

The Similarities Of Maintenance Planning And Zoo Keeping

Written by Al Emeneker, Life Cycle Engineering (LCE)
Wednesday, 01 November 2006 19:56

This author compares asset management to the care and feeding of, and sometimes keeping endangered species alive. Compelling analogy, isn't it?

When was the last time you visited a zoo and enjoyed a leisurely stroll through the exhibits, during which you interfaced with the various fauna? For the visitor, a zoo can be a quiet, relaxing place for reflection. For the animals, the zoo is a home. For the zookeepers and all the others involved in its day-to-day operation, the zoo is a job. Granted, most of the zookeepers are there because they consider this a true calling- *something that fulfills their strong desire to 'be there and do that*

.' Take the staff of the zoo in my hometown, Columbia, SC. It is a wonderful place that is well-run, well-managed and well-maintained by competent, enthusiastic people. They are people who basically live and breathe for the existence of the zoo and the well-being of the animals and plants that inhabit it.



Consistency is key

Have you ever considered whether a zoo just exists, much like the animals and plants that exist in the wild, or whether there may be a rhyme, rhythm and reason to the organization?

What would happen if we were to put the lions in the polar bear exhibit (without the bears, of course)? Or, what would happen if we moved an ostrich into the seal pool? Such situations clearly would be recipes for small-scale disasters.

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Then there are the nutritional aspects to consider. Would the chameleons stay healthy on a menu of nothing but tsetse flies? Would the elephants thrive on a constant diet of sugar cane? Probably not.

Consistency is an important element in almost any successful operation, be it a zoo or, in our case, a maintenance organization. Just like zookeepers, we maintenance professionals have a fairly constant set of parameters within which to exist. For example, due to the living organisms and constant changes in a zoo environment, zookeepers must continuously evaluate the health, sanitation, nutrition, environment and social structure of their charges—some of which may include truly endangered species.

Likewise, we, as maintenance professionals also may be keeping individuals of an endangered species alive. There are all sorts of carnivores out there just waiting for us to become weak enough for them to swallow us! If we are lucky, they'll swallow us whole; if we're not, we will be ripped asunder and many good people and their value will be lost. The future of a maintenance organization, therefore, depends on how well the health, well-being and environment of our flora and fauna are managed.

Best practices

How exciting would a visit to the zoo with your family on a warm, spring afternoon be if the zookeepers had not followed the plan, schedule and procedure for feeding the lions for several days? Wouldn't those young, tender morsels of fresh meat tagging along behind you look particularly appealing to the hungry lions? Keep in mind the fact that the lions don't have highly developed thought processes that allow them to discern the difference between your tasty morsels and ones that the zookeeper should have fed them. Your family's relaxing afternoon at the zoo could suddenly become quite exciting, much like a rolling mill when there is a bearing failure, or a winder when a journal breaks at 9000 fps! Much like a rupture disk doing just what it was designed to do, only at an unplanned time! In a plant environment, such excitement occurs because we don't have—or didn't pay attention to and follow—the processes and procedures necessary for Reliability Excellence.

Maintenance planning and scheduling, coupled with Best Practices and a concerted effort toward Reliability Excellence, can help ensure that your day-to-day operation and production are like a pleasant visit to your favorite zoo. Best Practices for zoo keeping dictate that the animals be fed routinely, consistently and efficiently. Best Practices for industrial processes dictate that equipment be maintained through routinely, consistently and efficiently

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applying preventive maintenance (PM), predictive maintenance (PdM) and corrective repair.

We can appease hungry lions for a bit by tossing a side of beef over the fence, just as a good shot of grease will appease the growling of a bearing. This, however, will only work for a short time! You should only think of a side of beef and/or a shot of grease as interim, temporary solutions to problems.

The bearing will need to be identified and tracked by some means, typically in the form of a work order. This work order will need to be planned, that is, looked at by knowledgeable people who develop a plan for the efficient, effective and quality repair of the failing equipment. It is much easier, more cost-efficient and less labor-intensive to capture knowledge and effect a repair on a planned and scheduled basis, rather than waiting for equipment to fail.

