

Maintenance Improvement – Where to Start

Background

The quest for improvement in asset maintenance is a core responsibility of any modern maintenance manager. The procedures and systems that could equip today's maintenance professional to successfully follow this quest are many and varied. It is easy to place our faith in, and adopt one, or a number, of defined programs or processes aimed at reducing plant downtime and increasing maintenance group effectiveness and efficiency.

But has an adequate foundation been laid to ensure that maximum advantage can be gained from an improvement project that will often require a significant commitment in money, time and employee involvement? This article explores this question and attempts to offer some suggestions for making sure some of the basics of sound maintenance practice are in place.

Where Are We?

Since falling out of the trees and beginning to accumulate assets, human beings have been faced with issues relating to the maintenance of these assets. That stone axe was a real pain in the neck when it wasn't sharp. So if you owned it, you needed to look after it.

The passage of time has only exacerbated the problems relating to asset maintenance, and there are no prizes for guessing why. In the twenty first century there are four main reasons why our efforts to attain maximum plant/equipment/asset reliability often cause such concern. They are:

1. Faster, Better, Cheaper etc – There is an ever increasing need for improved plant reliability, to support growing pressure for better business performance.
2. They Don't Make 'Em Like They Use To (No.1) – Over-engineering of equipment has been gradually reduced, in turn reducing the margin for tolerance of equipment use/abuse.
3. They Don't Make 'Em Like They Use To (No.2) – The increased complexity of equipment has necessitated a comparable increase in engineering knowledge and technical expertise to meet the requirements of plant maintenance.
4. It's Not My Problem – The focus of business management has also become especially complex, with business managers devolving various areas of responsibility, including asset maintenance, to "specialists" who are often expected to pull rabbits out of a hat to make their area work.

It would make life much easier if we could magically reverse, or at least arrest these trends, but I doubt if that will happen. No surprises there either.

Not Much Help

So we are faced with rising pressure to perform. That's life and we should get on with it. But there are other issues that add to the complexity of the situation. Prominent amongst these are:

1. Allied to Point 4. above, there is a shortage of understanding of the link between assurance of asset performance and optimising business performance. This leads to the endeavours of asset maintenance professionals being overlooked. They are expected to just get on with the job, without making a fuss. Oh, and by the way, we

need to cut cost so just reduce maintenance spending by 15% this year, there's a good chap.

2. Maintenance professional did I hear you say? Many clever, well meaning people (and occasionally some not quite so) are appointed to positions of responsibility for asset maintenance within organizations, without slightest hint of experience or training to meet their responsibilities. The often-held attitude is "Maintenance, how hard can it be? Just put that new graduate, What's-his-name, in charge. He's young, bright and keen. He should be able to handle it."
3. There is a tendency to place faith in what could be called packaged improvement schemes. These tend to be things that are the proprietary preserve of consulting organizations, often involve taking a simple, common-sense idea and complicating it. They are attended almost universally, by a rather expensive software system. They are often, curiously, identified by a three-letter acronym. These things are mostly very good, IN THE RIGHT PLACE, but it is always best to make sure that ALL the fundamentals have been attended to before launching into a costly and complex process that may or may not produce the desired results.

So far it would appear that it just keeps getting worse. But is there anything positive that we can hang onto to get us through all of this? There just has to be.

The Good Stuff

If all this bad stuff is out there, then why is it that we somehow seem to muddle through? Many of the businesses that depend heavily upon their physical assets seem to function reasonably well, even though they would not win awards for excellence in asset management. How do they do it? It is certain that many theories abound from outside, as well as from within, each of these organisations, as to why this is so.

For what it is worth, I believe that there are three primary reasons why the maintenance function in most companies appears to succeed to some level of acceptability, despite the challenges thrown up. One is related to overall business performance, while the other two have something to do with people.

Firstly, as previously stated, there is insufficient appreciation of the consequences of poor (or for that matter good) asset maintenance on the greater success of the business. Therefore, it is distinctly possible that the same relationships between many of a company's other activities are just as poorly understood. The principal outcome of this is that nobody knows if, or to what extent, maintenance is performing well or badly and therefore nobody is able to rationally take issue with asset maintenance performance. There will always be those who suspect that maintenance is not quite what it could or should be, but that is probably the least of our concerns. Anyway as long as that new graduate reduces the R and M budget by 15% then that's all we really need, right?

