

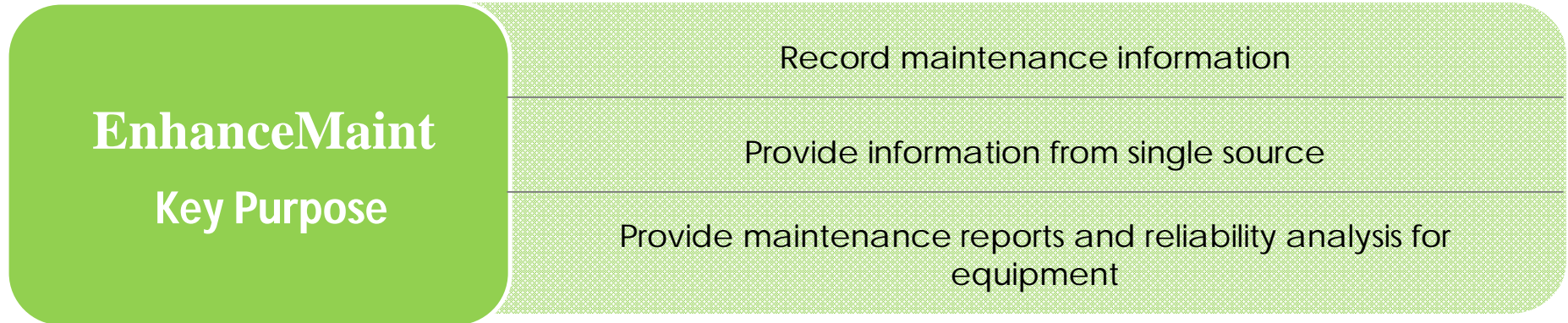


EnhanceMaint

Computerized Maintenance Management system

OVERVIEW

- **EnhanceMaint** - Enterprise Asset Management system helps you **Define, Manage, Maintain & Optimize** assets critical to your business



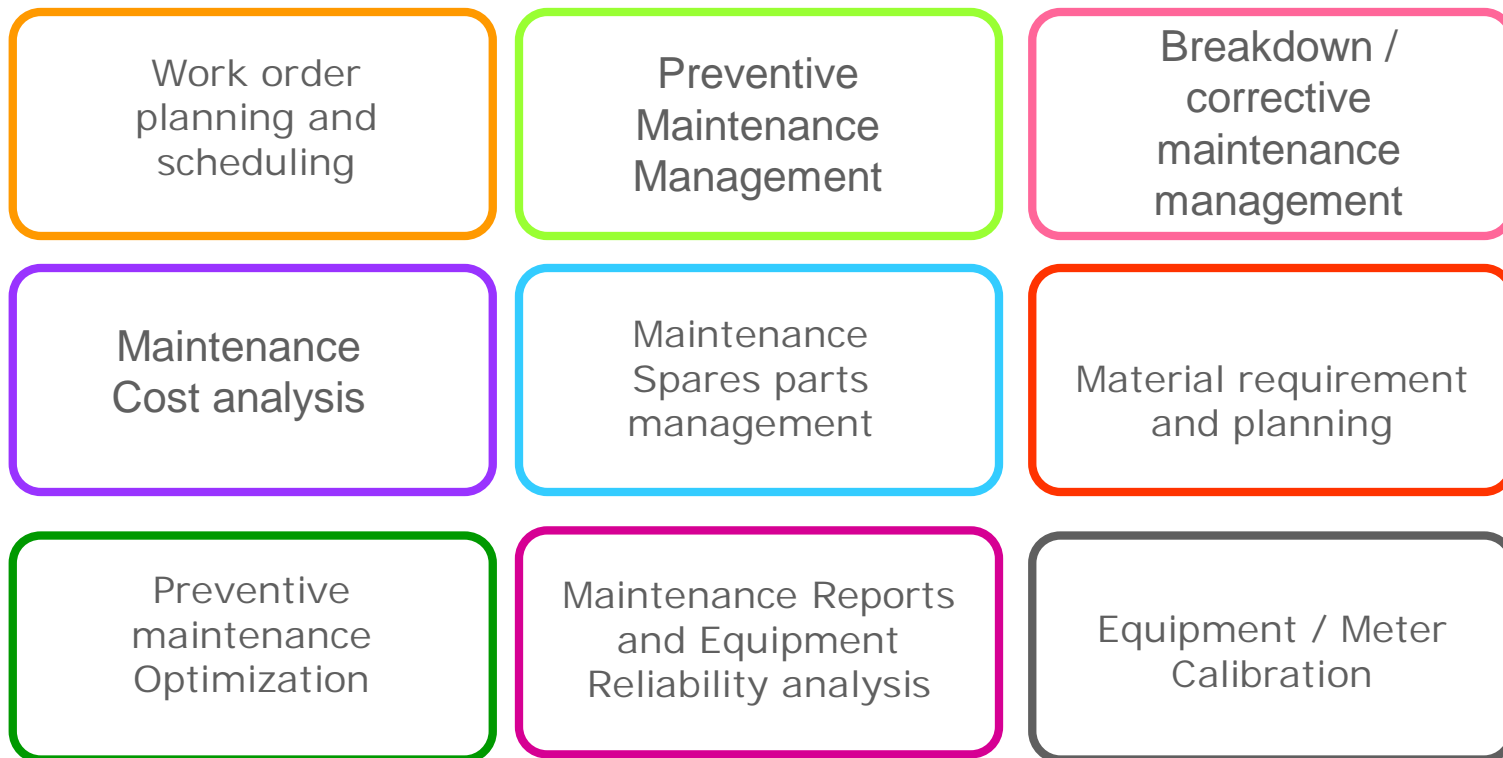
EnhanceMaint addresses and improves the following key areas in asset management

