production Management Systems Elevate PLM Solutions to a New Level

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Keywords

Manufacturing Execution Systems, Collaborative Production Management, Design/Build/Support/Maintain, Manufacturing Processes, Knowledge Capture

Summary

Production Management (PM), or Manufacturing Execution Systems (MES), are integral components of an end-to-end Product Lifecycle Management (PLM) solution. PM systems can be tightly integrated with the design/build functionality of PLM systems, thereby enabling a level of validation of the "as-built" to "as-designed" not seen before. More significantly, enterprise level PM functions are becoming essential components of comprehensive PLM solution sets that integrate and interface information from Enterprise Data Management (EDM), SCM, ERP, and other systems.

Production Management systems are being tightly integrated with the design/build functionality of PLM systems, enabling a level of validation of the "as-built" to "as-designed" not seen before.

Analysis

Recently, manufacturers have begun to define enterprise architecture and strategic initiatives within the scope of their PLM solution. Discrete manufacturers especially have come to realize that their core competencies, from the perspective of product design and production processes, are predicated on the design/build/support/maintain progression of the product lifecycle, from concept to obsolescence. This has given rise to the expansion of the role of PLM applications beyond the traditional product authoring and testing applications (CAD/CAM/CAE). They now address a much broader scope of the product lifecycle that includes creation, planning, and validation of the production processes, and with Production Management, they also extend to the production systems that execute factory floor activities.

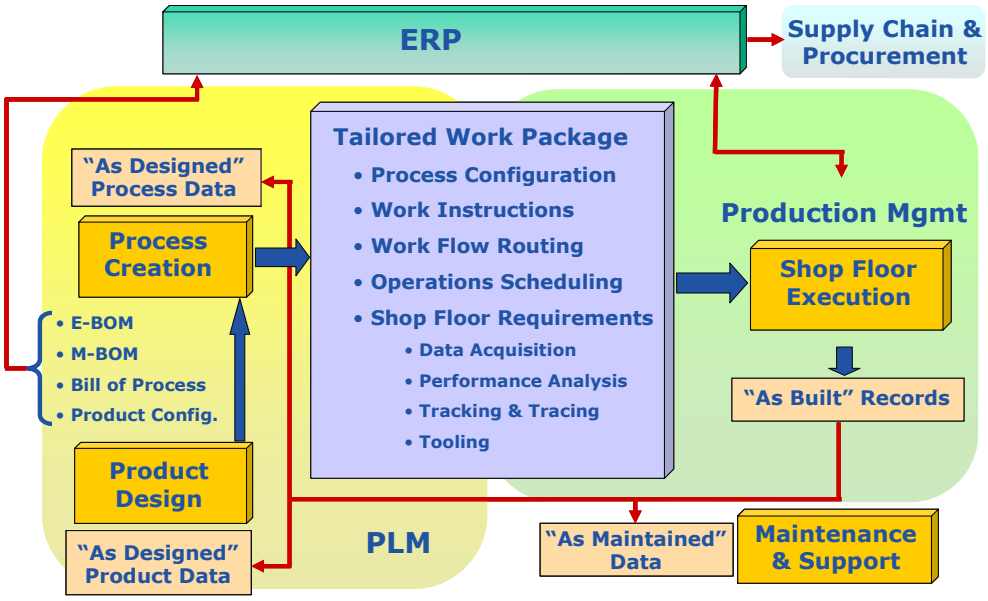
If the product lifecycle is defined as the design/build/support/maintain progression of the product from innovation to retirement, then PLM should be defined as a business strategy that addresses this end-to-end process from a holistic perspective. Based on these definitions, PLM represents a set of applications that directly support the collaborative creation, management, and dissemination of product definition and production processes throughout the manufacturing enterprise and across the product lifecycle. Furthermore, PLM provides an environment for the creation and management of digital information for the product and production processes, integrating the product design elements with business systems, manufacturing, and factory floor production systems. Within this context, production processes can be created, planned, validated, and, with Production Management systems, executed.

Production Management Is a Key Solution Component in an End-to-End Product Lifecycle Management Strategy

PM applications, and the production execution functions they enable, represent an essential stage in the PLM environment. The factory floor is where the product design, manufacturing processes, material, production equipment, labor, and, most importantly, the knowledge associated with the culmination of the build process comes together. It is at this point in the design/build process that the design and manufacturing engineers, along with production operations, determine whether they've made the product the way it was designed.

To truly optimize the manufacturing process, it is critical to focus on the point of manufacture to capture the knowledge which will either validate the production process design and planning or detect deficiencies that need to be corrected. This knowledge can then be stored, and routed back to engineering for process improvement. Today's comprehensive PLM solution sets possess the ability to enable and engender a collaborative environment for knowledge capture.

PM systems and related manufacturing execution functions represent a critical component of a company's overall PLM solution. PM activities dovetail with PLM functional domains, such as the PDM generated bill of materials activities for engineering and manufacturing (eBOM, mBOM). These BOMs also represent an essential interface for powering ERP systems.



Integrated PLM and PM Strategy

PM solutions enhance PLM by interfacing with, capturing, and storing real-time manufacturing events that determine how a product is made, and then executing the production processes. This provides the transition from "as designed and planned" information typically associated with PLM systems to the "as built" information of Production Management systems. With PM solution sets as integral components of PLM, manufacturing operations can create a closed loop system to determine if the product was made the way it was planned, and if it isn't, provide answers by accessing the real-time event repository.

PLM Providers Integrate PM Solutions

A significant percentage of in-house developed PM systems remain in place even though solution providers offer manufacturers a variety of PM solutions across a range of vertical industries. Manufacturers have adopted PLM solutions that enable them to create and plan production processes that are tightly integrated with product design systems, and now they want to extend and integrate these creation and planning activities to include execution. PLM providers are focusing on this extension of the design/build process to include PM and production execution of the processes.

The traditional PM application providers, who typically offer applications based on specific industry verticals, have been partnering with the larger

PLM players. This provides a good channel partner for the PM supplier, and it helps the PLM provider fill in the product lifecycle solution set portfolio. This partnering will continue to grow as the manufacturers realize the importance of PM to an overall PLM strategy. Conversely, PLM providers will expand their PM and process execution capability, both organically and through acquisition of PM suppliers who have applications that fit.

Recommendations

- Manufacturers should be looking to include PM and MES in developing an overall PLM strategy, as they define and expand the scope of their enterprise architecture based on PLM solutions.

- Manufacturers should recognize that PM application providers are partnering with PLM providers, and integrating their PM solution sets with PLM solution sets.

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