

# INFORMATION DRIVEN ENTERPRISE

JD Edwards EnterpriseOne

Maintenance Management for Demand-Driven Manufacturing



Increase equipment uptime.  
Reduce maintenance costs.  
Improve response.

## **INFORMATION DRIVEN ENTERPRISE**

The principles and methods of Demand-Driven Manufacturing are transforming everything from the way companies design production lines to the way they train employees. As companies revamp manufacturing operations to promote lean practices, virtually every supporting department and process also undergoes an overhaul to enable the company to become more responsive to customer demand.

In the eyes of your maintenance team, becoming demand driven means supporting a lean, flow-based manufacturing environment by ensuring equipment availability and reliability—and adopting lean practices within the maintenance function itself. Effectively managing these priorities requires a maintenance management solution that simplifies access to information such as equipment histories, preventive maintenance schedules, and spare parts availability. In other words, maintenance management becomes a business within a business, requiring the same tools and information available to your production and financial teams.

## Rethinking Maintenance Management to Support Lean Manufacturing

Ultimately, Demand-Driven Manufacturing requires you to rethink your approach to production and your supporting maintenance management strategies. Oracle's JD Edwards EnterpriseOne Capital Asset Management offers an integrated suite of maintenance management capabilities to help you make the leap from demand-driven theory to everyday reality. In addition to supporting lean manufacturing techniques, flow production, and pull-based replenishment, Oracle's JD Edwards EnterpriseOne Maintenance Management tools help you recast your maintenance activities as lean operations in and of themselves. They give you the flexibility, functionality, and analysis needed to respond to daily fluctuations in production and operational requirements, so you can develop the best strategy for improving manufacturing flexibility.

With JD Edwards EnterpriseOne Capital Asset Management, you have the integrated capabilities to assign the right technician to the right maintenance task at the right time, with the right instructions, parts, and tools. You also have the information to determine the optimum strategies for acquiring, operating, and maintaining assets based on the realities of your changing manufacturing environment.

To see how JD Edwards EnterpriseOne Capital Asset Management supports Demand-Driven Manufacturing operations, consider the following scenarios.

Oracle's JD Edwards EnterpriseOne provides the asset history and analytics necessary to determine optimum maintenance strategies in light of changing market conditions.

**Scenario 1: Meeting Demand-Driven Manufacturing challenges you to rethink your maintenance management strategy.**

The principles and methods of Demand-Driven Manufacturing often contradict the standard practices of traditional manufacturing. As a result, your company's maintenance management priorities shift accordingly.

In traditional manufacturing, many companies strive to operate at full capacity in an effort to maximize return on labor and assets. The result is large finished-goods inventories that ultimately increase the cost of production by adding significant overhead through inventory tracking and management (in addition to the wasted labor and machine time for goods that often go unsold). In this model, the primary role of maintenance is to ensure that production and equipment operate at maximum capacity.

In lean environments, your entire organization adapts to fluctuations in demand as they evolve. Rather than operating at full capacity and adhering to a forecast-centric schedule, you synchronize production with ongoing changes in customer demand—using only the materials, resources, and machine capacity needed each day. In addition to increased production efficiency, you improve profitability by reducing the administrative overhead tied to bloated inventories and inefficient production methods.

Your maintenance management strategies follow suit. For example, in a demand-driven environment, break-fix and reactive maintenance scenarios can stop critical production lines and jeopardize your ability to meet customer demand. They also increase maintenance costs through overtime and expediting charges on shipped parts.

We provide the asset history and analytics necessary to determine optimum maintenance strategies in light of changing market conditions. It enables you to understand the impact of fluctuating customer demand on equipment availability and utilization and adjust your maintenance activity and maintenance, repair, and operating (MRO) inventory accordingly. And your maintenance and production personnel better understand the role of each piece of equipment in the manufacturing flow process.

Demand-driven manufacturers favor flexibility over efficiency. While efficiency is still important, it ranks below the ability to respond to demand. With Oracle's JD Edwards EnterpriseOne software, your maintenance management strategies can keep pace with manufacturing's continual adjustments in capacity and product mix. At the same time, your maintenance activities capitalize on the savings inherent in lean practices.

# Balancing Your Asset, Operational, and Financial Goals

**Scenario 2: With ongoing fluctuations in customer demand, you continually face new choices critical to maintaining the performance and availability of equipment.**

On one hand, you must ensure that the right equipment is available at the right time and operating at desired capacity where and when customer demand occurs. On the other hand, you have the responsibility to adopt the leanest, most cost-effective strategy for maintaining production assets. JD Edwards EnterpriseOne Capital Asset Management offers the analytical capabilities to monitor equipment information from throughout your organization to help prioritize your maintenance activities so you can effectively balance asset, operational, and financial goals.

Specifically, JD Edwards EnterpriseOne Capital Asset Management provides the information foundation that enables you to implement a reliability-centered maintenance (RCM) strategy. Under RCM, you determine the optimal mix of break-fix, preventive, and predictive maintenance given your production requirements and the role of equipment in meeting these requirements. By reviewing equipment history, costs, and return, you can clarify which pieces are critical to production and which are not. Those that are critical require the highest level of maintenance.

