



ptc

LIVEWORX

A NEW ERA IN PRODUCT LIFECYCLE INNOVATION

SESSION ID: PL1130B

UNDERSTANDING THE IMPACT OF A CHANGE

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PLM Product Management - PTC

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PRODUCT LIFECYCLE MANAGEMENT & CHANGE

- PLM:
 - A strategic approach to managing a product's entire lifecycle
 - Encompasses a wide range of activities:
 - Engineering
 - Manufacturing
 - Quality
 - Supply Chain
 - Sales & Marketing
 - Service & Support
- Change:
 - Any modification, alteration, or revision made to a product, process, structure, design, strategy, technology, and more
 - Impact of a Change:
 - Effects or consequences that a change has on various aspects of a system, process, or organization

Product Lifecycle Management



TYPES OF CHANGES

- **Organizational Changes:** Modifications in a company structure, management, or workforce
 - Examples: M&A, department reorganizations, or changes in reporting structures
- **Strategic Changes:** Vision, mission, & long-term goal changes
 - Examples; product portfolio shift, entering new markets
- **Technology Changes:** Changes to software, hardware, or systems (tools)
 - Examples: Digital Thread, Shift to Cloud, AI Tools
- **Regulatory Changes:** Changes to laws, standards, regulations, or requirements that impact product design, manufacturing or distribution
 - Examples: Environmental, Safety, Trade
- **Process Changes:** Modifications to the manufacturing, assembly, or testing procedures of a Product
 - Examples: Automation, LEAN, Six Sigma
- **Product Changes:** Changes to product's design, features, materials, or functionality
 - Examples: Design, materials, components, look, feel



CHALLENGES

- Cultural Resistance:
 - Comfortable with existing systems and processes
 - Understanding the need for change is missing
 - Job security fears
 - Example: automation
- Scope Management:
 - Defining the scope of the change clearly
 - Impact: scope creep = delays, increased costs, & confusion
- Resources:
 - People, time, money
 - Impact: proliferation, delays, cost, incomplete project
- Information Gathering
 - Getting the right input
 - Measuring the right things
- Visibility
 - For all relevant stakeholders into the change process
 - Large organizations can have implications across a large spread of teams
- Risks & Disruptions
 - Planning for unforeseen circumstances
- Complexity
 - Change is not easy!!

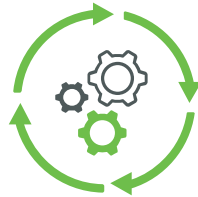
IMPACTS OF A CHANGE ACROSS THE ENTERPRISE

Financial



Changes in revenue, costs, profits, and cash flow.

Operational



Changes in processes, systems, technology, and resources required to carry out business operations.

Cultural & Employee



A change can affect employees' job roles, responsibilities, as well as values, behaviors, beliefs & attitudes

