

Maximizing Maintenance Operations for Profit Optimization: The Journey to Maintenance Excellence

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**Establishing a Strategy for Profit-Centered Maintenance
By
The Maintenance Excellence Institute**

Division of Ralph W. Peters and PEOPLE Inc.

Part I: Maintenance is Forever!

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Introduction: "Maintenance is Forever!" and Part I defines the need for long-term continuous reliability improvement (CRI) within the business of maintenance and physical asset management. It sounds the alarm to support maintenance leaders in their quest to maintain facilities and equipment with diminishing funds while often gaining new production assets and facilities along with new maintenance requirements for these physical assets via new minor/major additions or acquisitions. It strives to explain how four very basic but interrelated challenges can almost exponentially grow the scope of overall maintenance work requirements. Part I brings all to the realization that maintenance within manufacturing operations has a major impact on profit, throughput and quality in many ways. That impact can easily be negative. And with focused investments and continuous reliability improvement, the impact can conversely have a very positive impact on the bottom line and profit optimization. It also strives to help all leaders understand the importance of managing their maintenance and physical asset management operations as a profit-center and that maintenance truly is forever!

A Profit-Centered Strategy is Necessary: Maintenance must operate with a strategy of profit-centered maintenance and the subsequent business management attitudes. Profit optimization is a hot term in the financial world with systems to support a new C position, the CRO; Chief Revenue Officer. Within many large governmental or educational system organizations the facilities management group is probably as close to being profit-centered and revenue-driven as one can get and not be a contracted maintenance service provider. For example, a progressive facilities and physical plant operation will account for material and technical labor for charge back or accountability back to the tenant/customer. A contract maintenance provider does this via strict accountability either from a performance based contract or from time and material billings of services rendered. Just like your personal plumber or heating, ventilation and air conditioning (HVAC) systems technician for your home facility needs.

Four Unique Strategic Challenges: Regardless of current size or operation's scope, both plant maintenance and facilities management leaders are faced with four unique but very interrelated challenges. These four challenges are to:

- ❑ **Challenge One:** Maintain existing production assets and facilities in safe and sound conditions.
- ❑ **Challenge Two:** Improve, enhance and then maintain existing assets and facilities to achieve environmental/regulatory standards, greater production capacity at better quality and while using the best energy practices.
- ❑ **Challenge Three:** Enhance, renovate and modify/overhaul existing assets/facilities using capital funds or funds from tenant/customer and then maintain the additions.
- ❑ **Challenge Four:** Commission new production assets or facilities. Assume increased scope of work to maintain the new assets. Be prepared to assume more work from Challenges One, Two and Three above as production assets and facilities get older and older.

A classic example is the facilities maintenance challenge of large state university systems across the USA with multiple campuses and major facilities and infrastructure of all types on each campus. This example is really important because (as you will see later by being a taxpayer) you and I are the ones who really pay for addiction of “gambling with maintenance costs” within the public sector. The scope of my example includes the facilities and physical plant operations within my home State of North Carolina where we have having 16 campus facilities complexes and 59 community colleges across the State. This includes physical assets with over 110 million gross square feet valued at over \$13.2 billion. Now another \$3.1 billion from a recent state-wide bond issue is on the way for new construction and renovation for more of Challenge #4. Each university campus complex receives and uses state appropriated funds supposedly at 3% of replacement value for maintenance and repair. Dollars hopefully sufficient for facility and infrastructure maintenance to maintain current facilities in Challenge One above. And also hopefully enough to achieve each facility’s primary function for the respective customer/tenant’s teaching or research mission. They also receive other pots of money in the form of trust funds from alumni gifts and also have funds coming from receipt supported facilities such as dormitories, research facilities, basketball arenas and football stadiums etc. The bottom line on our little example here is not good. There is now a deferred maintenance bill outstanding of nearly \$1,000,000,000 billion dollars and growing.

Challenge One: Often the appropriated (or budgeted funds) fail to meet existing facility needs for basic facility maintenance or for plant maintenance requirements in a manufacturing operation. This is compounded even further when overall deficits in state budgets occur as they have in North Carolina in 2001 and 2002. So what is cut first (or never adequately included to begin with, M&R for maintenance and repair. The vicious cycle continues year after year until the taxpayers have to pay up for government’s addiction to the “high cost of gambling with maintenance costs”. Then as in North Carolina we all pitch in and help out on Challenge One with our tax dollars.

Determining Existing Maintenance Needs: There are two foundational needs for an effective facility management or plant maintenance operation that need to be highlighted;

1. **Maintenance business process improvement:** Business process improvement is what this five part-series strives to help and promote with a profit-centered strategy and related attitudes. If this is truly present, then the plant maintenance leader or facilities management leader in governmental operations at least, has a chance to survive. However, regardless of the type of maintenance operation, they must be able to show top leaders they really are maximizing all available maintenance resources and there is a true need for resources to address the next item, the basic maintenance requirements.
2. **Maintenance requirements for the physical asset:** This is the primary mission; executing the required maintenance while providing, maintaining and improving the asset or facilities and related services for production operation and the tenants/customers. This is what maintenance leaders must achieve in addition to many other activities that compete for engineering, craft and administrative resources. Defining true maintenance requirement to top leaders is extremely important when all resources are maxed out and basic preventive maintenance is being neglected and regulatory issues aren’t even on the list.

