

OBJECTIVE OF THIS SURVEY

- The objective of this reliability and maintenance assessment is to determine where your maintenance organization strengths and determine its areas and opportunities to correct and improve. This survey will allow the organization to view its structure, relationships, process and the people involved in their day to day maintenance activities. This is the first step in the overall maintenance system improvement and development.
- There will be 129 survey questions that you need to answer which is divided into Twelve Disciplines of Maintenance Management. Try to answer to the best you can on the question at the bottom of the survey, your point of view definitely counts on this survey.

PLEASE READ and FOLLOW THE INSTRUCTIONS CAREFULLY

- We would like each of you to respond and answer the question the way you see your organization doing it now and not what it needs to be done in the future. You don't need to write your name so that we can create an unbiased result at the end of each survey.
- Kindly select only "ONE" of the letter that you think you and your organization is currently doing by checking the box. If after some thoughts, you want to change your answer kindly place an X on the checked portion letter and check the letter for your final answer, this is not a quiz. Letters indicates as follows :

A) I do not know the answer to this question

B) No, means you know the value but this simply does not exists in our plant

C) Sometimes, this is being used to some extent or when the need only arise and not on a regular basis

D) Yes, our people knows its value and we use them on to a good extent

E) Always, means that this survey question is very important to my organization and we comply to it.

- If there are any survey or assessment questions that you don't understand, you may call the facilitator for clarification regarding the question.
- Kindly answer the question on the bottom part that you feel is relevant and important to your plant. If space is not sufficient, you may write at the back. We would very much appreciate if you can provide us your thoughts regarding this.
- Kindly take your time in answering this survey, you will be given 2 hours for the duration of the survey, do not rush in answering each survey as the output of the overall survey is important to your organization.
- We would like to repeat in the instruction that you need to answer based on how you are doing them now and not what you think your industry should be doing. Our point is to determine how you compare with the best in class industries.
- If you honestly believe in your own opinion that the question is not applicable in your plant, kindly indicate n.a. on the box as this is not applicable to my plant.

SUMMARY OF MAINTENANCE ASSESSMENT QUESTIONNAIRE

Legend : A = 1 point, B = 2 points, C = 3 points, D = 4 points, E = 5 points

No.	Maintenance Assessment	Total	Assessment
1	Training Skills and Education	12	
2	Maintenance Indices and KPI's	10	
3	Operator and Maintenance Partnership	12	
4	Basic Equipment Condition	11	
5	Preventive Maintenance	11	
6	MRO Spare Parts and Management	12	
7	Life Cycle Management	10	
8	Lubrication Management	11	
9	Root Cause Failure Analysis	10	
10	Reliability and Continuous Improvement	10	
11	Condition-Based Maintenance	10	
12	CMMS Software	10	
TOTAL POINTS		129 questions	

SCORING RANGES : SCORING RANGES :

600 to 645 points : World Class Maintenance – Best in Practice

516 to 599 points : Very Good Performance, Effective Operations & Maintenance, close to World Class

387 to 515 points : Above Average Performance, you are on your way to World Class

258 to 386 points : Average Performance, many opportunities for improvement

257 and below : Below Average Performance, many opportunities for improvement

DISCIPLINE 1 :Training, Skills and Education Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Does your company allocate budget for training based on the training needs of your people ?					
2 Is your training based on the needs of your maintenance and operations people ?					
3 Does you management provide some expectation as to why you need to attend this training and what is the plan after you completed the training ?					
4 Is there a regular yearly calendar of training schedule being provided with your maintenance and operations people ?					
5 Is there a training department in your plant ? If you say yes, do they have a clear objective, goal and plan to foster the knowledge and skills of your people ?					
6 Do other departments in your industry support the existence of your training department as a vital tool in improving the plant's productivity ?					
7 Does training make a follow up to the people they have trained if the training had been utilized or not or what needs to be done so the people can use and benefit from the training ?					
8 Does management allocated time for their people to attend to training or they are being pulled back to work always to cope up with the day to day problems in the plant ?					
9 Is the skills and competency of the people updated, reviewed, or evaluated by the training or their subordinates regularly ?					
10 Does your people know what training courses they needed in order to perform their jobs and develop their skills ?					
11 Are your people equipped not only with the knowledge both practical and theoretical to perform their jobs ?					
12 Does your management, superintendents, supervisors also attend training together with their people ?					
What do you think should be done in order to improve the skills/knowledge of your people ?					