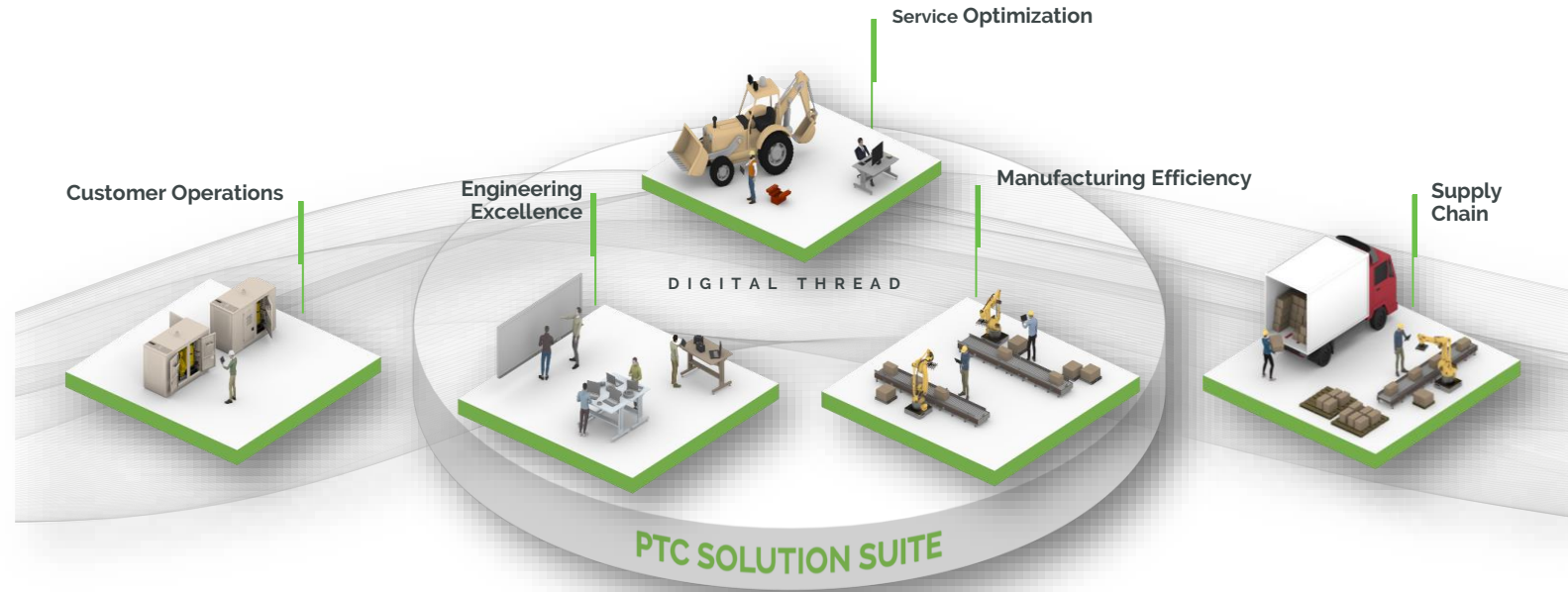
Reputational & Customer



A change can impact customers' experience with the organization, including changes in product or service offerings, quality, pricing, and delivery. This can lead to impacts on overall customers satisfaction, loyalty, & brand reputation

CONSIDERATIONS WHEN PLANNING A CHANGE

- Scope of Change:
 - Extent of change: component vs subsystem vs product line
- Scale of Change:
 - Magnitude: minor adjustments vs overhaul
- Timing of Change:
 - Timing can impact ability to execute & adapt
 - Peak production vs slower periods
- Readiness for Change:
 - Culture & readiness can impact ability to plan, manage, & execute
- Employee Involvement
 - Level of employee involvement, engagement, & visibility can impact the change
- Downstream Effects
 - Product change -> process change



PRODUCT CHANGES

- Product Changes: any modification made to the physical or visual aspect of a product
 - Examples: size, shape, color, materials, functionality, packaging
- Why are Product changes necessary?
 - Improve Product
 - Performance
 - Efficiency (product & process)
 - Functionality
 - Improving user experience
 - Enhance to capture market share & demand
 - Reduce costs: optimizing material usage, alternates
 - Design improvements:
 - Reduce Scrap
 - Improve efficiency
 - Reduce weight
 - Optimizing design for better manufacturing
 - Improve quality: reliability/durability
 - Stay Compliant: Environmental
 - New material cannot be sold
 - Stay Competitive



FURTHER CONSIDERATIONS WHEN PLANNING A PRODUCT CHANGE

- Business Objectives:
 - Does the product change align with business objectives & strategy
- Customer Needs:
 - Does the change aim to address customer satisfaction
- Market Trends:
 - Does the align with market trends
- Feasibility:
 - Is the change technically viable
 - Can we get it to market on time
- Cost Implications:
 - How will the change impact the rest of the organization and how much cost will incur compared to potential profit
 - What is the cost of tooling/production change
- Resources:
 - Consider time, budget, and personnel
- Risks:
 - Identify risks and plan contingencies
- Change Management Process:
 - Is your change management process established to ensure a smooth transition
 - Are all the right stakeholders informed
 - Stage of product:
 - On-order, on-hand, in-field
- Compliance:
 - Consideration as a product change may introduce aspects that may drop it out of compliance
- Sustainability:
 - Environmental impact

IMPACT OF A PRODUCT CHANGE

The Product



Changes to the product's design, features, functionality, performance, materials, packaging, or any other aspect of the product that affects its value proposition to customers

Supply Chain



A change can impact downstream Supply Chain functions including processes, material sourcing, packaging, distribution

Financial



A product change can influence revenue, costs, profits, & cash flow.

