



What's the 'M' in TPM?

Part 1

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It's confusing, at times, when working with a number of sophisticated clients who are engaging my help to implement TPM because I see the same acronym used to drive change within organizations but with so many different meanings. So I ask you, what's the 'M' in your TPM?

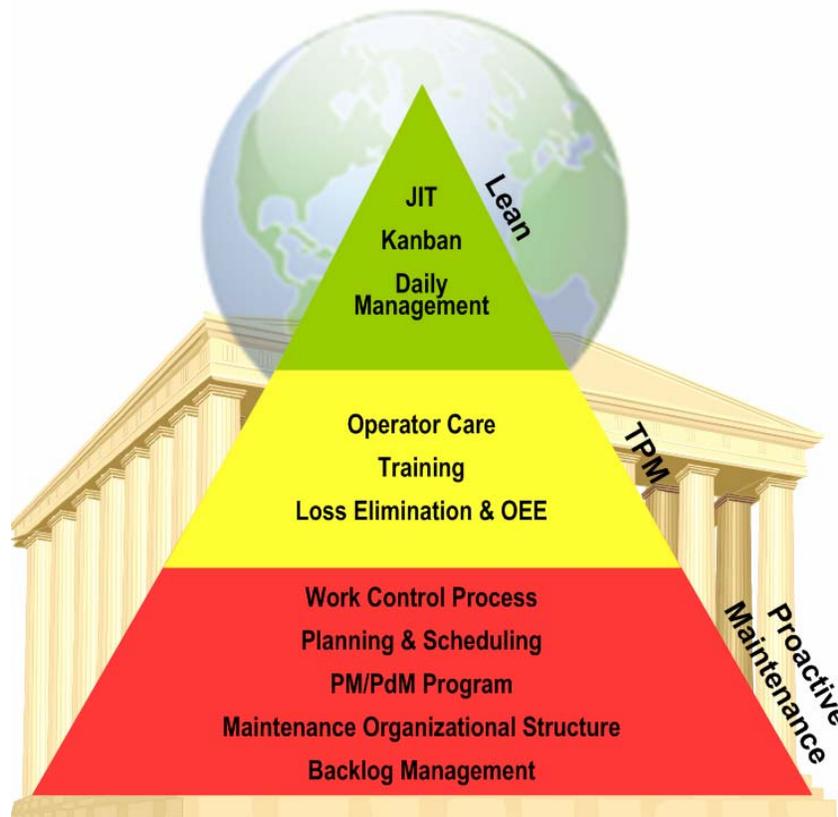
The first time I asked this question I got the strangest look. I found myself arriving on plant site at an organization which had been directed to "pilot" a corporate initiative colorfully entitled "TPM". I say it was colorful because of the variations in definition depending on who you spoke with. In any case, there I was, coming to the plant nearly seven months after the initial kickoff of TPM and meeting with the Plant Manager for the first time. My role was to rebuild the change management effort and regain the focus on implementation within this organization to ensure that the pilot program was successful. The Plant Manager, although professional in his demeanor, was reluctant to have yet another consultant "help" him implement a program which he was directed to resource and manage. After all, he had a plant to run!

At this stage within the TPM effort, focus teams were actively re-engineering business processes, such as, Planning & Scheduling, Preventive Maintenance Program Development, Root-Cause Analysis, Operator Care, and other processes designed to manage Maintenance labor and material resources. The Plant Leadership Team (PLT), however, had become stagnate, demotivated, and was continually challenging the need for change. So, what was it that TPM was supposed to do for this manufacturing facility? Was TPM intended to eliminate failures in order to improve plant capacity? Was TPM focused on reducing Maintenance costs to drive greater profitability? Or, was the corporate TPM directive driven from a need to standardize business practices across multiple plant locations? For me, the answer was simple...all of the above. However, my task was to determine what each of the PLT members thought. What was their motivation, or de-motivation, for implementing TPM? The responses I received, as you can imagine, varied but ultimately pointed back to four key drivers for change; that of **Machines, Manpower, Materials, and Money**.