Secondly, many maintenance groups are staffed by some good people. The "Fire Brigade Syndrome" may very well predominate, where reactive maintenance is effectively and efficiently dealt with by a team of tradesmen and technicians who really know how to affect a repair, before heading back over the horizon, in a cloud of dust, to await the next plant disaster, when they will again charge to the rescue. As a profession we frown upon this, but many individuals and organizations do it and do it very well. Job done and what can you say?

Thirdly, I suspect also that there are plenty of clever people who instinctively understand the value of being proactive about plant maintenance and, often on their own initiative, and without recourse to formal programs, do indulge in condition-based and preventive activities.

They will probably do this because it makes their own life easier, but the outcomes for the asset and ultimately the business will be the same as if an identical action had been instituted through one of the TLA programs.

The bottom line is that we often don't have a clue how good or bad we are, or how good (or bad) we need to be. But we do have some good people who do a great job propping the whole thing up.

And So?

If you are happy in the situation that presently surrounds you then you need do nothing, and life will go on potentially for a long time without any major problem. The only hitch is that a major problem will certainly be waiting down the road somewhere, without any fore-warning, and it will not be a pretty sight when you hit it.

So which mega-dollar TLA process do you buy to forestall this cataclysmic inevitability? I suggest none. Instead I suggest you consider what is set out below.

Four steps need to be undertaken to gain some measure of control over you asset maintenance function. They do not represent any departure from normal common sense methods that we already understand fully. These steps are:

1. Know your environment
2. Communicate your environment
3. Apply the natural conditions for development within your environment
4. Promote the way ahead

It's all about building a strong foundation. Without that nothing else will last long enough to be of significant, enduring benefit to the organisation. While the processes for the application of these steps may vary wildly from business to business, here are some general suggestions on to how to progress.

Know Your Environment

You need to have a very clear understanding of what makes the business tick. For a professional maintenance practitioner it is simply not enough to believe that if he can magically prevent all equipment failures then all will be well.

He should also know exactly how well the maintenance group performs. This will necessitate the development of some form of objective measurement and monitoring for maintenance activities. Reams have been written on establishing, measuring and evaluating Key Performance Indicators for maintenance, and with a moderate amount of trial and error it should not be hard to find some suitable measures by which you can deliver an accurate picture of how good or poor the maintenance function is.

The most important thing however (and here's the tricky bit) is to link these two bodies of knowledge in order to gain an appreciation of the relativity between the two. In short, if ordinary performance by the maintenance group is sufficient to meet the business's overall needs, then it is probably best not to waste money and resources casing better things.

Understanding this link is critical and generally complex, and it could be the subject of a book on its own. Suffice to say here that, successfully understanding the complete relationship will also require the acquisition of knowledge of other subjects, such as finance and budgeting, and production.

Communicating Your Environment

So you finally know what's going on. Well thank heavens for that, because there is just an outside chance that you are the only one who does.

Think back to the start of this article where we gave some thought to the premise that there is a tendency for corporate management to devolve responsibility, and to a certain extent interest, in activities that do not seem to have any direct impact on business performance to others. We also understand that these others are not always fully qualified or experienced to accept the devolved responsibility.

Having taken the time to understand the environment within which you operate, it is a natural follow-up step to disseminate this understanding. The reasons for this are obvious, but let's list some of them anyway:

1. Simply put, appreciating the situation is essential for planning any developments or improvement in maintenance processes
2. Providing corporate management with a clear picture of the state of the maintenance function will allow them to make more rational business decisions, or to at least, understand the potential consequences of their decisions
3. Allowing the maintenance workforce to share the information relating to group performance, business requirements etc, will equip them for participation in any future development of the maintenance group
4. Making this information available to other groups within the company will raise the profile of the maintenance group and will set the scene for better understanding and closer working relationships with groups such as production, supply and finance.

The process for spreading the word needs to be purpose-designed for your situation. Notwithstanding this some essential aspects of the process must be incorporated. These include ensuring the widest possible spread, constant referral to the goals, aims and objectives of the business and the maintenance group, and being persistent about getting your message across.

Natural Conditions for Development

The concepts that I want to cover now are rarely, if ever, considered to be part of the knowledge base of engineering. They are mostly about addressing people issues relating to the quest for maintenance improvement.