Marketing & Sales



A product change can have impact on sales and marketing as a product may result in a market shift, alter perceived value, & change position in market

Customer



A Product Change can impact customer perception, loyalty, and satisfaction

STRATEGIES FOR SUCCESSFUL CHANGE

- Building a Change Friendly Culture:
 - Continuous improvement
 - Involving employees
- Monitoring progress:
 - Identify potential issues
- Clear and transparent communication:
 - Effective communication is critical in assessing risk and impact
 - Employee buy-in & support
- Developing a clear and comprehensive change management plan:
 - Identify risks & outline steps needed to effectively manage the change
 - Establish clear goals and timelines for implementation



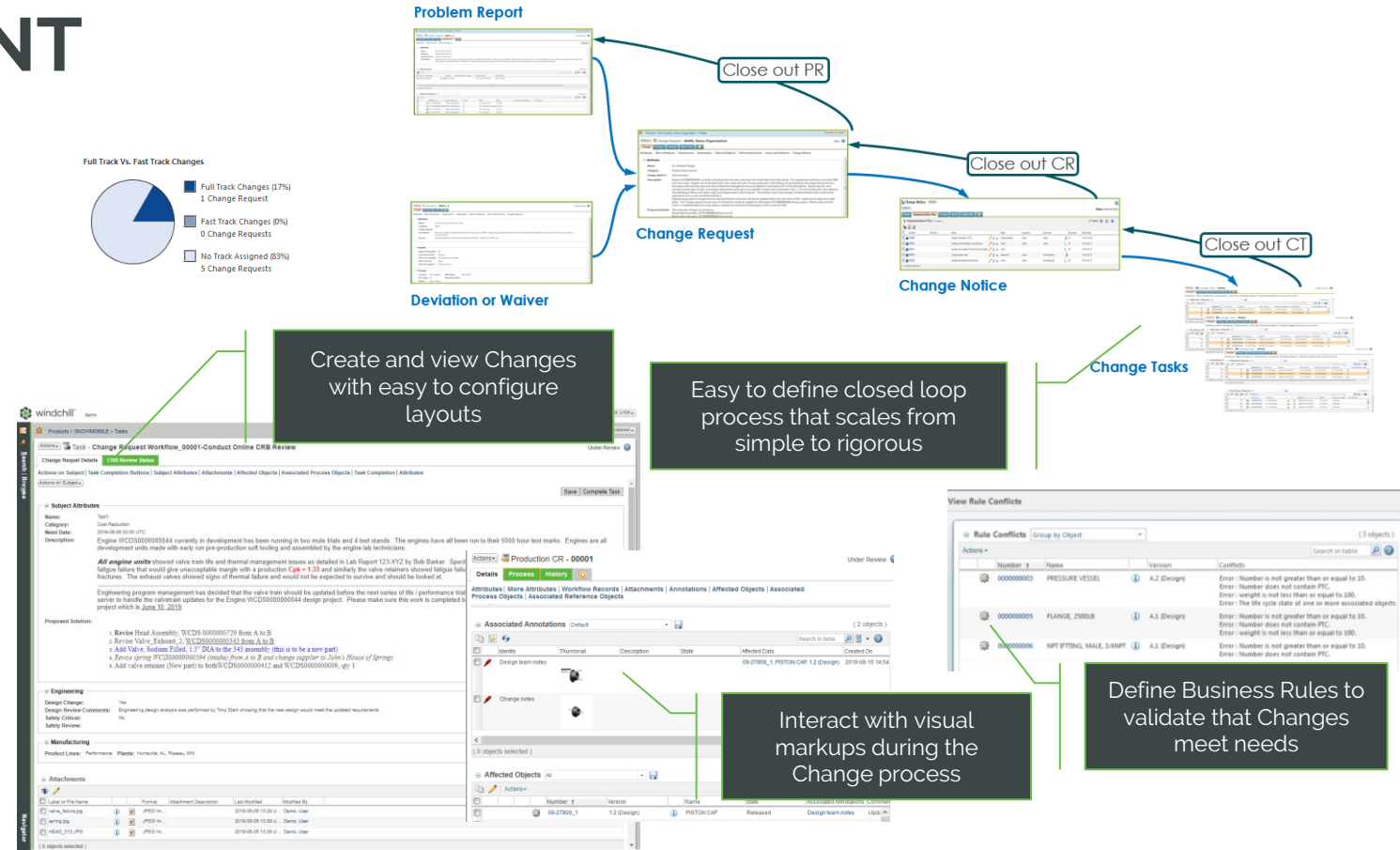
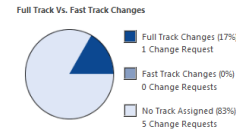


HOW CAN WINDCHILL HELP?