For example, in cases where equipment is critical to meeting customer demand, a condition-based maintenance strategy enables you to monitor equipment health in real time and perform maintenance when system-issued alerts indicate that machines are approaching predefined thresholds. In other cases, it may be less expensive to run equipment to failure because it is not essential to meeting demand or viable replacements are available at an acceptable cost.

Oracle's JD Edwards EnterpriseOne software enables company-wide visibility into manufacturing, maintenance, and procurement data, so your production and maintenance staffs can share insight and collaborate on how to realize the full value of your equipment investment while maximizing maintenance's contribution to a demand-driven strategy. Better integration of maintenance and production strategies and schedules ultimately improves your responsiveness to the production process and customer demand, minimizes the frequency of overhauls, and decreases the potential for costly equipment failure and line stoppages.

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**Scenario 3: You depend on equipment operators to perform basic maintenance.**

Manufacturing companies making the transition to demand-driven environments often embrace total productive maintenance (TPM) and total quality management (TQM) as strategies to achieve lean practices. The TQM focus on empowering employees to improve product quality complements the TPM focus on empowering employees to increase equipment reliability, uptime, and capacity. From a maintenance management perspective, TPM offers a way to find the elusive balance of providing maximum equipment availability and utilization while reducing maintenance costs.

As with flow-based manufacturing processes, TPM relies on employee knowledge to eliminate waste and increase equipment uptime. Our maintenance management capabilities enable your maintenance employees to analyze equipment history and operating and maintenance costs at any level of the organization to spotlight where and when equipment failures occur and to isolate root causes. This information, combined with employee experience and insight into equipment performance, can drastically reduce breakdowns, lost production time, and maintenance costs.

To realize the full value of their maintenance personnel's expertise in TPM, many companies opt to assign basic maintenance responsibilities to equipment operators. This strategy frees maintenance personnel to focus on more strategic activities, including equipment rebuilds, failure analysis, troubleshooting, and training. Also, operators who understand and perform basic care functions gain a better sense of why and when equipment may fail—improving the accuracy of job planning and scheduling that is central to RCM.

This mind-set of continuous improvement is another shared characteristic of TQM, lean manufacturing, and TPM programs. Over time, the cumulative impact of small improvements in maintenance contributes to the goals of zero equipment breakdowns and reduced maintenance costs. Fewer breakdowns also translate into reduced MRO inventories.

Demand-Driven Manufacturing environments require a wide range of skills from maintenance personnel. Employees on a lean, flow-based production line typically have the skills to perform the responsibilities of the stations immediately before and after their own. The inherent unpredictability of a demand-driven environment calls for even greater versatility from maintenance personnel. An ongoing investment in developing and broadening maintenance skills ensures the continuity of the maintenance function and helps maintenance personnel better understand their contribution to operational goals.

## Empowering Maintenance Employees Through TPM, 5S, and Six Sigma

Another methodology that maintenance departments implement as part of a comprehensive demand-driven plant strategy is 5S. When your maintenance personnel apply 5S principles to the maintenance function, you realize the same savings, efficiencies, and safety improvements that operations does. By adopting 5S principles for maintenance activities, the maintenance department can better support a lean, demand-driven shop floor, while acting as a lean organization in its own right. These principles include:

- **Sort.** Determining needed maintenance items and quantities and eliminating any excess.
- **Straighten.** Keeping needed tools and parts in the right place for easy access.
- **Sweep.** Maintaining a clean work area to promote efficiency and safety.
- **Standardize.** Adopting consistent, repeatable maintenance processes.
- **Self-Discipline.** Making consistent best practices part of daily operations.

Six Sigma facilitates lean maintenance practices by reducing maintenance process variation through continual process improvement. We can help you achieve improvements in equipment reliability and uptime as you strive for the ultimate goal of zero equipment downtime and breakdowns.

### **Scenario 4: MRO inventories are excessive and sourcing costs are escalating.**

The ultimate success of a demand-driven approach to maintenance hinges on strong relationships with a select group of key strategic suppliers. Large MRO inventories and stocks of critical spare parts can add significant overhead costs and ultimately hamper profitability. Many maintenance organizations exacerbate these costs by sourcing their local needs from local suppliers—especially companies with operations in multiple dispersed facilities. To combat escalating sourcing costs, lean maintenance organizations need a solution that enables them to see inventory usage patterns and costs to determine the best single source supplier for different parts. In this way, they can negotiate an organization-wide contract to secure the best price, quality, and availability.

We give you the tools to negotiate more strategic partnerships with a small pool of key suppliers. It enables you to consolidate demand across all your locations through an integrated view of inventory usage patterns. You can also track supplier performance on delivery and quality and use this information to evaluate the best partnership candidates. The potential savings can have a significant impact on your bottom line through the resulting price breaks, the reduction in administrative costs, and the savings on costly insurance spares that can't be purchased off-the-shelf.

