

Supporting Lean Maintenance

Combining Best Practices with Technology for Superior Results

TECHNOLOGY MANAGEMENT SOLUTIONS

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Executive Summary

While the core concepts of Lean have been around since the early 1900's, it didn't become the dominant strategy in American industry until the 1990's.

It was the Japanese, and Toyota Motor Company in particular, that created the philosophy of Lean Manufacturing. It was originally know as Just-in-Time manufacturing.

In short, Lean is about eliminating waste in any business process. Waste comes in many forms. Materials, time, idle equipment and inventory are all factors in waste.

The Lean concept takes a systems approach to business processes. The core elements of a plant or facility: people, machines and materials, are all interdependent.

Technology plays a major role in helping businesses achieve "Lean" status. It is only through the use of information that companies can identify and eradicate waste in their operations.

Computerized Maintenance Management Systems (CMMS) software has been developed to help businesses of all types integrate all aspects of their maintenance operations. These systems can also help to collect the information needed to practice Lean Maintenance.

This white paper highlights the aspects of CMMS software that support Lean Maintenance efforts.

History of the Lean Concept

The root of lean manufacturing can be traced all the way back to Henry Ford and his assembly line. Ford was the first industrial company to put Frederick W. Taylor's "scientific management" concepts to work. The result was a continuous system for manufacturing that encompassed all of the elements of manufacturing: people, raw materials and machines.

After World War II, the Japanese needed to rebuild their industrial base. With the help of American scholars, such as Edwards Deming and Joseph Juran, the Japanese created their own philosophy for manufacturing. This philosophy was focused on inventory and quality control. It became famous at Toyota Motor Company, and became known as the Toyota Production System (TPS). In the United States it became known as Just-in-Time (JIT).

From the mid 1970's until the early 1990's, manufacturers attempted to emulate the Toyota system. These attempts became known by many different names, such as "continuous flow manufacturing" and "world class manufacturing", to name just a few.

In 1990 James Womack published a book titled "The Machine That Changed the World". This book detailed the history of automobile manufacturing from Ford through the current period, looking at American, European and Japanese auto making plants. It was Womack who coined the phrase "Lean Manufacturing".

What is the Lean Concept?

At its core, Lean is a philosophy of eliminating waste at every point in occurs in a manufacturing process, or value stream.

In Lean, value is solely determined by the customer, either external or internal. Products and services must meet the customer's needs for specific price and time. Identifying the value in the Lean concept means understanding all the activities required to produce a product or service, and then optimizing that entire process from the view of the customer.

Adopting a customer-centric viewpoint is essential to Lean, because it helps to identify activities that clearly add value. It also identifies those activities that do not add value, but can't be avoided, and those activities that add no value and can be eliminated from your process.

A more text book-like definition is:

A systematic approach to identifying and eliminating waste (non-value-added activities) through continuous improvement, in a business process.

Business Factors Driving Lean Adoption

Companies are under tremendous pressure to manage their assets proactively across the enterprise to reduce costs, increase productivity and respond to a rapidly changing regulatory environment. Budget reductions are challenging maintenance departments to do more with less.

Maintenance costs continue to capture the attention of senior management as the investment and reliability in their assets becomes increasingly more important to the overall success of the organization. However, we also find that maintenance costs are becoming a larger percentage of the total cost of operations. This is due to many factors including increased regulations, mergers and consolidations, shortened time to respond due to increased competition and customer demands.

A recent Aberdeen Group survey found that 87% of respondents report that asset maintenance is very or extremely important to their organizations overall financial performance, but only 7% are completely satisfied with their maintenance performance.

With companies looking to improve all aspects of their operations, maintenance management has become a highly visible area within all types of businesses. Many industry studies conclude that focusing on maintenance management can provide major financial benefits. These benefits include:

- **20.1% decrease in equipment downtime**
- **17.8% reduction in MRO inventory**
- **28.2 improvement in maintenance productivity**

Adopting Lean concepts and methodologies is one way to address needed improvements, while dealing with constrained budgets.

How Technology Supports Lean

Implementing Lean maintenance is not the same thing as the acquisition of more and more technology. In fact, that is a mistake made by far too many businesses, believing that they are solving problems by such purchases alone.

This doesn't mean that technology plays a significant role in Lean maintenance. Since the aim of Lean Maintenance is the elimination of waste in every aspect of a maintenance department's operations, access to information and tools are critical for its success. Therefore, it is important to focus on the technology used to support their Lean efforts.

Leading industry consultants refer to software designed for maintenance departments as either Computerized Maintenance Management Systems (CMMS), or Enterprise Asset Management

(EAM) software. Regardless of how these consultants label this type of software, it must be able to support the mission of Lean Maintenance.

Key to any Lean technology solution is the gathering of, and analysis of, data to support lean activities. Tracking parts usage and cost trends, automated/tailored parts purchasing, recording and evaluating effectiveness of preventive maintenance and the associated trends in breakdown occurrence are critical components. Additionally, the on-going tracking of lean efforts to document progress, identify additional areas for improvement, and to police past efforts to ensure no back-sliding are important too.

Software applications should provide integration between the maintenance effort and spare parts inventory management. Additionally, these applications should include a variety of data requirements associated with maintenance activities so that each activity provides building-block information that leads to trend and event analysis.

They need to integrate storeroom, repair, preventive maintenance planning, and purchasing functions with numerous additional lean-oriented technologies such as mobile connectivity, bar code technology, radio frequency identification (RFID) technology, and automated communications features such as email, pager, and operating screen notifications to key personnel. The inclusion of key performance measurements is a must to ensure that leanness goals are being accomplished.

Lean Maintenance with SIMS

Services Information and Management System (SIMS) is an enterprise asset management software suite that allows your organization to proactively manage your assets to keep them aligned with business strategies, reduce your total cost of ownership and improve regulatory compliance.

The SIMS software suite provides the ability to manage and optimize your business processes to deliver cost-effective approaches to simultaneously minimize cost, maximize return on assets and achieve the highest possible service levels.

SIMS gives you the ability to fully automate your maintenance department's operations and business processes. Monitor operating costs and schedule future maintenance with this flexible easy to use program.

With SIMS, you can track your maintenance history and all your equipment information in one place. Enter maintenance requests, schedule upcoming or enter completed maintenance activities, and review and approve service orders.

Track equipment information and assign equipment to locations, track equipment hour meter readings and schedule future preventative maintenance tasks.

SIMS makes it easy to save time and money. The information and tools provided by SIMS will help you improve your productivity and service levels.

Whether you manage one facility, or several facilities around the world, SIMS will help you:

- **Control Operating Costs**
- **Reduce Inventory**
- **Keep Equipment Working at Capacity**
- **Optimize Preventative Maintenance**

About Technology Management Solutions

Technology Management Solutions develops and supports our **Services Information and Management System (SIMS)**. SIMS is a web-based application that provides asset and inventory control, as well as equipment repairs and preventative maintenance tracking. SIMS offers a streamlined approach to managing your complete maintenance process while increasing overall equipment and inventory visibility to your entire organization.

SIMS integrates your inventory management, equipment service records, and financials to maximize your effectiveness and profitability. The SIMS solution will track costs and other financial details and summarizes key data such as service expenses and recurring equipment schedules. Our software has an integrated reporting system to provide access to key management information with respect to servicing and supplying your facilities and equipment

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