DISCIPLINE 2 : Maintenance Indices and KPI's Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Are there KPI's (Key Performance Indicators) and measures tracked and reviewed by your organization on a regular basis ?					
2 Are maintenance craftspeople involved in setting and meeting goals and objectives with the maintenance department ?					
3 Are any of the following measured by your maintenance PM Compliance, Ratio of PM hours vs Emergency manhours, PM Completion ?					
4 Are any of the following measured by your maintenance team Number of breakdown, MTBF, downtime, MTTR, Availability, Reliability, OEE ?					
5 Are you familiar on what constitute a breakdown or when to say a breakdown exists. Example if you have a back-up and the duty is running and it failed and you switch on the back-up equipment, was there a breakdown at all ?					
6 Does your management together with your people review the cost of doing maintenance and are there any strategies or targets to lessen or reduce your maintenance costs?					
7 Are the maintenance people motivated to challenge the goals, and when the goals are met or exceeded are the maintenance rewarded or recognized in any form ?					
8 Is the whole maintenance people involved in the KPI and are you familiar with the plant's goals and targets for the year ?					
9 Do you think the KPI's and measures you are currently tracking important to your organization or they need to be change at all ?					
10 Are data such as downtime, breakdown, captured regularly and can easily be known or retrieved example total downtime last December 2012, and what equipment is the main contributor for the downtime ?					
<p>What do you think in your own point of view are the most important measurements and KPI's that your maintenance team should be focusing and tracking ?</p> <hr/> <hr/> <hr/> <hr/>					

DISCIPLINE 3 : Operator/Maintenance Partnership Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Does maintenance teach or coach operators about their equipment and knows how to perform very minor repairs ?					
2 Is there an equipment checklist to be done on their equipment And does operator perform the checks completely ?					
3 Is there a program or any strategy to enhance the skills of of the operator on their equipment so that they can understand their equipment intimately ?					
4 Does operator assists the maintenance during repair period when the equipment is down ?					
5 Can the operator spot problems such as noise, excessive vibration or others before a breakdown happen and do they communicate the problem with the maintenance ?					
6 Does the operator calls maintenance for repairs that you think are very minor and can be done by operator themselves ?					
7 Is PM schedules always defer by operations during their actual schedule to cope up with production and productivity ?					
8 Is there some form of technical training for your operator to familiarize themselves not only with operating but to understand the functions of each sub-assembly of their equipment/assets ?					
9 Does operator care for the equipment by cleaning, lubricating, and taking care of the basics or they just operate the equipment until it fails ?					
10 Does your operator understand the importance of cleanliness on their equipment and maintaining it clean always ?					
11 Does your operator understand the importance of lubrication and perform them regularly on their equipment ?					
12 Does your operator understand visual control and how they can be used on their equipment to simplify inspection and detect problems on their equipment					
What do you think will be the most important activities in order to strengthen operator and maintenance relationship in your plant ? <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>					

DISCIPLINE 4 : Basic Equipment Condition Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Does operator and maintenance knows what basic equipment equipment condition is all about and who is responsible ?					
2 Are oil leaks, air leaks being exposed & addressed immediately and does operators and maintenance knows its impact on the equipment besides safety issues ?					
3 Are sources of contamination, dirt, leaks being addressed on the equipment and permanent countermeasures are deployed to prevent them from recurring ?					
4 Are all the gauges, charts, sensors and protective devices in the equipment working and does operator know the limits of gauges in their equipment ?					
5 Can operators spot problems on their equipment such as Abnormal noise, excessive vibration, unwanted smell such as burnt wires, motors,					
6 Does the operator perform the lubrication on the equipment themselves and do they know the lubricating points, min-max quantity needed and type of lubricant to be used					
7 Does your equipment has complete bolts, fasteners, screws to keep vibration minimum and controlled ?					
8 Does operator knows how to interpret mechanical drawings and simple schematic diagram of the asset or system ?					
9 Is the equipment your operator is operating maintained clean, is there a time for operators to clean their equipment either before of after their shift ?					
10 Is the operator been trained on lubrication, knowledgeable on lubricants and how they are being contaminated ?					
11 Are deteriorations, abnormalities, defects found addressed immediately on the equipment					
<p>What do you think is the best way you can suggest in order for operators to accept the responsibility and sustain the basic equipment condition of their assets ?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>					