- ***Asset Performance***
- ***Asset Availability***

Key Success Factor (KSF) - in manufacturing companies as they depend on **availability & performance** of Physical Assets

Integrated maintenance function in single suite.

EnhanceMaint EAM



Software for equipment & plant maintenance management.

Active WO

WO Date	WO No	Plant Line	Equip. Code	Equip. Desc	WO Desc	Priority	Requestor
15-Dec-17	WO12179	BT	BTASLY1	Battery Assembly station 1	Machine not working	Low	Kartik
15-Dec-17	WO121710	CP	--	--	Charging of Batteries	Low	Kartik
16-Dec-17	WO121712	CP	WND1	Coil Winding 1	Feeded motor conveyor not working	High	Sham Pillai
16-Dec-17	WO121713	BT	BTASLY2	Battery Assembly Station 2	Machine not working	Low	Sham Pillai
16-Dec-17	WO121714	BT	BTASLY2	Battery Assembly Station 2	Trolley Wheel not working, Machine MCB Tripping	Low	Sham Pillai
16-Dec-17	WO121715	BT	BTASLY1	Battery Assembly station 1	Machine not working	Medium	Sham Pillai
15-Jan-18	WO01185	BT	BAT2	Battery Testing 2	Main MCB tripping	Low	Sham Pillai
16-Jan-18	WO01187	BT	BTASLY1	Battery Assembly station 1	Machine not working	Low	Sham Pillai
21-Jan-18	WO01188	BT	BAT2	Battery Testing 2	Main MCB tripping,	Low	Sham Pillai
30-Jan-18	WO011811	BT	BTASLY2	Battery Assembly Station 2	Machine MCB Tripping	Medium	Sham Pillai
03-Jan-18	WO011812	BT	BTASLY1	Battery Assembly station 1	Trolley Wheel not working	Medium	Sham Pillai
17-May-17	WO05172	BT	BAT2	Battery Testing 2	No reading on display	Low	Sham Pillai
14-Jul-17	WO07171	CP	WND1	Coil Winding 1	Motor not working	Low	Sham Pillai
14-Jul-17	WO07172	CP	WND2	Coil Winding 2	Motor not working	Low	Sham Pillai
14-Jul-17	WO07173	CP	TT1	Testing Station 1	Loose Testing Jig	Low	Sham Pillai
18-Jul-17	WO07174	CP	WND2	Coil Winding 2	Motor not working	Low	Sham Pillai
18-Jul-17	WO07175	CP	SPB2	Spray booth 2	Spray gun holder loose	Low	Sham Pillai
21-Jul-17	WO07176	CP	SPB2	Spray booth 2	diode fail	Low	Sham Pillai
15-Dec-17	WO12172	BT	BTASLY1	Battery Assembly station 1	Machine MCB Tripping, Loose Testing Jig , Machine MCB Tripping	Medium	Sham Pillai
15-Dec-17	WO12173	BT	BAT2	Battery Testing 2	Trolley Wheel not working, Main MCB tripping	Medium	Sham Pillai
15-Dec-17	WO12175	CP	WND2	Coil Winding 2	Tube Light Not working, Feeded motor conveyor not working	Medium	Sham Pillai
15-Dec-17	WO12176	BT	BAT2	Battery Testing 2	Loose connection at the terminal, Loose Testing Jig	Low	Sham Pillai
15-Dec-17	WO12177	PW	COB1	Coating Booth	Low current	Low	Kartik
15-Dec-17	WO12178	BT	BTASLY1	Battery Assembly station 1	Tube Light Not working	Low	Kartik

