

Lean – A Buzz Word or State of Being

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Virtually everyone has heard the word ‘lean’ used in some professional context to define a desired future state – Lean Manufacturing (where it all began), the Lean Organization and Lean Maintenance. There is certainly the lean body (don’t we wish!) and I suppose there is Lean Engineering. What do they all mean? Basically all involve increasing efficiency to do more with less! (One could argue effectiveness rather than efficiency.) In a time when everyone fancies “a lean, mean, fighting machine” how could anyone disagree with the concept? While the concept is very alluring, as in so many things the devil is in the details – in this case the implementation.

So we are all on the same page, the term ‘lean’ originated to describe a manufacturing process that minimizes resources, inventory, cost and waste (effort, money, duplication, time) and maximizes value delivered by optimizing flow, motion and quality. Lean has since gained a larger meaning to describe the basic principles applied to other areas.

North American industry has been ‘leaning’ the organization for so long that many can no longer accomplish all the work necessary. Jumping way ahead, the answer is that in the maintenance/asset care world, real, effective leaning must be preceded by a strong effort to eliminate the need for work, which means increasing system and asset reliability. Anything less simply pushes back to diminished availability and higher costs. Several principles are in play.

Everyone recognizes there are always more opportunities than resources. The lesson here is that leaning requires a ruthless prioritization of efforts to assure that whatever time and resources are available return greatest value and contribution to the final goal. The old adage that “when everything is high priority, there is no priority,” is certainly true. So where should resources be applied?

In the broadest sense of manufacturing, there are a host of “bad actors” within every facility. These are the 20% or less of the total systems and assets that chew up the majority of time and money available for “care and feeding.” A reliability-led leaning program recognizes that “bad actors” have to be identified, tamed and moved toward group average performance as a bare minimum.

But how is this done? A complete description requires a book (and there is one I am quite familiar with out there). For the purposes of this brief screed a reliability improvement program can be

summarized in four words – identify, plan, do, adjust. It begins by quickly identifying and prioritizing the “bad actors” in terms of cost and downtime. Next, underlying defects that are the root cause of unreliability are identified. Plans are formulated and implemented to eliminate the defects, which may require improving materials, components and perhaps even replacing entire assets. We must make certain that operating procedures are not a source of problems. Finally, we observe and measure results making adjustments as necessary to achieve the required objectives.

Reliability Centered Maintenance (RCM) is being hailed as a must-do process to achieve optimum system and asset performance. Many state that an optimal end result necessitates subjecting every system and asset to RCM. RCM is unquestionably a powerful tool to improve maintenance. However, when it comes to estimating how much this will cost for a typical facility in terms of both time and money, it becomes apparent that the real world is a harsh master. There are seldom resources to accomplish RCM on every system, much less each asset. For most lean world applications the resources available may be sufficient to accomplish RCM on 25% or less of the total systems and assets. If you are in this situation you had better first implement a solid risk ranking process to assure that the 25% covered with RCM are those with the greatest risk-to-mission requirements and hence greatest potential value recovery. One other comment on RCM – Will the process lead to the conclusion to modify or replace a “bad actor” or is it limited to devising a more intensive and costly maintenance program that prevents failure but doesn’t correct the underlying cause of unreliability?

The concept of lean applies equally well to the instrumentation field. Since the “salad days,” the entire environment has ‘leaned.’ Compared to the height of the aerospace boom, there is much less “cutting edge” development in progress. Profit margins have shrunk. Supplier loyalty has atrophied and may even be illegal in some cases. Service support costs money – many customers complain, but few are willing (or able) to pay the higher price needed to provide yesteryear’s level of service. Suppliers who traditionally have offered very responsive support cannot compete with those who do not. Everyone knows which way the arrow points!

In the development area there simply

are not sufficient time and resources to reinvent the wheel – duplicate components and applications that are already available. In the ‘old’ days, enthusiasts often initiated projects to develop specialized, custom components, applications and even operating systems under the guise that higher performance gained by a dedicated development would justify the cost. In every case I am aware of, the project turned into a very costly nightmare. Performance expectations were never met, unanticipated problems, including manufacturing yields and the necessity to construct and support non-standard products, destroyed any economic viability. In fact, support costs were a common factor that reared its ugly head late in the project when it was realized that close to 25% of the development costs had to be invested every year just to stay abreast of parallel commercial technology that was running full bore ahead propelled by a much larger market.

It is with this background that I am astonished that after ten years MIMOSA is only now beginning to gain broad adoption. In a lean world duplication simply is not affordable or even possible. The software world never seems to learn. As one very bright software engineer told me years ago, “Every software engineer thinks he can do it better than the last person. The truth is that they will do it differently with different problems, but not necessarily better.” The real question is whether companies can afford to expend scarce resources duplicating real, proven applications. If the answer is yes, does this allocation of resources diminish the probability of success in other areas where the same resources might produce greater value? In the case of MIMOSA, the best case is that one would have to spend hundreds of thousands of dollars to duplicate something that is necessary, proven, robust, highly flexible and available essentially for free!

Whether managing manufacturing systems and assets or developing instrumentation, lean means doing more with less. Lean is a state of mind that requires understanding sources of value and consistently applying resources to gain greatest value. Lean demands accurate prioritization before beginning any task to assure resources are applied in order of risk/threat and reward. A lean process is an effective process where tasks are optimized and performed efficiently. **SV**

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