

# Maintenance Management Excellence

## Quick Assessment Guide

Maintenance management Excellence is many things done well. It's plant performance, product quality, maintenance cost versus budget, service levels, inventory turnover, superior asset reliability etc. In order to achieve excellence, an organization must firstly understand all the elements required to attain this status. To achieve maintenance excellence requires establishing, what we believe as the fundamental building blocks of leadership, control, continuous improvement and ultimately strive for asset excellence. Within each of these blocks are elements at which an organization must excel.



Adapted from John D. Campbell "Uptime"

This guide aims to assist you in getting a snapshot of your maintenance organization's maturity level from the point of view of this maintenance management excellence framework. It will help you in drawing your improvement strategy by identifying the area/elements in which you need to improve / focus first.

### INSTRUCTIONS:

Assign a score to each of the statements in the following questionnaire based on how well you think your maintenance organization adheres to the statement. Use the rating on this table. When completing the questionnaires and tabulating the results, add up the score in each element table and calculate the total score gained in terms of percentage. The total maximum score is stated in each table's element.

RATING	Score
Strongly Agree	4
Mostly Agree	3
Partially Agree	2
Somewhat Agree	1
Totally Disagree	0

## 1. MAINTENANCE STRATEGY

Statement	Score (4,3,2,1,0)
The maintenance department has a defined mission, mandate and a set of objectives that are well documented and understood by all personnel concerned.	
The maintenance mission statement and objectives clearly support a published statement of the company's objectives and goals, and the role of maintenance in achieving the company's objectives is understood.	
We have a long term plan or strategy to guide maintenance improvement efforts which supports, and is linked to, the overall corporate strategy.	
We have a set of policies or guiding principles for maintenance. Maintenance is seen as a process not a function.	
Our approach to maintenance is proactive. We do our best to prevent breakdowns and when something breaks we fix it immediately.	
Annual maintenance budget is prepared based on a long term improvement plan, scheduled overhaul strategy and history of equipment performance. Maintenance budget is related to expected performance and indications are provided as to the likely outcome if work is to be deferred.	
The maintenance budget has an allowance for any project work being done by the maintenance department. If not, project work is budgeted separately and accounted for outside of maintenance.	
Total (max. 28)	

## 2. ORGANIZATION / HUMAN RESOURCES

Statement	Score 4,3,2,1,0
Maintenance staffing level is adequate, highly capable and experienced.	
Functions covering plant needs are fully defined, and our employees understand what is / is not expected of them, and organizational charts are current.	
The maintenance organization is mostly decentralized and organized by area or product line.	
First line supervisors are responsible for at least 12 to 15 maintenance workers.	
Adequate support staffs are available to allow supervisors to spend more than 75% of their time in direct support of their people.	
Overtime represents less than 5% of the total annual maintenance man-hours. Overtime is not concentrated in one trade group or area, but it is well distributed.	
Regular technical training is provided to all employees and is more than 5 days / year / employee. Maintenance supervisors have also received formal supervisory training.	
A formal established apprenticeship program is employed to address the maintenance department's needs for qualified trades. Clear standards are set for completing the apprenticeship programs.	
Part of the pay is based on demonstrated skills and knowledge and/or results and productivity.	
Contractors are used to augment plant staff during shutdowns and/or for specific projects or specialized jobs. Their cost / benefit is periodically reviewed.	
<b>Total (max. 40)</b>	

### 3. MAINTENANCE TACTICS

Statement	Score 4,3,2,1,0
Less than 5% of the total maintenance work man-hours is devoted to emergencies (e.g.: unscheduled shutdowns).	
Condition-based maintenance is favoured over time or cycle based maintenance.	
Use of condition-based maintenance techniques such as vibration analysis, oil sampling, non-destructive testing (NDT) and performance monitoring is widespread.	
Preventive and/or predictive maintenance represents 60% or more of the total maintenance man-hours.	
Compliance with the PM program is high: 95% or more of the PM work is completed as scheduled.	
Results from PM inspections and failure history data are used to continually refine and improve effectiveness of the PM program.	
For new equipment we review the manufacturer's maintenance recommendations and revise them as appropriate for our specific operating environment and demands.	
We used a formal reliability based program for determining the correct PM routines to perform. That program is still used for continuously fine-tuning and improving our PM performance.	
<b>Total (max. 40)</b>	

#### 4. PLANNING AND SCHEDULING

Statement	Score 4,3,2,1,0
A plant equipment register exists, which lists all equipment in the plant that requires some form of maintenance or engineering support during its life.	
Over 90% of maintenance work are covered by a standard written work order, standing work order, PM work order, a PM checklist or routine.	
Over 80% of maintenance work (preventive, predictive and corrective) are formally planned by a planner, supervisor or other person at least 24 hours or more before being assigned to the trades.	
Non-emergency work requests are screened, estimated and planned (with tasks, materials and tools identified and planned) by a dedicated planner.	
Realistic assessments of jobs are used to set standard times for repetitive tasks and to help schedule resources.	
A priority system is in use for all work requests / orders. Priorities are set using pre-defined criteria, which are not abused to circumvent the system.	
Work for the week is scheduled in consultation with production and is based on balancing work priorities set by production with the net capacity of each trade, taking into account emergency work and PM work.	
All shutdowns are scheduled using either critical path or other graphical methods to show jobs, resources, time frames and sequences.	
Work backlog (ready to be scheduled) is measured and forecasted for each trade and is managed at less than 3 weeks per trade.	
Long term plans (1-5 years) are used to forecast major shutdowns and maintenance work and are used to prepare the maintenance budget.	
<b>Total (max. 40)</b>	