KPI Dashboard for Maintenance Management System

EnhanceMaint
Enterprise Asset Management

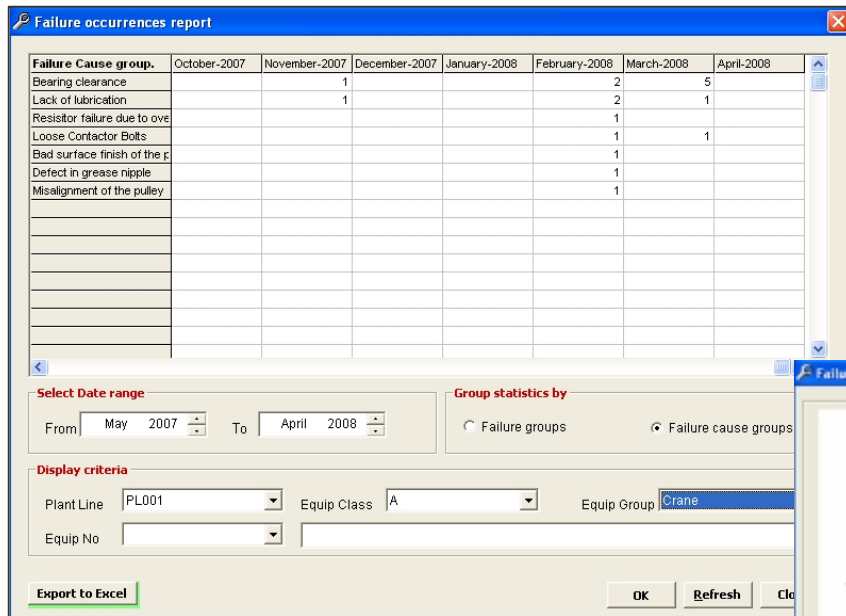
Status = Ready Current User: Sham Pillai EnhanceMaint - Ver: 6.16.1 Date: Wednesday 23-May-2018

Why to record maintenance information ?

Accurate information is critical for making decision that ensures the reliable operation of the equipment.

The main elements of the maintenance function is

- o Collecting
- o Analyzing
- o Measuring maintenance data and
- o Taking decision