What you want is for your most valuable (and most complicated) resource, your people, to be central to gaining control over your maintenance function. But are they ready and able? We can assume that they are willing because you have had the communication process working for a while now, but do they have the skill and knowledge to be good maintainers? They probably are good engineers, technicians and trades people but are they competent, switched-on maintenance practitioners? Are they "Maintenance Literate"?

Just as we can identify and develop literacy in terms of using language we should be able to identify and develop literacy in terms of other human skill sets. Most people are comfortable with what is meant by "Computer Literacy", so now let's consider "Maintenance Literacy".

For the sake of discussion, what I mean by this is the capacity to control and use all the processes that facilitate asset maintenance.

The acquisition of Maintenance Literacy is a learning process like any other literacy acquisition exercise. It is now well accepted in many educational circles that the most effective way to promote literacy is to provide a natural learning environment. This is based on observations that almost universally, human beings acquire the quite complex skill of speech, by simply being exposed to spoken language in a completely natural setting of demonstration, observation, practice and feedback without any strict procedural input or direction.

The development of Maintenance Literacy is somewhat similar. In a plant maintenance context, you should be aiming to promote a sense of being “maintainers” amongst your people. While being engineers, fitters, electricians, etc are noble callings, it should become instilled that these are the skills and qualifications that provide an important stepping stone to becoming competent maintainers. That is your business and you want to be good at it. And there should be no reason why you cannot be. The bulk of the natural conditions shall come from immersing your people in ethos, culture, expectations and even the language of maintenance. Their success as maintainers must be recognised.

What this natural environment consists of for the acquisition of maintenance literacy remains a matter of 'horses for courses'. What constitutes natural conditions for one business will not be the case for another. It can be said, however, that the establishment of natural conditions is not always an easy thing to achieve.

Promoting the Way Ahead

What has been described above, as we stated previously, is about building a sound foundation. For a maintenance group it is possible to survive almost solely on this foundation if it is well constructed.

But is survival enough? In short, no. Another statement made earlier asserts that pressure will continue to mount for improved performance.

Once you have instilled the basics of sound maintenance practice within the maintenance group they will be prepared to embrace more detailed and complex programs for maintenance improvement. This preparedness will stem from a number of the results of the acquisition of 'Maintenance Literacy'. Just like the child who becomes literate in terms of language, your maintenance personal will have:

1. Gained the skills, knowledge and understanding needed to take on bigger, more demanding tasks
2. Become more confident in their ability to step outside their normal operating boundaries and to tackle these more challenging tasks
3. Developed an interest in advantages and rewards that can accrue from exercising their newly acquired skills, knowledge and confidence

This is where the packaged improvement programs come into their own. The range of products available is extensive and as a maintenance manager you can, with some research, identify a program that will deliver the next step required to meet ongoing demands for improved performance within the maintenance group. Which ever system, procedure or process that you choose, the success of its application will be increased if it is done so in an environment where the employees who will ultimately be expected to work with it, or at least its outcomes, are attuned to the notion of maintenance being a worthwhile discipline in its own right, and that their role as practitioners is important and valued.

Conclusion

In summary, what this article has endeavoured to do is to promote a concept that improvement in maintenance functions needs to be approached from the basis of building upon a solid foundation. That foundation involves turning your personnel into “maintainers” over and above their core expertise as engineers, technicians and trades people.

In this article we have referred to this transformation process as acquiring “Maintenance Literacy” and likened it to language literacy in that it serves a basis for ongoing development of competence and success in the control and use of maintenance practices and techniques. We have further suggested that reaching this “Maintenance Literate” state is best achieved under natural conditions for development, akin to the non-structured processes used in developing the capability of speech with children.

It was contended that a Maintenance Literate workforce would be more capable and receptive to the implementation of higher level structured or packaged improvement programs aimed at ongoing process improvement in the maintenance function, because of the expanded skill and knowledge base, their heightened level of confidence in their own capability as “maintainers”, and their increased desire to be part of improvement and success.

While this article has only touched the surface of the concept of developing “Maintenance Literacy” a follow-up article is planned that will contain more detailed recommendations for a process to achieve this.

(This article was published in the Maintenance Journal, Volume 17 No.1, February 2004)