## 5. MATERIALS MANAGEMENT

Statement	Score 4,3,2,1,0
Service levels are measured and are usually high. Stockouts represent less than 3% of orders placed at the storeroom.	
Parts and materials are readily available for use where and when needed.	
Distributed (satellite) stores are used throughout the plant for commonly used items (e.g.: fasteners, fittings, common electrical parts).	
Parts and materials are restocked automatically before the inventory on-hand runs out and without prompting by the maintenance crews.	
A central tool crib is used for special tools.	
Inventory is reviewed on a regular basis to delete obsolete or very infrequently used items. An ABC analysis is performed monthly.	
Purchasing / Stores is able to source and acquire rush emergency parts that are not stocked quickly and with sufficient time to avoid plant downtime.	
Average inventory turnovers are greater than 1.5 times.	
Order points and quantities are based on lead time, safety stock and economic order quantities.	
Inventory is controlled using a computerized system that is fully integrated with the maintenance management / planning system.	
<b>Total (max. 40)</b>	

## 6. PERFORMANCE MEASURES / BENCHMARKING

Statement	Score 4,3,2,1,0
Labour and material costs are accumulated and reported against key systems and equipment.	
Downtime records including causes are kept on key equipment and systems. This records are periodically analyzed to generate continuous improvement actions	
The maintenance department has a set of performance indicators that are routinely measured and tracked to monitor results relative to the maintenance strategy and improvement process.	
All maintenance staff has been trained in or taught the significance of the measures we use. Most of us can read the measures and trends and can determine whether we are improving our overall performance or not.	
All maintenance trades / areas can see and understand the relationship between their work and results of the department overall. If a particular trade / area is weak they can see it and work to correct it.	
Performance measures are published or posted regularly and kept available / visible for all department staff and trades to see and read.	
Internal and/or industry norms are used for comparison.	
Maintenance performance of “best in class” organizations has been benchmarked and used to set targets for performance indicators.	
<b>Total (max. 32)</b>	

## 7. INFORMATION TECHNOLOGY

Statement	Score 4,3,2,1,0
A fully functional maintenance management system exists, which is linked to the plant financial and material management systems.	
Our maintenance and materials management information is considered to be a valuable asset and is used regularly. The system is not just a “black hole” for information or a burden to use that produces no benefit.	
Our maintenance management system is easy to use. Most of the maintenance department, especially supervisors and trades, has been trained on it, can use it and do use it.	
Our planners / schedulers use the maintenance management system to plan jobs and to select and reserve spare parts and materials.	
Parts information is easily accessible and linked to equipment records. Finding parts for specific equipment is easy to do and the stock records are usually accurate.	
Scheduling for major shutdowns is done using a project management system that determines critical paths and required levels of resources.	
Condition-based maintenance techniques are supported by automated programs for data analysis and forecasting.	
Expert systems are used in areas where complex diagnostics are required.	
<b>Total (max. 32)</b>	

## 8. RELIABILITY ANALYSIS

Statement	Score 4,3,2,1,0
Equipment history is maintained for all key pieces of equipment showing cause of failure and repair work completed.	
Equipment failures are analyzed to determine root-cause and prescribe preventive measures.	
Our failure prevention efforts are mostly successful. We can usually eliminate the problems we focus on without creating new problems.	
Equipment Mean Time Between Failures (MTBF) and process or mechanical availability are logged/calculated/forecasted.	
Value-risk studies have been conducted to optimize maintenance programs.	
All equipment has been classified based on its importance to plant operations and safety. The classification is used to help to determine work order priorities and to direct engineering resources. We work on the most critical equipment's problems first.	
Reliability statistics are maintained even though our employees have a good feel for the best and worst equipment.	
Reliability-centered maintenance or other formal analysis is used to determine the optimum maintenance routines to perform on our equipment.	
<b>Total (max. 32)</b>	

## 9. EMPLOYEE EMPOWERMENT

Statement	Score 4,3,2,1,0
We don't have a "Command and Control" organization with highly disciplined procedures.	
Multi-skilled tradespeople (e.g.: electricians doing minor mechanical works, mechanics doing minor electrical work, etc.) are a key feature of the organization.	
Operators understand the equipment they run, perform minor maintenance activities like cleaning, lubricating, minor adjustments, inspections and minor repairs (not generally requiring the use of tools).	
Supervisors regularly discuss performance and costs with their work teams.	
Continuous improvement teams are in place and active.	
Much of the work are performed by self-directed work teams of operators, maintainers and engineers.	
Maintenance is a part of the team involved during design and commissioning of equip. modifications or capital additions to the plant.	
Trades usually respond to call outs after hours. Operations can get needed support from maintenance trades quickly and with a minimum of effort.	
Call outs are performed by an on-shift maintainer who decides what support is needed without reference to a supervisor for guidance. Operations do not decide who will be called.	
Partnerships have been established with key suppliers and contractors; Risk-sharing is a feature of these arrangements.	
<b>Total (max. 40)</b>	