Mega Capital Projects and Product Documentation: How PLM Can Help

by Richard Mizuno and Brittany Hamm

Investment activity in infrastructure and other major capital projects has regained its upward trend following the 2008 crash. The quantity and scale of mega capital projects is encouraging for the engineering and construction industries. However, recent studies have indicated that despite the growing volume, success rates and the profitability of these projects are flat.

For original equipment manufacturers (OEM) and original component manufacturers (OCM), winning the opportunity to supply equipment to a mega capital project represents both significant revenue and significant investment. Mega capital projects are multi-phased efforts, involving numerous interested parties and changing, complex requirements that often cause them to run long and over budget. In addition to the OEM and OCMs, these projects involve Engineering, Procurement and Construction (EPC) contractors, Program Management Companies (PMCs), and an owner/operator (which may be a joint venture itself). The challenge of distributing and consuming up-to-date information increases with the number of participants involved.

Ultimately, equipment gets shipped and projects are completed. However, that may not be the end of the story. Related documentation – drawings, specifications, certifications, test results, and other customer requirements – may still be in process. In some cases, the contractually required documentation may take additional weeks or months to complete.

The Business Impact of Delayed Product Documentation

For the OEM or OCM, a documentation delay likely means inability to fully invoice the customer. Besides a growing backlog of unbilled receivables, it also means lost goodwill and reputation with the EPC contractor and the owner/operator. OEMs and OCMs rely on these relationships for future projects and sales of aftermarket parts and services. Often, the process of complying with the product documentation requirements of each customer requires high levels of manual paper work. Consider the effort to collect, organize, check, print and compile thousands of documents for each piece of equipment ordered. For the owner/operator and EPC contractors, timeliness of product information from the OEM or OCM is a major risk to on-time delivery of mega capital projects.

Over the past several years, the EPC community has invested in systems and processes for managing capital projects and their related data. The OEMs and OCMs have not been as diligent, and don’t have as many tailored tools and systems available for helping with the product information flow. Instead, OEMs and OCMs have made do with general document management and collaboration solutions like SharePoint, spreadsheets, and their shared drives and filing cabinets.

However, a new class of solution is emerging which leverages product lifecycle management (PLM) technology as the common engine behind both the technical design data that emanates from engineering and the product documentation that is delivered to customers with the equipment.

The Potential Value of Using PLM for Managing Product Documentation

- PLM can be the single source of truth for both design data, which is typically housed in PLM, and the related product information that is provided to the customer. This enables the OEM to provide aftermarket services, since the as-designed and as-built information is stored in the same system.
- Modern PLM applications have excellent collaboration and workflow features. These native capabilities facilitate engaging suppliers and customers in the design and build processes for the equipment and the review process for product documentation.
- PLM puts product documentation under the control of the same engineering change management (ECR/ECN) processes as the product design, reducing the possibility of errors and rework.

Many companies have implemented standalone document management solutions, or add-ons to their ERP systems for the management of product information. This is logical because document requirements are specified as part of the customer purchase order and need to be delivered before the customer can be invoiced – all traditional purviews of ERP. But an ERP or standalone document management system is inadequate as the foundation for product-related documentation – an area where PLM systems are strong.

To leverage PLM as the basis for this solution, it is necessary to connect the customer’s requirements to the product development workflow. Once this is done, significant improvements in data integrity, increased productivity through automation, and on-time delivery of both the equipment and related product information are possible.

Linking PLM and authored design data to the customer contract and product documentation can yield significant benefits. Companies that have done this have realized noticeable reductions in days sales outstanding, and the number of people required to manage and produce product documentation. Once equipment is put into operation, their aftermarket business has the ability to access all design and as-built
information about the product from a single system.

Conclusion

Project complexity and customer expectations will continue to rise. OEMs and OCMs need every advantage to stay competitive and improve profitability. Advanced documentation solutions that work with PLM tools can reduce the order-to-cash cycle, improve on-time delivery, increase aftermarket efficiency, and ultimately improve customer satisfaction.

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