Challenge Two: Periodic determination of basic maintenance requirements and regulatory compliance issues can be determined relatively easy. They can validated and reinforced for budgeting by periodic facility and asset condition evaluations by qualified professional engineering staff. Facility condition evaluation of existing facility components/system are important to benchmark actual condition of primary and secondary electrical systems, major facility HVAC systems, elevators, roofing system, fire

protection systems, other life safety and American's with Disabilities Act (ADA) compliance along with energy management opportunities. Condition assessment of production assets to perform primary function with quality output likewise is a valuable exercise.

In our example, facilities management leaders then figuratively have to “beg, borrow and steal”, with maximum creativity to get scarce appropriated State funds to accomplish their Challenges One as well as their Challenge Two. To improve, enhance existing facilities to meet environmental/regulatory standards and achieve energy management best practices is often a never-ending fiscal battle to state it simply. Often when we save “here” we can't invest it “there” for even higher ROI on initial savings. For governmental facilities leaders they watch it revert back to the “big, big pot” and continue the vicious cycle for the next fiscal year. Most of the time this basic scenario applies to the plant maintenance leader as well; “If you save it, it will fly away” and not come back next year as available revenue/profit to be used for additional continuous reliability improvement.

Challenge Three is Good News-Bad News: For Challenge Three; the receiving of capital funds or funds from the tenant/customer to enhance/renovate or add new production processes is both good news and bad news for the maintenance leader. The good news is that significant other special non-appropriated funds can and does evolve. Needed additions, renovations and often major/minor tenant/customer funded construction and facilities enhancements can be achieved.. Non-appropriated funds may even fund new craft positions if there is a large tenant population or selected tenants that have deep pockets with continuous research grants, trust fund gifts by alumni, etc, etc. New production processes provide new products, greater throughput, improved quality for more profit and hopefully better profit optimization choices. Profit optimization is good for all in a production environment.

But There is Some Bad News: The bad news side is that these production asset additions, renovations and facilities enhancements along with their major building system requirements all must be maintained ...forever. More bad news is the fact that the newly funded craft positions used to construct or support these minor and major renovations at a university often may not fully be used to maintain work in the existing facilities. Pure maintenance and repair must come from “appropriated funds” and related craft positions. The bad news and total maintenance costs exponentially compounds itself over time as “appropriated funds” then decrease for the enhanced existing facilities. We very seldom see a bronze plaque in a building lobby with donor's names for someone providing the maintenance funds. Nor will you very often see a building or wing in a building named for someone that is paying for the maintenance. We the taxpayers do most of that for governmental and educational system facilities.

Challenge Four: The last but certainly not the least of the challenges for all types of maintenance leaders is major additions of production assets and new construction. Here the commissioning and the maintenance and operating of new assets and facilities without adequate technical staff additions to maintain. Often plant maintenance is faced with startup of new production assets without adequate short and long-term engineering support. To continuously assume increased scope of work to maintain new assets or new construction plus be prepared to assume more work from Challenges One, Two and Three requires every bit of maintenance business process improvement that can be mustered. Top leaders must understand and see that all available resources are being maximized (if they truly are) and that the new maintenance requirements are valid. These added requirements can come from any of the above four challenges. It is very important here for the plant maintenance and facilities manager to have in place a way to document true requirements and to have an effective performance measurement process in place that we will discuss later in Part V.

Validate Results of Improvement: Performance measurement should cover multiple resource areas and be broad based to validate asset reliability and uptime, actual work accomplished, the backlog of work including deferred maintenance, the PM requirements and compliance, customer service metrics, time charged to work orders and actual charge backs to customer. These metrics along with MRO materials management metrics and other metrics to validate craft utilization (wrench time) and even craft performance can be extremely helpful in documenting true resource needs. A contract maintenance provider sums the net positive impact of all these into two key areas; ***profit and improved customer satisfaction***. And as we will see in Part V the *Maintenance Excellence Index* can provide the same basic process to manage the in house maintenance operation as an internal business. In house operations must validate results to top leaders and also provide for communications of positive results to all levels in their organization; especially down to our most important maintenance resource which is the craft work force.

Ensure Top Leaders Understand: Maintenance leaders must ensure their top level leaders fully understand “the high cost of gambling with deferred maintenance costs” whether in a research facility or in a precision machining center making aircraft components. The growing labor resource needs for increasing maintenance requirements must come from somewhere. Labor resource needs can be offset by either new craft resources and/or greater productivity of existing craft resources. The growing maintenance needs of an organization must continuously be highlighted to top level leaders. Just as important the maintenance operation must continuously improve its operation and be provided investments for implementing operational improvements that support a profit-centered approach to maintenance.