CHANGE MANAGEMENT

Capabilities

- Pre-defined Change and Issue processes
 - Easily configure Change to meet enterprise needs while providing visibility
 - Tailor to support simple to rigorous Change processes
- Workflow's can be flexibly configured and support enterprise scale
- Enable Work-in-Process interactions with Change processes
- Plan and execution changes with Redlines, Mass Updates, Effectivity, Supersedes and more
- Validate that Changes meet business rules
- Create Reports to track process and execution



Benefits

Productivity
Enterprise can **participate in change** processes

Visibility
See and understand plan impacts

Enterprise Value
Reduce scrap, rework with better analysis

Governance
Better decisions with enterprise involvement

CHANGE REDLINE – INTENT AND PLANNING

Change Redlining (BOM Redlining) provides users the ability to easily highlight suggested changes to a BOM. Users can communicate and get approval on changes both internally and externally.

Clearly communicate intended changes in the context of the BOM



Enable users to identify changes before committing them

Simplify the intent and results of the change

CHANGE REDLINES

Capabilities

- Plan Changes before committing them
- Create and Plan Redlines on Change Notices
- Redline BOM and Part Changes
 - Add / Remove Parts
 - Insert New / Existing Parts
 - Replace New / Existing Parts
 - Substitutes – Add or Remove
 - Redline Part, BOM and Occurrence attributes
- Create Redlines via Mass Change – create / update many Redlines in a streamlined process
- Support out of order execution as Redlines are only applied when is appropriate
- Enable the enterprise to easily see and review the Plan for the Change

The screenshot displays a software interface for managing change redlines. On the left, a tree view shows a hierarchy of parts under the design '010000, ATLAS BACKPLANE, Demo Organization, Chg-C-1.1 (Design)'. The right pane shows a table of occurrences with columns: Number, Name, End Item, Quantity, Unit, Reference Designator, and Find Number. A context menu is open over the row for part 070010, showing options: Remove, Edit Usage Attributes, Edit Attribute Value, and Revert.

Number	Name	Quantity	Unit	Reference Designator	Find Number
0000000081	CONFORMAL COATING, LIQUID SILICONE, Demo	1	each		
070000	CONNNECTOR, AMP EUROCARD CONNECTORS, Demc	20	each	J1-J4, J6-J7, J10-J11	20
070001	CONNECTOR, MOLEX MINI-FIT JR. CONNECTORS, De	1	each	J19	35
070002	CAPACITOR, 0.1uF, SMD CERAMIC CHIP, Demo Organi	30	each	C6-C35	45
070008	PCB, ATLAS, Demo Organization	1	each		100
070009	CAPACITOR, 10uF, 16V, SMD, Demo Organization	5	each	C1-C5	90
070022	EMI FILTER, 1000pF, 50V, SMD, Demo Organization	1	each	L1	
070009	CAPACITOR, 10uF, 16V, SMD, Demo Organization	23	each	C1, C3, C6, C10, C12, C14, ...	60
070010	CAPACITOR, 2nF, 16V, SMD, Demo Organization	4	each	C4, C22, C222-C223	70
070011	RESISTOR, 1kΩ, 1%, 1/8W, 150V, SMD, Demo Organizat	2	each	C5, C11, C29-C32	80
070012	RESISTOR, 1.8kΩ, 1%, 1/8W, 150V, SMD, Demo Organiz	2	each	C7, C16, C25, C37, C58	
070013	RESISTOR, 3.3kΩ, 1%, 1/8W, 150V, SMD, Demo Organiz	1	each	C8-C9, C13, C17, C26-C2...	
070214	IC, OP AMP, CMOS, HIGH SPEED, Demo Organization	1	each	IC1	