TPM and the World Class Production System

For many companies, TPM is a sole improvement strategy to increase productivity while reducing the overall cost of manufacturing, however, this way of thinking is a catalyst for failure. TPM, although a very dynamic improvement strategy, is neither the beginning nor the end of the

continuous improvement continuum. To be successful in your endeavors to implement TPM, focusing on 1) engaging senior leadership to own productivity (the process, not just the results), 2) efforts to improve Overall Equipment Effectiveness (OEE), 3) empowering operators to perform autonomous maintenance, and 4) creating a culture of continuous improvement, your organization must first be in a maintainable state. An organization that is truly reactive in its maintenance practices is unable to manage the improvements identified through TPM. With that said, Proactive Maintenance is the foundation for TPM. Building on the platform of maintenance process stability, TPM is implemented in order to create standards of practice geared towards stabilizing the manufacturing process. Once your organization and its manufacturing process are stabilized through Proactive Maintenance and TPM, Lean Manufacturing methodologies should be implemented to eliminate waste and inefficiencies caused by excessive Work-In-Progress (WIP), human error or inconsistency of operating practices, and less than optimum manufacturing schedules.



Breaking Down TPM

So what does it mean, TPM? Some will tell you that TPM stands for “Total Productive Manufacturing”, while purists will argue that TPM can only be defined as “Total Productive Maintenance”. For me, it’s not so much the words as it is what TPM implies. At first glance, I tend to focus on the concept of “Total”, which I believe most organizations overlook, seeing this initiative as either a manufacturing or maintenance effort alone. To the contrary, the concept of

“Total” implies that this is a way, or process, for all plant personnel to work together to improve equipment effectiveness in support of manufacturing objectives. A TPM-based organization places emphasis on everyone, the Total organization, looking for ways to minimize losses which impact the availability, throughput rate, or quality of product produced. Holistically, the Total focus of TPM is everyone working together to promote equipment effectiveness from conceptual design, during procurement and storage of spares, at point of installation, and throughout the day-to-day processes of operating and maintaining. Kunio Hirose, a well known expert and author of *TPM Culture in Japan*, defines TPM as “a set of activities for restoring equipment to its optimal condition and changing the work environment to maintain those conditions.” The key in Hirose’s message is “changing the work environment” from a focus on maintenance as a repair activity to a culture focused on sustaining the utmost desirable conditions for equipment effectiveness, and doing so through partnerships amongst Engineering, Maintenance, and Production while continually refining the principles of teamwork amongst labor and management workgroups.

When I try to conceptualize the “Productive” element of TPM, I inevitably return to two all encompassing thought processes; 1) valuable utilization of plant assets, and 2) valuable utilization of plant labor and material resources. I use the term “valuable” because being productive in itself creates value for the organization, but focusing on being productive holistically adds value to the organization. So the only question is how much value can be added through TPM via focused productivity improvements?

“Productivity” Results

Having been involved with organizations around the globe I have witnessed productivity improvements in the realm of 17% (OEE) within a single location of a unionized metals manufacture, which translates into a value of more than \$10MM annually. Additionally, this same organization successfully reduced maintenance spending by as much as \$20K per week within the first eighteen months. But don’t take my word for it; let’s look at some of the results published by the Association for Facilities Engineering (AFE) in 2001.

In a unionized automotive-component assembly plant in Michigan, in less than four months they successfully improved productivity by 23% (OEE), resulting in more than \$200K in annual labor and material cost savings. In the machining center of this 20-year-old facility, setup time was reduced by more than 90%, and chip removal time was reduced from 2 hours down to 40 minutes.

In a non-unionized manufacturing facility in North Carolina production increased by more than 10% per month through focused improvements in product quality, in affect reducing the number of defects per month by nearly 69%. At this same location, maintenance labor costs reduced by \$300K in the first year, and maintenance material costs were reduced by 5%.

Finally, focused quality improvements within a very large, non-unionized chemical plant in Tennessee reduced off-class polymer product from 90,000 pounds per year to less than 19,000 pounds, adding over \$2MM in revenue. Additionally, this organization reduced facility maintenance costs by \$3.5MM over four years, and reduced the number of critical failures per month in both their Organic Chemicals and Fibers divisions by more than 95%.

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So what is the secret of their success? The answer lies within the third conceptual aspect of TPM...the 'M'. Regardless if the focus is holistically centered upon improving the manufacturing business, or if the scope is reliability-centric, focused only on driving out repetitive failures, Machines, Manpower, Materials, and Money are always the fundamental issues. This means, that "Total" and "Productive" are the methods by which your organization implements the solutions designed to resolve each of these issues.

Part 2 of our TPM discussion will breakdown each of the "M's" in TPM, defining the focus of each opportunity of improvement through TPM. For more information on how to implement TPM in your organization, or to receive more information regarding the improvement methods described in this article, contact Darrin Wikoff at DWikoff@LCE.com or contact Life Cycle Engineering at www.LCE.com.