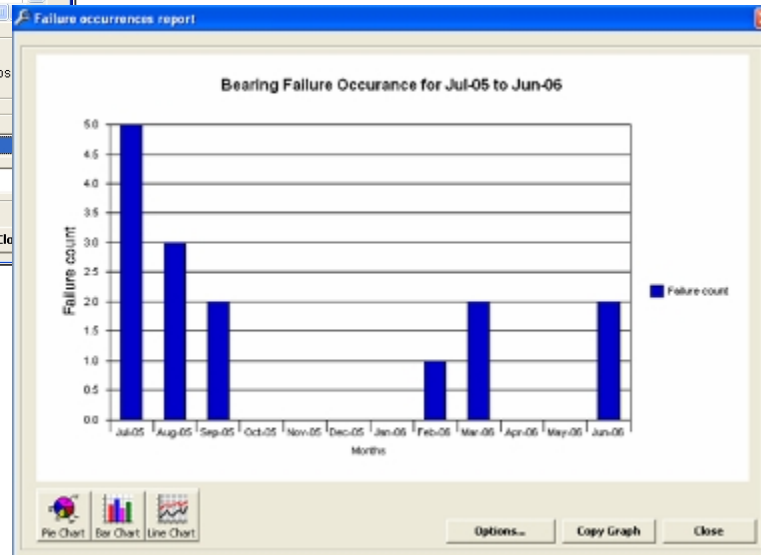
Failure Cause group.	October-2007	November-2007	December-2007	January-2008	February-2008	March-2008	April-2008
Bearing clearance		1			2	5	
Lack of lubrication		1			2	1	
Resistor failure due to ove					1		
Loose Contactor Bolts					1	1	
Bad surface finish of the p					1		
Defect in grease nipple					1		
Misalignment of the pulley					1		

Select Date range: From May 2007 To April 2008

Group statistics by: Failure groups Failure cause groups

Display criteria: Plant Line PL001, Equip Class A, Equip Group Crane

Buttons: Export to Excel, OK, Refresh, Close



How does EnhanceMaint benefit.

Helps you to manage work orders, preventive maintenance, Maintenance inventory, and maintenance Reports and analysis for your needs.

Record View

Work order type, area / Location

Work Ord No : W009092 Plant Line : PC 4

Equip.No : TTP3WL Equip. Desc : Trip test Panel with high current source (3WL)

Failure details

Job Type : Safety Failure Grp : Mechanical

Failure Desc : test

Action Taken : rftst

Cause Grp	Causes
Mi-5	As per yearly PM schedule

Remark : test

Status : Closed WO Open reason : TBR :

Planned Work order details

vWO No	Equip. No	Equip. Desc	vWO Description	Planned Date	Planned Time	Assigned Engg	Asgn
5	H40T	Haulick Roos 40T	Plan replacement of all Pu3 hydraulic tubings &	17-Nov-08	10:33:00 AM	Bangera Hemant	17-Nc
5	H40T	Haulick Roos 40T	Plan replacement of all Pu3 hydraulic tubings &	17-Nov-08	10:33:00 AM	Ajay Acharekar	17-Nc
45	LA	Linear Abrasive	Safety Guard on Motor of post grinding automat	12-Nov-08	12:01:00 PM	Ajay Acharekar	12-Nc
2115	--	--	-- test	18-Sep-09	12:05:00 AM	Anil Pawar	18-Se
2112	HHM	HYDRAULIC HACKSAW	Bulb to be replaced by tube light. Bulbs are	07-Oct-09	10:57:00 PM	Anil Pawar	07-Oc
2112	HHM	HYDRAULIC HACKSAW	Bulb to be replaced by tube light. Bulbs are	07-Oct-09	10:57:00 PM	SEA	07-Oc
2100	--	--	-- Pl.tranfer fan from pillar G5 to H5	13-Oct-09	8:25:00 PM	Anil Pawar	13-Oc
2070	Alex2	Post grinding Automat (New)	Pneumatic ball vibrator to be replaced currnt valve	29-Oct-09	8:26:00 PM	SEA	29-Oc
2073	--	--	-- Instamat door not closing.	24-Nov-09	8:26:00 PM	Dhuri Sudhakar	24-Nc
2073	--	--	-- Instamat door not closing.	24-Nov-09	8:26:00 PM	D.B Thakur	24-Nc

How does EnhanceMaint benefit.

Plan and organize maintenance work orders.

Plan Work Order

Plan WO | Pending WO List

WO Details

WO Type: Breakdown Maintenance Flag Days: 0 WO No: 2113

WO Desc: Berro for sensing Lamination stack in Magazine at 1st lam.feeding station is not working

Maint. Group: PE- Electrical Work desc: --

WO planned period.