Benefits

Mass changes easily made

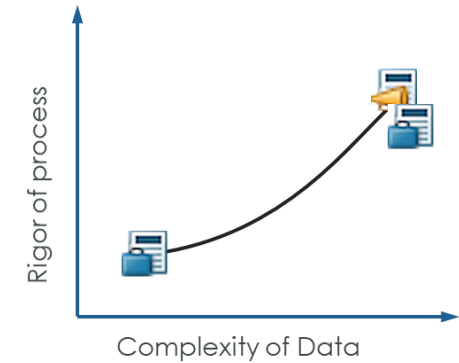
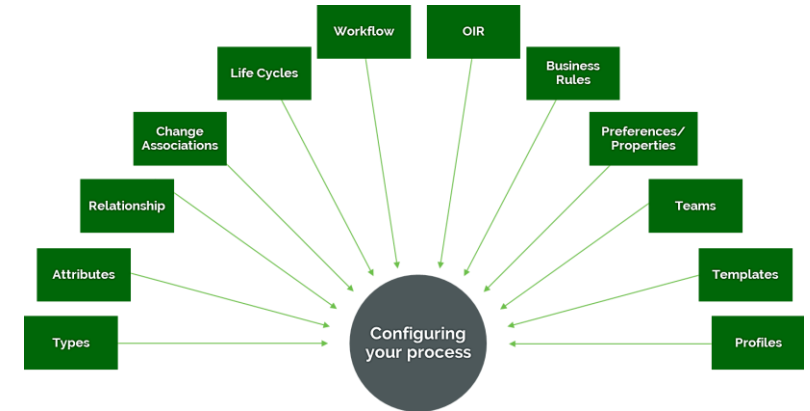
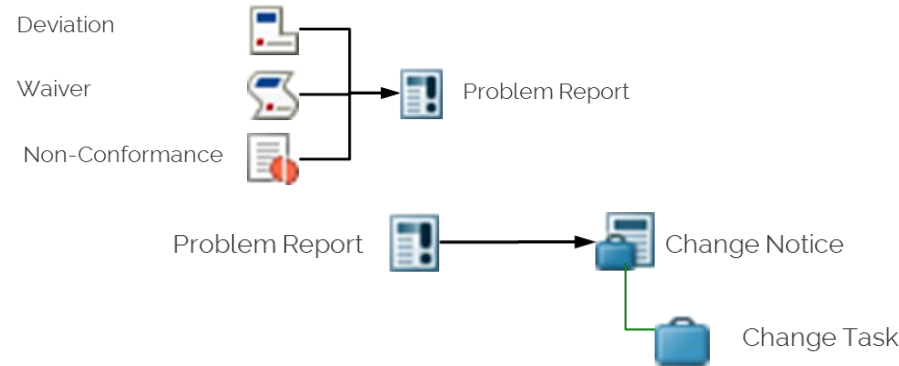
Out of order execution supported

Enterprise-wide access to data and changes

SCALABLE CHANGE PROCESS

Capabilities

- **Windchill Change Process –**
 - Configure Change processes to meet needs from simple to complex, from lightweight early Dev traceability to NPI to Sustaining
- Tailoring capabilities – configure the change process to meet enterprise needs
 - Simple to incorporate attributes, lifecycle, layouts and more to suit an organizations needs
- Interacting with Changes across the Enterprise
 - Involve the broader enterprise – engineering, manufacturing, supply chain, service and more
 - Execute change across the digital thread from requirements and design through process planning and service documentation



Benefits

Configuration supports change to meet a wide range processes

Easy to tailor to meet the enterprise needs

Execute change across the digital thread

Read the Case Study



The Vaillant Group is a global market and technology leader in the fields of heating, ventilation and air-conditioning technology



VAILLANT

The Challenge

Vaillant faced a multitude of key challenges: high-setup times (involving manual data collection of changes), non-transparent change statuses, long process execution times, time-consuming manual tracking of actions needed for ECN implementation, and reliant on phone and email.

The Solution

Windchill's high configurable out-of-the-box PLM capabilities with a multilayer interface to SAP/MDG-M are applied to this process, creating a holistic change management solution.

The Impact:

- Lists with interdependent parts, products, documents, etc., are automatically generated
- Pre-defined rules are automatically generated
- Automatic transfer of changed product data, including MBOM, to ERP SAP (via Enterprise Systems Integration)
- Enhanced and efficient workflow-controlled approval processes
- Automatic & transparent cross-systems status tracking of changes

CONCLUSION

- Effective Change Management is critical for successfully implementing changes in PLM & across the Enterprise
- Types of Changes:
 - Organizational, Strategic, Process, Technology, Regulatory, Product
- Challenges:
 - Resistance, Resources, Technical, Planning & Management
- Impacts of a Change:
 - Financial, operational, employee, customer
- Considerations & Strategies for a Change:
 - Scope, Scale, Timing, Readiness, Stakeholder Involvement
 - Planning, involving, monitoring, & communicating
- Product Changes:
 - Improving Product to stay competitive
 - Improve efficiency in product and downstream
- Windchill Change Management:
 - Change Intent Planning (BOM Redline)
 - Configurability





QUESTIONS?

Thank you! You can find me at:



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THANK YOU

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APPENDIX

AGENDA

- PLM & Change
- Enterprise Changes
- Product Changes
- Strategies
- Windchill
- Customer Examples

IMPACTS OF A CHANGE ACROSS THE ORGANIZATION

Customer



A change can impact customers' experience with the organization, including changes in product or service offerings, quality, pricing, and delivery.

