

TANGO™

CONDITION MANAGEMENT

PREVENT FAILURES IN SERVICE



Benefits

- Analysis of program results.
- Feedback on work order status and closure.
- Condition history for each location and machine.
- Integrate the results of ALL predictive maintenance technologies.
- Report connects tailored to individual user responsibility.
- Current status of all critical machines immediately available on your web browser.
- Problem details for each condition problem available in a drill down report with data if needed.



INTEGRATED CONDITION REPORT

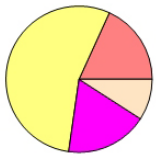
Browser Based—Requires (no installed software)

Color coded list shows most severe problems at top of the list.

Pie chart quickly shows how many assets are in a User's area are in states of problem severity.

Integrated Condition Status Report

User: John Reliable, Date: 10/13/2010, Time: 16:33:36



Color	Level	Entries	Description
Red	1	2 {18%}	Repair within 7 days
Yellow	2	6 {54%}	Repair within 30 days
Green	3	2 {18%}	Repair within 90 days
Blue	4	1 {9%}	Under Surveillance. No action required.

Work Order Status shows if work has been initiated by each Condition Entry.

Open Condition Entries

Severity	Asset	Component	Technologies	Days Awaiting Checkoff	Work Order Status	Work Order Numbers	Case Closure
1	CLDWELL	MOTOR1	Infrared, Vibration - Route	1358	1 of 2	02-14056	Close Entry
1	2CENTAC	Air leaks	Visual Inspection	1325	0 of 1		Close Entry
2	REACTOR	1FAN	Vibration - Special Test	1212	0 of 1		Close Entry
2	CASTING	2SPM1	Oil - Screening, Vibration - Special Test	1356	1 of 2	03-02011	Close Entry
2	WASTE	FANN3	Vibration - Route	630	0 of 1		Close Entry

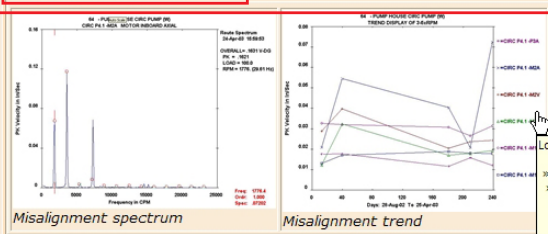
Location: 26CP Carbon Plant » BAKE » WASTE » FANN3 (Locate in Tree)

Entry	Severity	Technology	Faults
Jan-21-2009 By: John Reliable	2	Vibration - Route	<ul style="list-style-type: none"> Looseness - stationary component Misalignment

Recommendations: Perform laser align next planned outage; check base for looseness or soft foot
Comments: Vibration trend for misalignment increasing over last few months, now also showing some looseness. Could be base plate or fan mounting bolt problems. Need to check and correct any looseness issues, then perform laser alignment.

- Linked Documents
 - Misalignment spectrum
 - Misalignment trend
- Work Order Request: [Assign](#) CMM5
- Work Order Number: [Assign](#) CMM5
- Details Report View
- Status Comments
- Add Status Comment
- Linked document thumbnails

Planners or Plant Personnel may enter Work Order # for correction of condition problem.



When condition problem is corrected, Area Supervisor or Planner checks off the entry.

2	WASTE	FANS2	Electrical - Online	1473	0 of 1		Close Entry
2	7120067	Gearbox	Oil Analysis - Lab, Vibration - Special Test	1491	0 of 5	• Awaiting (x1)	Close Entry
3	1CENTAC	Air leaks	Visual Inspection	835	0 of 1	• Awaiting (x1)	Close Entry

Sorted By: Severity {Descending}

Clicking on Severity opens the Technology Status Report.

Under Linked Documents, view addition reports and docutments.

Case Closure shows that work has been completed and is ready for condition confirmation.