From Date / Time: 15-Sep-09 13:57 To Date / Time: 15-Sep-09 18:57

Assignment and resources

Assign Engg. | Assign-Sub-Contractor | WO Instruction. | Material Requirement

Engg. No	Engg. Name	From Date	From Time	TO Date	To Time
155706	SAMBER KERHAR	15-Sep-09	13:57	15-Sep-09	18:57
999	SEA	15-Sep-09	13:57	15-Sep-09	18:57

Remarks: _____

Pending WO List Save Show all planned WO Refresh Close

Work Order Slip

Work Ord No: 745 WO Requestor: sethumadhavan

Work Ord Desc: Name plate on the work station are worn out, functions are not visible.
Name plate to be replaced.

WO Date / Time: 03-Feb-09 1:39:00 PM

Equip No-Desc: IB3 Induction brazing

Asset No: 565510060382

Dept / Location: Induction Brazing --

WkOrdPriority: High JOB Type: Corrective Maintenance (SDUD)

Completion Details:

Action Taken: _____

Attended By: _____

Service Time: Start Date/Time: _____ End Date/Time: _____

Down Time: Start Date/Time: _____ End Date/Time: _____

Acknowledge By: _____

Date: _____ Sign: _____ Dept: _____

15-Sep-09

Plan Work Order

Plan WO | Pending WO List

Date	WO No	WO Type	Equip No	MC Desc	WO Desc
02-Jul-09	2107	Breakdown	GRN1	Grinding M/C	not working in Auto mode.
02-Jul-09	2109	Breakdown	--	--	Three Nos. of tubelights not working
02-Jul-09	2110	Utility Mainte	MKL_G	MKL grinder	Electrical , pneumatic connections c
02-Jul-09	2114	Corrective M	BlohmG	BLOHM HAWSEAT 75 SURFACE G	Pipe for cooling of m/c bed broken. I
02-Jul-09	2113	Breakdown	MAMO	mamo machine	Berro for sensing Lamination stack
01-Jul-09	2097	C.A.M (Con	ULC1	Ultrasonic Cleaning M/C	Air pipe is coming out, no hose clip
01-Jul-09	2096	Safety	GRN1	Grinding M/C	Heavy oil leakage.
01-Jul-09	2099	Utility Mainte	--	--	Provision of Tubelight & fan above n
01-Jul-09	2104	Utility Mainte	T8469/01	Lmination block assly fixture	Air pipes are very short. Pipe length:
01-Jul-09	2106	Corrective M	H63T	Haulick 63T	WF 725 error,Coupling protection en
30-Jun-09	2094	Corrective M	LA	Linear Abrasive	Pneumatic Dust bag shaking unit o
30-Jun-09	2090	Corrective M	Oko1	Okomoto	Abnormal sound came from grindin
30-Jun-09	2088	Breakdown	DM1	Drilling machine	spindle for drilling chuck is falling d

Equipment statistics and reliability Analysis

Machine Reliability analysis is just a matter of couple of clicks with EnhanceMaint which gives the clear picture of machine breakdown analysis and graphs, that facilitates the user to focus on specific failure cause..

Equipment Reliability Analysis

Failure Group - MTBF

Equip.No	Equip.Name	Fail Group	TB Down Time	No of BO	MTBF (Hrs)	MTBF (Days)
CC1	Chiling Table 1	Bearing	0833333581088	2	4271.48	177.88
CC1	Chiling Table 1	Compressed air		1	8543	355.88
CC1	Chiling Table 1	Electrical Connection		1	8543	355.88
CC1	Chiling Table 1	Pallet failure		2	8542	355.88
CC1	Chiling Table 1	Shaft failure		1	8543	355.88
CC1	Chiling Table 1	Split pin failures		3	8541	355.88