Generally, if a critical piece of equipment fails, it is at the least opportune time and causes an amount of collateral damage that could easily have been avoided with the proper planning and scheduling of corrective repair work. Similarly, it is more effective to feed lions in a consistent, routine and efficient manner than to have them roaming around looking for a meal. Anxiety tends to increase when one is facing a hungry lion or when there is a total loss of production in the middle of the night, or on a weekend when there has been a big party and few individuals are in any condition to respond to a call-in!

Easy justification

A planned and scheduled asset repair typically requires one-third the labor cost and one-third the asset downtime of an unplanned and unscheduled repair. The materials cost will be less, too, simply because of the reduction in collateral damage.

Equipment should be taken off-line before it is allowed to self-destruct and waste more money, lose more production, affect quality and fuel customer dissatisfaction. When a repair is properly planned and scheduled and the appropriate communication, coordination and cooperation are employed, equipment downtime, loss of production and inefficient use of resources are minimized!

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Managing the system

But, back to the zoo. . .How are animals fed and cared for in a routine fashion? How does the flora get fertilized, watered, pruned, staked and beautified in a systematic and effective manner? You can bet on the fact that a zoo will have an overall, ongoing plan for these processes. The folks in the background, those not as visible as the zookeepers working directly with the animals, are the strength of the system. Compare this system to a proactive operational environment.

The reliability and maintenance engineers, the materials management folks, the purchasing folks, the crafts persons responsible for the care, feeding and well-being of the preventive maintenance and predictive maintenance programs are the strength of the system. The planners utilize the tool of their job, the Computerized Maintenance Management System (CMMS), to publish the schedule of when the specific animals are going to be fed, when the water system is actuated, when the pruning will take place, when the specific animal environ will be cleaned, when the diets will be reviewed for effectiveness, etc.

When there is a system in place that manages the care and feeding of the animals (i.e., equipment assets), and when that system is a proactive system in the maintenance environment, it allows for age considerations to be addressed. Do diets and maintenance processes remain the same over time? The correct answer is, "Not likely." As many of us older maintenance professionals can attest, diet and health needs change drastically!

The same applies to the equipment that makes product for our customers. We need to evaluate, on a routine basis, the processes required to maintain aging equipment in a state capable of sustaining the defined production needs. We must consider the need for changes in frequency of the PM/PdM procedures, changes in the PM/PdM procedures themselves and changes in the materials required to maintain the equipment. In other words, changes, changes, changes! Someone has to remain abreast of and communicate the adjustments necessary to stay proactive and productive in the marketplace. Typically, this effort and responsibility fall to the reliability engineers and maintenance engineers. They are the first-line offense in the effort to constantly maintain the production level. Just as the elephant requires a diet change and a unique exercise regimen as he ages, equipment requires adjustments to the processes and procedures of the past in order to maintain the production capability and efficiency of the future. Reliability and maintenance engineers utilize historical information from the CMMS and work orders to design and develop changes to the

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maintenance procedures for continued pursuit of Reliability Excellence.

Beware the hungry lions

Who would have thought a zoo could be an analogy to an effective, proactive production facility? The similarities, while a bit lighthearted, are surprising; the environments may be different, yet the needs and requirements are much the same-*across both types of operations*.

Maintenance professionals, like zookeepers, should strive for consistency around the plant. Pay special attention to maintenance planning and scheduling. Moreover, stay alert and constantly look out for the hungry lions. Just consider the chaos that would ensue should one of them break out! **MT**

Al Emenecker is a consultant with Life Cycle Engineering (LCE). He has over 37 years of experience in maintenance planning and scheduling, working in the areas of aircraft electronics, nuclear and fossil fuel power generation, pulp and paper, construction, commercial business machines and small business maintenance. He also has been conducting educational seminars for over five years, helping others realize the impact of effective and efficient planning and scheduling. E-mail: aemeneker@LCE.com