DISCIPLINE 5 : Preventive Maintenance Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Is the frequency of Infant Mortality Failure or start-up failure high. Or does the equipment always fail right after performing Preventive Maintenance on the equipment ?					
2 During the planning stages, does the new and old equipment if they are of the same type receive the same amount of PM activities ?					
3 Does Preventive Maintenance and planners review their PM for accuracy, revisions, additions, deletions of PM activities to be done on a certain equipment ?					
4 Is the amount of emergency work, repairs reduced as a result of the Preventive Maintenance activities done ?					
5 Is the spares to be used on the equipment for a PM schedule well communicated ahead of time with the storeroom people ?					
6 Does operations allow maintenance to access the equipment For a scheduled PM, scheduled outage or shutdown and not deferred by the operations people ?					
7 If contractors are used for PM are they provided with a detailed list of procedure on what to do to the equipment and do they comply all the time ?					
8 If Predictive Maintenance or CBM exists in your plant do they communicate with PM before the scheduled PM regarding their assessment of the equipment using their non-destructive PdM Instruments					
9 Does your maintenance planners prepare or have a job plan and detailed procedures for a major shutdown or scheduled outage on the equipment before initiating it ?					
10 Is PM Compliance and ration of emergency work compared to determine the effectiveness of your PM activities ?					
11 Are equipment undergoing PM prioritize based on its criticality, severity and or the PM activities are the same for all equipment					
<p>Are you currently satisfied with your Preventive Maintenance activities, what do you think is the main problem you have right now and how can we improve upon them ?</p> <p>_____</p> <p>_____</p> <p>_____</p>					

DISCIPLINE 6 : MRO Spare Parts Management Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Are obsolete parts or spares that are a result of machines that are decommissioned communicated with the storeroom and removed from the storeroom ASAP ?					
2 Does the people from your storeroom for spareparts being managed by the maintenance department ?					
3 Is the number of stock-out high ? (Note stock out is defined as the number of times your people request for a part in the storeroom and the part has zero stocks)					
4 Is your spareparts inventory automated and included in your CMMS (computerization software) and is the actual inventory and systems inventory (computer) more than 95% accurate ?					
5 Are the parts with warranty, shelve life or expiration made known to the maintenance department ?					
6 If your plant is 24 hours operating, does the storeroom also runs for 24 hours. If not, and your storeroom is from 8 to 5 pm does it take more than 2 hours for storekeeper to respond when the breakdown happens after their shift at 10:00 pm					
7 Does the storeroom provide a card catalogue for all the spare parts and are they updated regularly for additional parts and those that are obsolete ?					
8 Are maintenance knowledgeable in identifying the correct parts code or part number of the part in the event a breakdown happens and a part needs to be replace ?					
9 Is the amount of emergency buying high and does the maintenance keep parts in their secret hiding places					
10 Does your storeroom use bar coding in issuing the parts to Maintenance ?					
11 Can maintenance make a decision on whether to stock or not to stock a part or they always rely on the vendor or OEM					
12 Does your maintenance team review the cost of non-moving and obsolete parts in your storeroom ?					
What do you think is the number 1 problem in your spare parts and your recommendation to it ? <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/>					

