

Equipment Performance Part 8

RELIABILITY PYRAMID

In last month's newsletter, we discussed what it would take to begin the journey to world-class maintenance. We end the article with our first framework-- Total Productive Maintenance. The next framework that we use is The Reliability Pyramid (shown below):



The reliability pyramid allows us to see where we are in the progression toward world-class maintenance. As you can see in the pyramid above, the team must first gain control of the work that needs to be done, then continue to progress through the subsequent stages until they reach the final stage in which the maintenance team is considered to be operationally excellent-- world-class. What we typically see is the sporadic attainment of the items in each stage with no solid progression through each stage. This progression takes strong leadership discipline to ensure no short-cuts are taken. It also requires leadership to show bravery with regards to investment in order to bring the assets back to proper working conditions. Yes, you will have to pay for the mistakes of the past leadership team.

KEY PERFORMANCE INDICATORS

As we progress on the journey, it will be important for us to measure our baseline and progress as we improve the maintenance function with regards to ensuring capacity for the business. Below are some typical maintenance key performance indicators:



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Safety Incidents (#)
High-Risk Safety Items (#)*
Availability (%)
Planned / Scheduled (% of Total Time)
Breakdowns (% of Total Time)
Maintenance Productivity (Captured Hours / Payroll Hours)**
Overtime (%)
Inventory Level (\$)**
Call-ins (%)
Off-shift Work (Full or Partial Crew)
Work Order Backlog (Days)
Budget Performance (+/- %)
Capital Replacement (\$)
Stock Outs (#)
Maintenance Cost / Unit (\$)
Depreciation / Capital Investment (ratio)****
Meantime Between Failure (MTBF)
Cost to Maintain vs. Cost to Replace (\$)
Maintenance Induced Failures (#)
Maintenance Response Time (min)
Time to Repair (min)
Overall Equipment Effectiveness (OEE)*****

**There are many ways to characterize the level of risk, and one can't address all of them. The key is to set a minimum allowable limit in the beginning, then work to address any over that limit. True North (which is our compass heading, not our goal) would be zero risks.*

***A low Maintenance Productivity % can indicate missing data (not capturing actual work) and/or low performance of the maintenance group.*

****As we become more adept at predicting maintenance, we should need fewer spares on hand to deal with the unplanned breakdowns.*

***** >1 = Underinvesting in our Assets, 1 = Maintaining our Assets, <1 Growing our Assets*

****** OEE = Availability x Quality x Performance Efficiency, where Availability = (scheduled time – unplanned downtime) / scheduled time, Quality = Total Good Product / Total Ran (Good, Scrap and Rework), Performance Efficiency = Total Quantity Ran / Standard Quantity that should have been run in the same time period.*

ASSESS YOUR ORGANIZATION

Now that we have briefly reviewed world-class maintenance and how to measure it, we are ready to assess where your organization is with regard to its maintenance program. One easy way to begin the journey is to ensure a clear alignment around the priorities of maintenance. Below is a ranked list of what we believe those priorities should be:

Maintenance Priorities

1. Ensure the machine is safe.
2. Ensure the machine is producing a quality product.



3. Ensure the machine is producing at rate.
4. Ensure rapid response to downtime, rapid restoration of flow, and root cause corrective action is in place.
5. Ensure the predictive maintenance is completed.
6. Ensure preventative maintenance is completed.
7. Project Work

If you simply begin setting the expectation around these priorities, buy-in to making the investment, and begin making the investment, you will be well on your way to world-class maintenance. Just remember, there is no “pixie dust” or magic wand here. It takes lots of hard work and determination to make this happen.

At what stage in the reliability pyramid is your company? What are you doing to progress? What measures do you have to show progress? Are you following the maintenance priorities?

If your organization wants to improve uptime and Return on Net Assets (RONA), Drive can help. We have a team of proven experts on improving business performance as well as implementing world-class maintenance strategies. For a no-obligation introduction meeting, please contact Paul Eakle at paul.eakle@driveinc.com or 865-323-3491.