**Scenario 5: Your maintenance teams face increasing pressure to limit the amount of time that machines are offline.**

For the maintenance team supporting a lean, Demand-Driven Manufacturing environment, time is a precious resource—especially in process manufacturing where any downtime can equal lost revenue. We help your maintenance team make the most of downtime (both scheduled and unscheduled) by allowing your maintenance planners to create job packages for a more disciplined and efficient approach to maintenance. Job packages document the history, processes, tools, crafts, and equipment needed to complete specific maintenance tasks.

They promote a leaner approach to maintenance by minimizing redundant effort on highly repetitive tasks. For example, job packages prevent maintenance personnel from wasting time looking for the right machine to fix and then researching equipment history and gathering the required parts and tools at the job site.

With an integrated solution of shared information and capabilities, we promote increased collaboration among operations and maintenance personnel. Your production maintenance coordinator has a clear picture of upcoming maintenance needs given your production requirements. By sharing this information with your maintenance planner and crew foreman, your team can link job packages to specific maintenance requirements. Both departments can then create a realistic work schedule that takes into account maintenance backlog, upcoming preventive maintenance work orders, and the maintenance crew's skills and availability.

Better collaboration helps you minimize the amount of time that machines are offline and increase maintenance productivity, ultimately improving production line efficiency. It also reduces the overhead burden related to backup equipment and associated spare parts inventories.

# Maximizing Productivity of Your Maintenance Team

## **Scenario 6: It's important to focus limited resources on improving those areas of maintenance operations that will deliver the greatest value.**

One of the most prominent characteristics of a Demand-Driven Manufacturing environment is the attention devoted to continuous improvement and the related monitoring, measurement, and analysis. Maintenance management plays a critical role in this process, and a systematic program for tracking overall equipment effectiveness (OEE) can help clarify priorities for your maintenance team.

Oracle's JD Edwards EnterpriseOne software streamlines access to the equipment information critical to a successful OEE program. Mathematically, OEE is the product of equipment availability times its performance efficiency times its quality rate. OEE can help you isolate those maintenance processes in greatest need of improvement, while ultimately increasing your return on assets (ROA). As a key performance indicator that measures equipment effectiveness, OEE can shed light on your changeover efficiency, the effect of minor stoppages, the consequences of unplanned downtime, and the time and material lost to making off-standard parts and rejects. It enables your maintenance personnel to realize maximum value from your equipment investment by extending the life of machinery you already own.

By using OEE to integrate maintenance into your Demand-Driven Manufacturing initiative, you can dramatically increase cash flow by extending equipment life, reducing maintenance costs, and improving equipment uptime— all of which help you achieve your ultimate goal of giving customers what they want, when and how they want it, and doing so profitably.

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We streamline access to the full range of maintenance and production information, so your maintenance team can work smarter.

**Scenario 7: Disconnects between operations and maintenance teams can cause unnecessary disruptions to production.**

Because of constantly shifting customer requirements, maintenance personnel in a demand-driven environment require real-time information on production and maintenance schedules, equipment history, and MRO inventories to assess a situation and take action at a moment's notice. The more information you provide your maintenance staff, the better you can leverage their skills as knowledge workers to improve your overall business processes and results.

We streamline access to the full range of maintenance and production information, so your maintenance team can work smarter. An integrated suite of information and capabilities shared by the entire company helps foster closer collaboration among operations, engineering, and maintenance and helps overcome the traditional barriers that usually separate these disciplines.

Operations can assume a more active role in assessing maintenance needs and coordinating maintenance efforts. Maintenance can better understand its impact on operational performance and efficiency in meeting customer demand. Tighter coordination among engineering, operations, and maintenance helps you adopt a more proactive maintenance stance while cutting maintenance costs by 30 percent and reducing spare parts inventory by 25 percent. The improved exchange of information enables you to precisely schedule needed maintenance activities to minimize the impact on production and maximize equipment life and uptime.

# Oracle Global Services Committed to Your Success

## Oracle Global Services for JD Edwards EnterpriseOne

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## Oracle Consulting for JD Edwards EnterpriseOne

Oracle Consulting can help you implement, optimize, and upgrade Oracle's JD Edwards EnterpriseOne products to improve business performance. Consulting services accelerate time-to-value, maximize functionality, and reduce project timelines and costs. Implementations are tailored to specific business needs. Through a single-vendor relationship, customers gain deeper access to resources and get more value out of their software.

## Oracle University

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Oracle is committed to ensuring customer success and satisfaction by building quality products and delivering cost-effective, results-oriented service and support based on the unique organizational needs of our customers.



# ORACLE®

Oracle Corporation

**World Headquarters**  
500 Oracle Parkway  
Redwood Shores,  
CA 94065  
U.S.A.

**Worldwide Inquiries**

Phone  
+1.650.506.7000

Fax  
+1.650.506.7200

[oracle.com](http://oracle.com)

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