CONDITION MANAGER PROGRAM



Integrate, Organize & Communicate Predictive Maintenance Results

Edit Condition Entry
Location: Reliable Manufacturing, Inc. >> 801 Cooling Tower >> Tower >> CLDWELL >> MOTOR1

Condition Entry Details

Technology	Vibration - Route
Analyst	Mike Manager
Severity	1 {Repair within 7 days}
Entry Date	Jan-24-2007
Work Request	
Work Order	

Suspected Faults [Add]

Fault	Fault Group
<input checked="" type="checkbox"/> Drive end bearing failure	Mechanical

Recommended Action [Library]

Repair or Replace Motor

Check spelling

Comments

Drive end bearing showing advanced degradation, motor should be repaired at earliest opportunity - and monthly cleaning should be done.

Check spelling

Linked Documents [Add File] [Add URL] [Add Screen Capture]

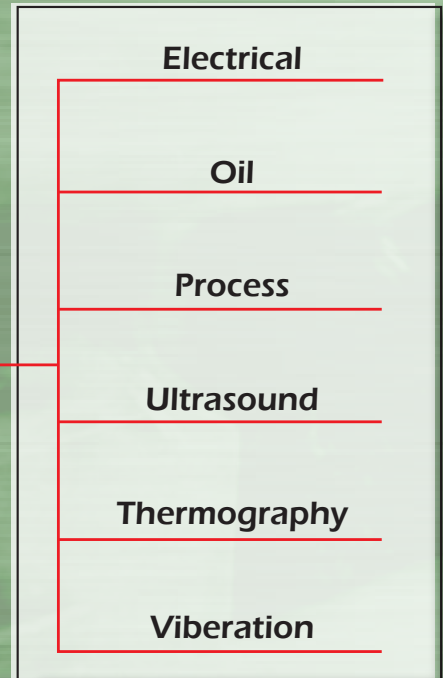
Description	Document Type
Vibe data - bearing	Condition Data Snapshot

Checkoff Status

Checkoff Date:

Checkoff Comment:

Check spelling



The Tango Condition Manager package allows each predictive maintenance technologist to input their knowledge and recommendations about a degraded machine. The Tango condition entry screen (above) provides a common interface for all plant predictive technologies

to document their results. Tango then integrates all of the technology condition information and presents the status to the plant through the plant intranet.

Plant maintenance personnel will receive, through the plant intranet, a status report of all degraded machines within their area and trigger the repair work order. Tango also allows reliability engineers to examine the past failure cycles of the machine or location to identify unreliability and possible root causes of the problem.

CONDITION ASSESSMENT TASK MANAGEMENT



The screenshot displays the Tango software interface. On the left, a tree view shows a hierarchy of assets under '43 - ROLLING MILL', including various furnace and pump components. A dialog box titled 'Condition Assessment Assignments -- Plant Asset Component' is open, showing a list of tasks with checkboxes for selection. The 'Condition Assessment History' window is also visible, displaying a table of assessment records for a specific asset.

Condition Assessment Assignments -- Plant Asset Component

Task Name	Selected
Cont Mill	<input type="checkbox"/>
Finishing Mill	<input type="checkbox"/>
Furnace	<input checked="" type="checkbox"/>
IR - Electrical	<input type="checkbox"/>
IR - Mechanical	<input checked="" type="checkbox"/>
MCE - Offline	<input checked="" type="checkbox"/>
MCE - Online	<input type="checkbox"/>
Oil Samples	<input type="checkbox"/>
Rev Mill	<input type="checkbox"/>
Support	<input type="checkbox"/>

Condition Assessment History

Unit: [Empty]
 Function: 43 - ROLLING MILL
 Asset: FURNACE HYD PUMP 1 (W)
 Component: Motor

Date	Task Name	Assessment	Condition Entry Info
5/7/2003	Furnace	Measured, Mildly Abnormal	
5/6/2003	IR - Mechanical	Measured, Nothing To Report	
5/6/2003	MCE - Offline	Nothing Measured -- Requested To Skip	

Assessment Cell Color Codes:

- No Condition Assessment
- Measured, Nothing To Report
- Measured, Mildly Abnormal
- Measured, Condition Entry
- Nothing Measured -- Equipment Down

Condition Assessment Task Management is an optional Tango function which allows the user to manage when condition tasks are to be performed, assign technologies to plant assets with the measurement interval and maintain a history of each measurement and its results for an asset.

The Condition Assessment Task Management function is useful in managing condition programs with multiple technologies, managing multiple subcontractors, and maintaining an easily assessable validation history of measurement results.

