Asset Management vs. Maintenance Management

“We’ve been hearing more and more about asset management systems as described in the PAS 55:2008 specification and the emerging ISO-55000 standard. But I still don’t get it. Yes, I know sometimes they change the name of something to make us think it’s new and improved. But in my mind maintenance management IS asset maintenance. What’s the difference?”

That’s a really great question. And there are many more maintenance people asking that very same question. So let’s explore the similarities and the differences between asset management and maintenance management. While asset management includes everything we think of as good maintenance management practices, it goes well beyond the scope of maintenance as we know it.

Let’s Set the Stage with Some Definitions
The term “asset” in this case refers to physical items such as plants, equipment, facilities, vehicles, utility systems, and infrastructure. And “asset systems” refer to a series of equipment that functions together as a single system such as a chemical process or a manufacturing process, or a railroad system—each is composed of numerous pieces of equipment.

We will use the term “equipment” here in general when referring to physical assets of the types discussed above.

The term “system” then is a structured set of interacting, often interdependent, elements forming an integrated whole to deliver a desired result. A computerized maintenance management system (CMMS) is an example of a system with its numerous programs, functions, forms, tables, reports, and its processes for work orders, PMs, parts, labor, planning, and scheduling.

A good definition of “management” is the organization and coordination of activities aligned with certain policies for the achievement of clearly defined objectives of an enterprise. A synonym of the term management is stewardship—responsibly caring for the property of others.

Last is “reliability.” Simply stated, reliable equipment does what it is supposed to do, the first time, every time in the prescribed operating context or environment—in other words, failure-free performance. For example, a reliable racecar in motorsports racing not only finishes the race but it performs as intended. (If you can’t finish, you can’t win.) Given a reliable racecar, winning depends largely on the actions of the driver and pit crew, the strategic decisions by the crew chief, and of course, staying out of harm’s way—all of this better than the competitors.

Maintenance in a Business Context
The primary objective of maintenance is to take care of equipment, respond to its needs, and keep it in good operating condition. However, in a business context, maintenance is not the goal. The expectation of an equipment-intensive business is to have reliable equipment performing functions that lead to its business goals. Maintenance then is a work process that contributes to equipment reliability through the use of proven actions, tools, techniques, and people.
When we take into account the operating context, in many cases, maintenance tasks alone cannot generally make equipment reliable. Why? Simply because maintenance is not the answer to all of the causes of unreliability.

Unfortunately, in some organizations, the maintenance department is seen as the sole supplier of equipment reliability because they perform preventive maintenance (PM) and then fix it when it breaks. This “fixing paradigm” is often communicated as a customer-supplier relationship—where production is the customer and maintenance is the supplier—rather than the organization-wide partnership for reliability central to asset management.

The bottom line thus far is this: Maintenance as a department rarely has the ability to make equipment reliable. The process of maintaining equipment, regardless if it is performed by maintainers, operators, engineers, or contractors, cannot address all of the causes of unreliability. In many cases, the ultimate remedy resides in other departments or organizations—some within the same enterprise and some outside.

There are many approaches to maintenance management that improve the efficiency and effectiveness of maintenance functions. And this is a good thing for sure. But we’re still talking about maintenance management.

**The Life Cycles of Equipment**

Reliable equipment doesn’t just appear with the wave of a wand. In fact, there are many phases in the life cycle of equipment. For the purpose of this brief article, let’s group these into four major phases:

- Acquisition: design, build/buy, install, startup, commission
- Utilization: performing the intended function or operation
- Maintenance: maintain, repair, and renew (restore)
- Decommissioning: Obsolescence and disposal

Here are two reliability questions to ponder:

- In these four lifecycle phases, where does reliability begin?
- In these four lifecycle phases, where is reliability sustained?

Decisions that are made during the shortest—acquisition—will have a life-long effect on the performance and reliability of the equipment. Reliability begins in phase 1. When equipment is bought on low bid with vague specifications, with little regard to lifecycle performance or costs, the chances of operational readiness and lifecycle reliability are highly unlikely.

The phases with the longest duration are the combination of phases 2 and 3—utilization and maintenance. These are also the phases with the most frequent variables (human factors) that affect equipment reliability. And these two phases occur in an interdependent but intermittent fashion. Reliability is sustained in phases 2 and 3.

Back to the racecar example: The acquisition phase is crucial. The racecar must be designed and built to comply with the sanctioning body regulations. And it must be assembled to very clear, defined, complete specifications with inspections every step of the way to assure that it meets all
of the design requirements. The acceptance testing criteria must also be specific and used to verify that the racecar meets all of the requirements.

Then, how this racecar is set up, driven, raced, maintained, and renewed throughout its life cycle will dictate how long the car will perform as intended. The actions and human variability of the drivers, pit crew, crew chief, mechanics, fabricators, engineers, parts suppliers, and a host of others all play into these life cycle phases: utilization and maintenance.

**Reliability Inhibiting Variables**

Let’s briefly consider some of the reliability inhibiting variables commonly found in phases 2 and 3:

- Semi-qualified, untrained operators or maintainers
- Vague operating and maintenance work instructions
- Inconsistent, non-standard methods, short-cuts, or violations
- Personnel fatigue, stress, sensory limitations
- Errors: Skill based, judgment, misperception
- Failure to correct known problems with personnel or equipment
- Insufficient personnel: Operations, maintenance, supervision
- Equipment doing things it was not intended to do
- Lax routine cleaning and inspection
- Inconsistent or deferred scheduled PM routines
- Insufficient, incorrect, unfit for service spare parts
- Improper lubricants or lubrication routines
- Conflicting priorities: production vs. maintenance

**Asset Management**

I’ve often referred to asset management as “maintenance on steroids.” But that doesn’t explain what asset management really is intended to be. If you’ve made it this far, you can recognize that there are more causes of un-reliability, poor equipment performance, and equipment-related problems that are outside the direct control of maintenance. This is where asset management comes into play. Here are ten major elements in an asset management system:

1. **Asset management** focuses on the assets that strategically add value to the enterprise, to the business—the assets that the success of the business is built around.

2. The **asset management process** systematically aligns all asset-related policies, procedures, functions, roles, responsibilities, activities, and resources with the strategic plan of the business.

3. A specific **asset management policy** communicates the business imperatives related to its physical assets. This policy, with specific expectations and accountabilities, is deployed at the same level by the same senior executives as the quality management and environmental, safety and health policies.

4. **Asset management objectives and plans** are aligned with the asset management policy and the strategic business plans and goals.
5. **Asset management controls and enabling processes** are established to facilitate the implementation of the asset management plans to achieve the asset management objectives.

6. **Strategic equipment**: When performance of equipment is vital to the function it is performing and there are no acceptable alternatives to replace the function of the equipment, it has a strategic purpose. Some equipment may be more critical or more at risk than others and must be managed accordingly.

7. **Implementation** of the asset management plans spans all four of the lifecycle phases described above: acquisition, utilization, maintenance, and decommissioning.

8. **Performance and condition monitoring** of the strategic assets as well as the asset management system itself are also performed to assure, and to improve their efficiency and effectiveness.

9. **Periodic management reviews** of the asset management processes and systems are routinely performed to assure that the business goals are being addressed and achieved.

10. **Asset management participants** include every organization, department, function, and every person (part time or full time, hourly, salary, or contractor) who makes decisions or takes action that directly or indirectly impacts the performance and/or reliability of any asset that will affect the strategic business plan of the enterprise.

Finally, with these formal asset management processes in place equipment performs as intended, operating costs decline, and the return on net assets increases.