Select Year: From Jul 2005 To Jun 2006

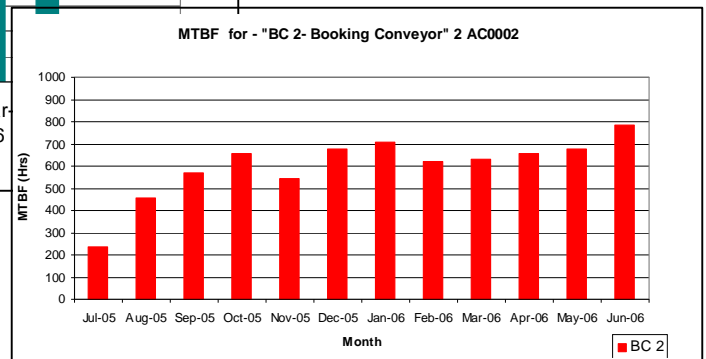
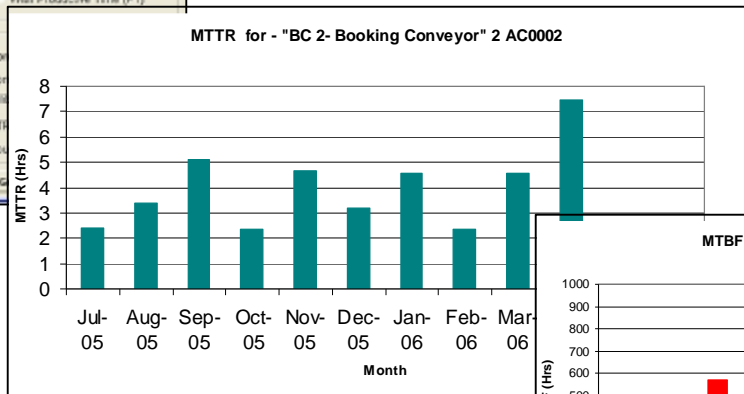
Select Statistics: With Equip. Available time With Productive Time (PT)

Filter criteria: Plant Line, Dept, Equip Group, Equip Class, Equip No (CC1), Equip Desc (Chiling Table 1)

Select Display: MTBF - Mo, MTTR - Mo, Equip Avail, MTBF/MTTR, Failure Group

Export to Excel

- MTBF / MTTR and Equipment availability are key performance indicators (KPI) of maintenance department.
- Monthly equipment availability.
- EnhanceMaint gives you the MTBF for each Cause group that helps to take a decision in that direction, that may be to increase or decrease the PM frequency, helping optimizing your PM package schedule.



Preventive Maintenance scheduling

For the success of maintenance it is important the PM Schedule is followed, EnhanceMaint's smart PM Scheduler highlights the PM Schedule status, easy for the user to identify and plan accordingly.

View Preventive Maintenance Schedule for Equipments

Total Records: 13

Equip Desc	Equip.Code	PM Package	PM Last Done	Next PM Date	Freq.(Days)	Ext.Agency	Engg.Nam	Maint Grp	Manufact	Serial NO	AMC PO NO	AMC Visits
L1 Pre testing	L1 PT	Bi-Monthly	24-Mar-18	23-May-18	60	--	Ramesh	Electro-Mex	--	--	0	0
L1 Laser	L1-LR	Bi-Monthly	19-Mar-18	18-May-18	60	--	Ramesh	Electro-Mex	--	--	0	0
L1 Post testing	L1-PST	Bi-Monthly	31-Mar-18	30-May-18	60	--	Ramesh	Electro-Mex	--	--	0	0
L1 Turn Table	L1-TT	Bi-Monthly	20-Mar-18	19-May-18	60	--	Ramesh	Electro-Mex	--	--	0	0
L2 Post testing	L2-PST	Bi-Monthly	31-Mar-18									
L2 Turn Table	L2-TT	Bi-Monthly	20-Mar-18									
L3 Auto Packing	L3-APCK	Bi-Monthly	02-Apr-18									
L3 Pre Testing	L3-PT	Bi-Monthly	01-Apr-18									
L3 Turn Table	L3-TT	Bi-Monthly	04-Mar-18									
L5 Multipole Testing Line	L5-MTST	Bi-Monthly	05-Mar-18									
ON/OFF Lever Printing 1	PRNT1	Bi-Monthly	23-Mar-18									
Twisted Wire Welding	TWWA3	Bi-Monthly	13-Apr-18									
Twisted Wire Welding	TWWA2	Bi-Monthly	19-Mar-18									