DISCIPLINE 7 : Life Cycle Management Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 When considering to award a part to a vendor does your organization based the decision to award based on the Life Cycle of the part ? (Sometimes will be expensive but the part will pretty much last longer than the others)					
2 When deciding to purchase new equipment, does your organization also compare the cost to maintain the equipment before making any decision to purchase ?					
3 When deciding to localize some spares, does your team also study the metallurgical aspect or the strength of material of the part and compare its life.					
4 When commissioning new equipment in your plant, does your organization compare the time to commission the equipment based on the existing time old equipment was commissioned ?					
5 Does your purchasing or requisitioning people aware of Life Cycle Management ?					
6 When your plant purchase new equipment, does your organization also compare and study the other cost in operating the equipment such as cost of spares replacement, maintenance cost, commissioning costs, cost of consumable parts etc.,					
7 When the same parts are obtained from 2 different vendors does your team provide a valid feedback to purchasing which part actually last longer and provide any recommendations ?					
8 When trying to modify some parts or spare in the equipment does your team compare the modified part before and after life compared to the existing part ?					
9 Does your maintenance team track how much it cost to maintain the equipment and make some study to reduce the cost of maintaining the equipment ?					
10 Is your maintenance team part of the decision making process on which vendor to award the spare or new equipment ?					
<p>Can you suggest how can we make both maintenance and your purchasing people aware of life cycle costing as the decision to award will definitely affect the performance of your equipment.</p> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>					

DISCIPLINE 8 : Lubrication Management Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Does your maintenance team understand the effects of contamination on oil, how your oil gets contaminated and how to control contamination ?					
2 Is your lubricant storage facility centralized and kept in an area that has a controlled humidity, temperature, lighting minimum dust ?					
3 Is your maintenance team aware of the temperature of the operating system of the equipment and the dropping point of the type of grease they are using ? Example Aluminum base grease is not recommended for temperatures above 175 deg F					
4 Is your maintenance team aware that different types of grease should not be mixed as they have different additives and may have some incompatibility issues ?					
5 Does your maintenance team sample your oil regularly to determine the condition of the oil itself					
6 Are your people aware on good practices regarding lubrication management and how it affects the performance of your equipment and assets ?					
7 Does your plant have an in-house laboratory for checking the condition of their oil ?					
8 Does your team understand how to interpret oil analysis report and the limits for each test ?					
9 Does the people performing greasing understand the correct quantity to apply and know when to stop greasing ? Do they any measuring equipment such as meters or headsets attached to the grease gun ?					
10 Does your maintenance team used closed type containers and not open type in tapping oil when on equipment as this has a direct effect on the contamination of oil ?					
11 Does maintenance used any means of filtration equipment when transferring new oil or changing oil on the equipment ?					
<p>What do you think is the main issue or problem you have in lubrication and suggestion on how to Improve on it ?</p> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>					

DISCIPLINE 9 : Root Cause Failure Analysis Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Does your maintenance team perform Root Cause Failure Analysis on recurring and failures with high impact ?					
2 Is your team familiar on the most basic types of wear and how to distinguish them such as abrasion, erosion, adhesion, and fatigue and how to control them ?					
3 Is your maintenance team equipped with the knowledge and technique on how to investigate equipment breakdowns and failures ?					
4 Is your management team aware that the objective of RCFA is not to blame or punish the culprit but to learn from the things that go wrong in the plant ?					
5 Does your people understand that Root Cause Failure Analysis can only be done when the evidence is preserve meaning that when the equipment is already repaired then it is not technically possible to perform a root cause					
6 Are you familiar with any of the following brainstorming, pareto, analysis, why-why analysis, fishbone or ishikawa diagram or any problem solving tools not mentioned in this question ?					
7 Does your team understand that performing root cause is not only about performing countermeasures and corrective actions but people involved should also change ?					
8 Is you organization no longer on the blame culture that when something goes wrong someone will answer to it ?					
9 For poor performers, does the company have any improvement plans for them besides terminating them ?					
10 Is there any strategy that exists in your plant to address human errors and reduce them by improving procedures and SOP					
<p>What do you think is the number one problem on maintenance you are currently experiencing and your recommendation on how we can improve on it ?</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>					

