Kirloskar Oil Engines Limited (KOEL) Undergoes a BOM Transformation to Improve Productivity

Manufacturer sees 73% drop in production-based engineering changes with a throughput time for changes going from months to days.

Kirloskar Oil Engines Limited (KOEL) is a leading manufacturer of air-cooled and liquid-cooled diesel engines, power generating units, and agriculture pump sets. First incorporated in 1946, KOEL is the largest producer of non-automotive diesel powered engines in India. The company is headquartered in Pune and has over 2,400 employees across the country.

A subsidiary of the Kirloskar Group, KOEL's strong distribution network enables the manufacturer to bring its engines to the international market, including the Middle East, Africa, and South Asia.

Business Challenge

According to M.A. Ravichandran, head of the PLM program at KOEL, “Our on-demand automated legacy systems were out-of-date, causing extreme misalignment and wasted time across the organization when it came to managing and sharing data. Teams could not focus on new product development over long periods of time, as people remained extremely busy with managing engineering changes for existing products”.

As the company continued to marginally grow on its existing product portfolio, it found that its legacy automated system being used to track product data changes was not in sync with its production reality. This led to higher volumes of interaction between engineering and other downstream teams, thus using up a significant portion of engineering’s bandwidth.

The interdependency and also difference in priority across business functions created a culture where siloed and short-term problems were addressed by individual business units without the bigger picture in mind. This led to a vicious cycle of excessive user demand for product data and documentation, whilst disconnected solutions and processes continued to grow rapidly.

The overall effect was a lower focus on innovation, without process improvement, and without a moving inventory. This created an unfortunate situation where all teams were working extremely hard with little or no effect on the top or bottom line of business.

KOEL urgently needed to embrace organizational change through digital transformation while staying aligned to new corporate values: empowerment at appropriate levels, simplicity of processes, and reduced interdependence with greater integrity of the data and work elements.

KOEL had already taken a major step in moving from a drawing-centric to a part-centric product development process. As a next step to achieve full transformation, KOEL strived for Bill of Materials (BOM) transformation from engineering to manufacturing. Ensuring that changes were automatically cascaded to downstream teams gave confidence to all stakeholders that they were using the most up-to-date information in their tasks.

KOEL's BOM Transformation

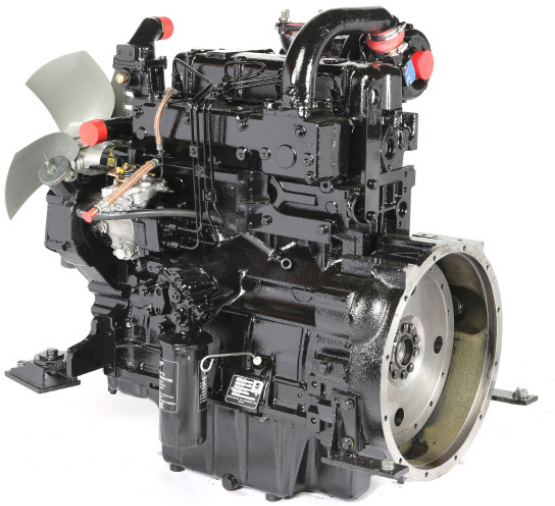
To begin its transformation, KOEL turned to Windchill, PTC's product lifecycle management (PLM) solution. Windchill offered a consolidated view of all product data throughout the lifecycle – bringing in information from PTC Creo, KOEL's chosen CAD software, the engineering BOM, the manufacturing BOM, the service BOM, and a seamless integration with KOEL's ERP system. In addition to Creo and Windchill, KOEL also invested in PTC's Service & Parts Information (S&PI) software suite, including Windchill Service Information Manager, Arbortext, and InService. Using these solutions enabled KOEL to create, manage, and deliver accurate and clear product information to field service teams and their dealers.

The Results

The transformational journey, considered to be extremely arduous due to the legacy work culture and involvement of multiple functions, turned out to be a well-accepted and smooth transition with very little downtime. The transition and changes were carefully scripted by a dedicated team. The implementation was a big bang approach: integrate all legacy and foundation level processes across teams and connect to their ERP system. The results that KOEL was able to see were jaw dropping:

- Standardization through PTC's solution drove a drop of almost 25% of product codes in the system.
- Their focus on 'first time right production' on proto-parts/products led to a 73% drop in production-based engineering change management.
- The average throughput times for engineering changes in production went from months to days.
- The number of requests for cancellation of late stage engineering changes was significantly reduced from 10% to 2-3%, having a great impact on cost and productivity.
- Parts information on designs or drawings is now instantly available with proper access controls in place. In addition, the quality of the information has substantially improved.
- Design work can now be accessed through visualization tools embedded in PTC's solution. This enables downstream departments like manufacturing and quality to more effectively review and consume process sheets and documentation. The same data is now used by their service team to create and publish 3D spare parts catalogues to a web portal where dealers and service personnel can access and order spare parts.
- A more collaborative work culture was established throughout the product development process. Yet, interdependency across teams has substantially reduced, leading to fewer meetings and less time spent manually updating teams and systems.
- Reporting from the solution made it possible for timely intervention and gave stakeholders more control – while not inhibiting innovation.

With their PLM foundation firmly in place, KOEL continues to build upon their process efficiency and effectiveness strategy to meet their business challenges. “Force-fitting an automated enterprise system into an existing tool or process can make or break the end objectives. While this may be an unconscious decision, it can greatly erode the success of the business”, Ravichandran explains of KOEL’s experience.



> “It is therefore vital to holistically visualize the end-to-end solution and look at PLM implementation as an opportunity, to revisit the existing processes objectively and transform the way you work – which should be towards greater effectiveness and efficiency.”

M.A. Ravichandran
Head of the PLM program, KOEL

Next Steps and Roadmap

Now that engineering, manufacturing, service, and ERP are now connected for collaborative product development, KOEL is planning to bring its quality organization into the mix with Windchill Risk & Reliability. This proposed quality implementation includes managing and tracking nonconformances, customer complaints, and field failures, as well as monitoring the investigation, RCA and CAPA processes. This implementation will also finally make it possible to close the loop with engineering by linking CAPA to the engineering change management process. This implementation is expected to reduce the cost of poor quality and avoid repeated quality issues.

Apart from Windchill Risk & Reliability, KOEL’s PLM expansion will also include ThingWorx Navigate user licenses for easy sharing and viewing of product information with 3D visualization across the organization.

To discover how your organization can also transform the way that it collaborates and shares information throughout the product lifecycle. Visit ptc.com/plm to learn more.

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