View Preventive Maintenance Schedule for Equipments

Monthly Schedule View

For Month: Jan - 2018 Show ■ Scheduled ■ Completed ■ Prepone/Postpone to adjacent month

Moithly PM S		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
L3-TT	L3 Turn Tabl			■																												
L5-MTST	L5 Multipole				■																											
TWWA2	Twisted Wire																			■												
L1-LR	L1 Laser																				■											
L1-TT	L1 Turn Tabl																					■										
L2-TT	L2 Turn Tabl																						■									
PRNT1	ON/OFF Leve																							■								
L1 PT	L1 Pre testin																															
L1-PST	L1 Post testi																															
L2-PST	L2 Post testi																															
L3-PT	L3 Pre Testir																															

Print PM Task List... Status = Ready (Update:11-Apr-2018)

Preventive Maintenance Optimization.

Tracking Failure causes with PM check List

Equip. Group:

Equip.No: BA3 150 Ton Thermoset Inj.Mldg. M/C

From: 27-Nov-08 To: 27-Feb-09

Failure details of - 150 Ton Thermoset Inj.Mldg. M/C

Equipment	Equip Desc	Failure Causes	MTBF(Hrs)	MTBF(Days)	BD Count
BA3	Equip Desc	Loose Contactor Bolts	Insufficient Data	Insufficient Data	1
BA3	Equip Desc	Wire Broken/Loose	471.14	19.63	3

Existing PM List

PM Task Group	PM Activity	Freq(Days)	PM Package Name	Assigned	Assigned To	PM
MI-1	Inspect the machine for abnormaliti	30	Maintenance Interval 1	--	--	05-
MI-1	Check for oil and air leakages	30	Maintenance Interval 1	--	--	05-
MI-1	Check the hydraulic oil level	30	Maintenance Interval 1	--	--	05-
MI-1	Clean glass tubes of flow meters	30	Maintenance Interval 1	--	--	05-
MI-2	Clen filters on the control cabinets	60	Maintenance Interval 2	--	--	04-
MI-2	Greasing on guide rails	60	Maintenance Interval 2	--	--	04-
MI-3	Check hydraulic high pressure hose	90	Maintenance Interval 3	--	--	03-

PM Optimization: With PM optimization user can rationalize the PM task list against the actual equipment down causes. When down time is recorded the cause of the down time is included in the record. In many cases down time can be prevented if the cause can be identified and tasks applied to the Equipment PM Task list. Also if the task is already assigned to the equipment, it could further be fine tuned by reviewing the MTBF of the cause and optimizing the PM task frequency.

Example: If the failure Cause - MTBF is 30 days and PM task is 19 days, there is a possibility to revise the PM task interval to less than 19 days (less than failure cause MTBF) and prevent the failure from re-occurring.

Key benefits and features

- ↪ Organize Maintenance work.
- ↪ Identify key problem areas
- ↪ Identify failure trends on equipment and its parts
- ↪ Rationalize PM task list (Track failure MTBF with PM frequency).
- ↪ Identify maintenance cost on asset- Material and Labor
- ↪ Identify spares average consumption and non-moving spares in stock
- ↪ Maintenance data available at single point of source
- ↪ Attach files to (Equipment drawings, material specs, calibration certificate, etc.
- ↪ Easy and fast retrieval of maintenance data, enhancing Office efficiency
- ↪ Details maintenance history reports & equipment reliability analysis.

VALUE PROPOSITION

- ↪ Ease of customization to meet customer MIS and business needs.

- ↪ User Role based dash board for quick access to maintenance data and navigate to details.

- ↪ ROI on investment period low as the software suite incorporates all key maintenance function in single package.

- ↪ Integration with external system to retrieve, store and export data, Export maintenance data to excel as required.

- ↪ Reduce equipment down time and get higher return on investment.

- ↪ Accessibility on hand held terminal helps access to real time maintenance data remotely

- ↪ Stream lining maintenance spares with integration to vendor and material purchase system.

- ↪ Material planning made easy through MRP module, providing forecast of Planned WO and Preventive maintenance material.



Thank You
Looking forward to work with you...

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