A Profit-Centered Approach is Needed: Large maintenance operations can and must operate as a true profit-centered maintenance organization. This must encompass all aspects of their extensive business enterprise; admin, financial, design, maintenance, construction, planning/scheduling, procurement and overall MRO materials management. Current constraints may continue from the public sector organizations and attitudes that in house maintenance is a “necessary evil” will die hard. But to survive in the 21 Century, both private and public sectors must put in place effective performance measurement processes that truly validate profit-centered results. Both must be able to show ROI when investment for improvements are received.

Do Not Kill the Goose: Budget cuts often fall in the one place they can hurt the worst and that is cutting of craft people, the technicians within all of the necessary trade’s areas who are out there doing the real work, the PMs, the emergency responses and week end service calls. The indiscriminate cutting of these scarce craft resources is a failed business practice of the 20th Century. Indiscriminate cutting is killing the goose that lays the egg whether “golden or plain brown eggs”. If an organization is not; a) doing continuous business process improvement and b) defining true maintenance requirements and achieving them, then cutting craft positions to meet budget is exactly like using blood letting as a new cure for a heart attack. It just will not work. The core competency for doing maintenance may not be present and contacted skills from a service provider may truly be needed. But regardless of the operation’s size or scope, the core requirement for maintenance remains forever. Dumb sizing of maintenance to match lean manufacturing trends can be fatal. It really will not work if one has truly maximized use of existing resources and valid maintenance requirements are not being accomplished. So do not kill the goose even for a CFO that wants a short term “golden egg”.

Do Not Gamble, Especially with Maintenance Costs: Do you know where you stand with applying today's best practices for maintenance and physical asset management? Do you have a baseline as to what is considered today's best practice and whether or you have applied them effectively? Are there best practices that you have heard about that we now need to really consider? If not, you may very well be gambling with the long-term success of your total production operation. Effective maintenance and physical asset management add value. They support profit optimization whether at one site or multiple sites. There are some very important steps that you should take to gain maximum value from your maintenance operation. Parts II, III, IV and V of this series can now help on your journey to maintenance excellence. Now is the time to take action to gain maximum return on that valuable investment.

Investment Requirements: The Maintenance Excellence Institute views all maintenance operations as profit centers. Maintenance and physical asset management operations within your organization can be true contributors to profit generation or increased service levels. The Maintenance Excellence Institute believes the cost of external resources and support services for continuous reliability improvement can be a very good investment. The value of external support is something that can be validated through the *Maintenance Excellence Index* that will be established in Part IV. The investment to retain The Maintenance Excellence Institute to support profit optimization and all continuous reliability improvement initiatives will be based upon a fixed fee plus actual travel expenses as they are incurred.

The opportunities for measurable results in almost all organizations are significant. It is highly recommended that The Maintenance Excellence Institute help to develop your Scoreboard for Maintenance Excellence and to conduct a pilot evaluation. To discuss the best approach for your organization, to request that a fixed cost proposal be developed for your organization and to receive a complete copy of this five-part series contact:

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Bio of Ralph W. "Pete" Peters

President and founder for **Ralph W. Peters and PEOPLE Inc.** a consulting firm with three divisions for total operations improvement; The Maintenance Excellence Institute (maintenance), The Manufacturing Excellence Institute (manufacturing) and The Institute for Public Service Excellence (governmental). His practical engineering experience and technical leadership in the maintenance, manufacturing and governmental productivity consulting fields has helped hundred of operations achieve manufacturing operations success and maintenance excellence in plant, fleet and facility maintenance operations.

His scope of experience in governmental operations productivity has firmly established his personal capabilities and that of The Institute for Public Service Excellence to support value added government services. Pete is a senior member of the Institute of Industrial Engineers, the Association of Facility Engineers and the Society of Maintenance and Reliability Professionals He has been involved in manufacturing operations management, systems implementation, facilities management, maintenance and governmental productivity consulting for more than 30 years. He is retired from the US Army Corps of Engineers/NC Army National Guard (1995) with 28 years of service and serving in Viet Nam and during Desert Storm.

Pete is author of the upcoming books; *Profit-Centered Maintenance: The New Millennium Strategy for Maintenance Excellence* and *PRIDE in Maintenance*. He is editor/primary author for *The Guide to Computerized Maintenance Management Systems*, Scientific American Newsletters LLC, author of the maintenance chapters in *The Warehouse Management Handbook* and *The Future Capable Company* from Tompkins Press and John Wiley's new *Handbook of Industrial Engineering, 3rd Edition*. A recognized leader in the areas of implementing manufacturing and maintenance best practices, profit-centered maintenance, performance measurement, productivity improvement for government operations and providing value-added total operations consulting, He is also the author of over 200 articles and publications and as a frequent speaker has delivered presentations on manufacturing and maintenance-related topics worldwide. He received his BSIE and MIE from North Carolina State and is a graduate of the US Army Command and General Staff Course and the Engineer Officers Advanced Course.

Clients from the manufacturing and maintenance sectors have included operations in the petrochemical, aerospace, manufacturing, mining, pharmaceutical, hand-tool manufacturing, utilities and automotive industries, in addition to construction fleet management, public transit operations and facilities management for healthcare, educational and governmental facility complexes.