DISCIPLINE 10 : Reliability & Continuous Improvement Assessment

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Are there any strategy the currently exists in your plant besides PM that is design to improve the reliability of your plant ?					
2 Is your team familiar on the most basic types of wear and how to distinguish them such as abrasion, erosion, adhesion, and fatigue and how to control them ?					
3 Does your organization compared itself to other industry for benchmarking against their maintenance practices to see how well or not you are currently doing ?					
4 Are strategies such as Reliability-Centred Maintenance or any pillars on Total Productive Maintenance in place in your organization?					
5 Is your maintenance people highly motivated and involve in any initiative to improve the reliability of their equipment ?					
6 Is your current Preventive Maintenance effective in reducing the amount of emergency or reactive work and are the activities on your PM reviewed on a regular basis before initiating them ?					
7 Is your safety people also part of the reliability initiative of the plant or does maintenance and safety work hand in hand in improving both the safety and reliability of the equipment ? organization ?					
8 For people who have contributed and impact the improvement of reliability in their plant, are they well rewarded and recognize in any form for their initiative by the company ?					
9 Are you familiar with protective devices in your equipment and are they being inspected for functionality test on a regular interval ? (Examples of protective devices alarms, leds, emergency stops and others)					
10 Does your maintenance understand failure consequences that May lead to environmental or safety consequences and is there Any strategy on your maintenance to address them ?					
<p>If we are going to go on a quest to improve the reliability of your plant what do you think will be the biggest hindrance, drawback and what would your recommend on how to overcome it ?</p> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>					

DISCIPLINE 11 : Condition-Based Maintenance Assessment

Note that if Predictive Maintenance do not exists in your plant kindly check letter B

<u>Maintenance Survey and Assessment Questions</u>	A	B	C	D	E
1 Does predictive maintenance exists in your plant or are there maintenance people that uses non-destructive testing tools to check the condition of the equipment ?					
2 If you answer yes to question number one, is your Predictive Maintenance in-house meaning you have your own people Doing them or are they contracted by third parties ?					
3 Does your organization compared itself to other industry for benchmarking against their maintenance practices to see how well or not you are currently doing ?					
4 Does your Predictive and Preventive maintenance people communicate most especially on what to focus during a PM shutdown or scheduled outage ?					
5 Does your maintenance team find value in doing predictive maintenance such as vibration, thermography, ultrasonics, oil analysis and other techniques ?					
6 If you answer yes to item 1, are the people using this in your plant knowledgeable not only on the instrument but on its principles and are they certified in the first place. Note that most Predictive Maintenance have 3 levels of certification ?					
7 Does your people have any knowledge or understanding what predictive maintenance is all about and what is the role they play in your maintenance organization ?					
8 Can your predictive maintenance team make decisions to stop the equipment since a functional failure is on the verge of happening in the equipment they are monitoring ?					
9 Does your Predictive Maintenance have a regular monitoring schedule and are plotting down the results of their findings on each equipment they track ?					
10 Is the amount of corrective maintenance, emergency work and repairs reduced as a result of your Predictive and Preventive Maintenance activities in your plant ?					
<p>One of the problems faced by an organization is that most CBM or PdM users leave the Plant when they gained enough experience on the instrument or achieve level 2 up, what can you recommend the plant can do to sustain their presence in your plant ?</p> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>					

DISCIPLINE 12 : CMMS Assessment

Note that if a CMMS software do not exists in your plant kindly check the portion on B

<u>Maintenance Survey and Assessment Questions</u>					
1 Does your maintenance organization uses a CMMS (Computerized Maintenance Management Software) or any maintenance software for your maintenance ?					
2 Is your maintenance stores computerized and part of the CMMS software ?					
3 Is your CMMS software updated and are your maintenance craftspeople knowledgeable on how to use them such as inquiring inventory of a spare, updating work orders, what equipments are scheduled for PM, KPI report and others?					
4 Does your CMMS software capable of providing important information such as KPI's, total maintenance expenditures costs, maintenance budget, downtime and others ?					
5 Is your CMMS software capable of communication with other Softwares on maintenance as vibration, thermography, oil analysis and other PdM softwares?					
6 Does your maintenance find value in the use of their CMMS and that you think that it has benefited your industry in reducing the amount of manual work when doing things manually ?					
7 Are management decisions, goals and strategies based from the outcome of your CMMS data and reports ?					
8 Is there a procedure on encoding downtime and other failures from the equipment on the CMMS and are the data encoded reliable in the first place ?					
9 Are the features of your CMMS used and maximized by the maintenance function and knowledgeable on using them ?					
10 Does your CMMS reduced the amount of paperwork being on maintenance ?					
<p>What do you think should be fully automated in your maintenance function that is you are still currently doing manually ?</p> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>					