Legal & Regulatory



A change can impact the organization's compliance with legal and regulatory requirements, leading to changes in policies, procedures, and governance frameworks

Reputation



A change can impact the organization's reputation and brand image, leading to changes in customer loyalty, trust, and confidence in the organization.

IMPACTS OF A PRODUCT CHANGE

The Product



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IMPACTS OF A PRODUCT CHANGE

Customer



A Product Change can impact customer perception, loyalty, and satisfaction

Compliance



A Change in the Product can aim to adhere to compliance regulations and standards: safety, environmental, & privacy

Employee Moral









A change can affect employees' job roles, responsibilities, and relationships with colleagues, managers, and customers, leading to changes in their level of engagement, motivation, and job satisfaction.

METHODS FOR ASSESSING THE IMPACT OF A CHANGE

- Risk Analysis:
 - Identify risks and impacts
- Cost-benefit Analysis:
 - Quantify financial impact by comparing costs to benefit
- Simulation & Modeling:
 - Assess the impact of a proposed change's performance, reliability, and other factors by simulating to gain insights
- Prototyping & Testing:
 - Asses the impact on change in real world conditions
- Customer Feedback:
 - Assess impact on customer satisfaction, & experience
- Employee Feedback:
 - Understand organizational impact and issues



Question	Rankings					Score	
	1	2	3	4	5		
What is the scope of the change?	A disruptive change that represents a radical departure from the status quo, necessitating a cultural shift and the integration of services/programs, with consequential effects on external stakeholders					Aligns with current processes and utilizes the existing workforce and skill sets, with minimal technological adaptation required	
Is the outcome of this change clear?	Outcome is uncertain and the objectives are subject to change as process unfolds					Thoroughly outlines, with achievable objectives	
What part of the organization is affected by this change?	More than one organization					Single unit	
What priority does this change have for the organization	Low priority – good alignment					A high-priority initiative that is strategically aligned, with a commitment to allocate all necessary resources	
Financials							
What is the budget?	<10k					>5M	
Is the budget committed?	No					Yes, and accounted for in financial planning	

Read the Case study



KOEL is an acknowledged market leader in India for designing, manufacturing, and service of diesel engines. KOEL boasts more than 430 service touch points across India and an extremely proactive service team.

KOEL

KOEL

The Challenge

KOEL found that its legacy automated system for tracking product data changes was not in sync with its production reality – leading to higher volumes of interaction between engineering and other downstream teams, using up a significant portion of engineering's bandwidth.

The Solution

Windchill offered a consolidated view of all product data throughout the lifecycle – bringing in information from Creo, the engineering BOM, the manufacturing BOM, the service BOM, and a seamless integration with KOEL's ERP system.

The Impact

- 73% drop in production-based engineering change management.
- Average throughput times for engineering changes 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

PTC Cloud Portal | Change Task - 00712 | Change Notice - 00665

pp-2301312045rx.portal.ptc.io/Windchill/app/#ptc1/tcomp/infoPage?oid=OR%3Awt.change2.WTChangeActivity2%3A6337162&u8=1

windchill Pat PP-2301312045RX

Products > Zero-Turn Mower

Change Task - 00712

Details | **Process** | Impacted Objects

Attributes | More Attributes | Attachments | Affected / Resulting Objects | Related Supplier Parts and Documents

Attributes

Name: Update BOM from Redline
 Change Notice: Change Notice - 00665
 Description: **Reviewing** the existing design to identify areas where weight can be reduced without compromising structural integrity or functionality.

Process

Assignee: Pat Product Manager Need Date: 2023-04-07
 Reviewer: Not Required
 Review Required:

System

Team Name: Change Activity Team
 Created By: Pat Product Manager Modified By: Pat Product Manager
 Created On: 2023-04-06 14:17 UTC Last Modified: 2023-04-06 14:17 UTC

Attachments (0 objects)

Download selected files Edit

Label or File Name	Format	Attachment Description	Last Modified	Modified By
(0 objects selected)				

Affected Objects All (1 objects)

Number	Version	Name	Redline	Change Intent	On Order	Work-in-Process	Finished	Annotation Sets	Comments
116-2000K06	B.2 (Design)	SS SEAT	Create	Revise	Use Existing	Use Existing	Use Existing		

BENEFITS OF A CHANGE



- Understanding
- Quality
- Efficiency
- Savings
- Innovation
- Customer Satisfaction



- Lead Times
- Errors
- Manual Handovers
- Resources Needed
- Rework
- Confusion