Reliability Management News

24/7 Systems, Inc.

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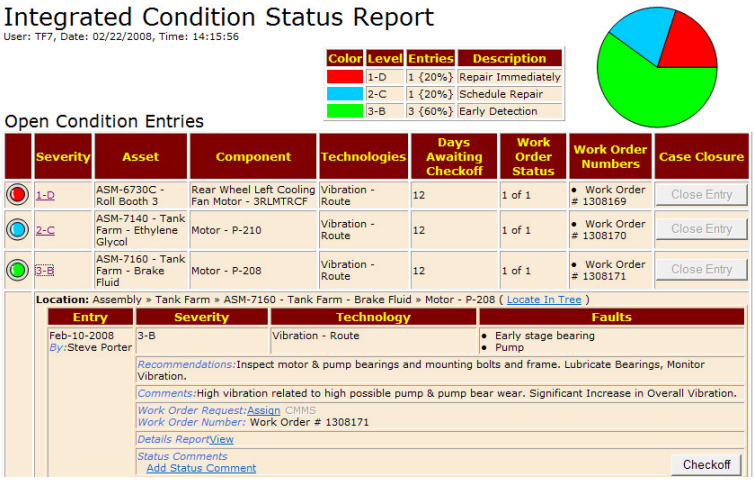
Bridging the Gap between Condition Monitoring Reports & Maintenance Action

Many industrial plants focus on training their condition monitoring analysts to high levels of technical proficiency, or search for service contractors with that capability - and then pay little attention to developing a process to ensure that the condition information drives an appropriate maintenance response.

Tango Web Service, in a supplemental role to the plant's CMMS system, can streamline the flow of equipment condition status between analysts, reliability engineers, and maintenance planners.

A couple of years ago one maintenance specialist at an automobile assembly plant in the Southeast would spend several hours each Tuesday reviewing e-mail reports coming from condition monitoring contractors providing vibration, oil, IR thermography, and ultrasonic analysis. After wading through the different formats and severity scales for each technology report, he would make decisions about which assets needed work orders in their SAP system.



Integrated Condition Status Report

User: TF7, Date: 02/22/2008, Time: 14:15:56

Color	Level	Entries	Description
	1-D	1 {20%}	Repair Immediately
	2-C	1 {20%}	Schedule Repair
	3-B	3 {60%}	Early Detection

Open Condition Entries

	Severity	Asset	Component	Technologies	Days Awaiting Checkoff	Work Order Status	Work Order Numbers	Case Closure
	1-D	ASM-6730C - Roll Booth 3	Rear Wheel Left Cooling Fan Motor - 3RLMTRCF	Vibration - Route	12	1 of 1	• Work Order # 1308169	Close Entry
	2-C	ASM-7140 - Tank Farm - Ethylene Glycol	Motor - P-210	Vibration - Route	12	1 of 1	• Work Order # 1308170	Close Entry
	3-B	ASM-7160 - Tank Farm - Brake Fluid	Motor - P-208	Vibration - Route	12	1 of 1	• Work Order # 1308171	Close Entry

Location: Assembly » Tank Farm » ASM-7160 - Tank Farm - Brake Fluid » Motor - P-208 (Locate In Tree)

Entry	Severity	Technology	Faults
Feb-10-2008 By:Steve Porter	3-B	Vibration - Route	• Early stage bearing • Pump

Recommendations: Inspect motor & pump bearings and mounting bolts and frame. Lubricate Bearings, Monitor Vibration.

Comments: High vibration related to high possible pump & pump bear wear. Significant Increase in Overall Vibration.

Work Order Request: Assign CMMS

Work Order Number: Work Order # 1308171

Details Report View

Status Comments

Add Status Comment

Checkoff

Now his service contractor, Reliability Maintenance Inc. (RMI), uses Tango Web Service to communicate condition monitoring results. This forces the use of standardized reporting format, severity codes, and fault descriptions across all monitoring technologies. As soon as the RMI analyst enters information about a high severity problem, the web system notifies the maintenance specialist by e-mail and he uses his web browser to open the Integrated Condition Status Report (ICSR) for details (Fig 1). The components with the highest severity problems are at the top of the list, and he

can quickly see if other technologies have also reported a problem with that asset. He can drill down into findings and recommendation details, plus open any supporting documents such as vibration spectra or thermography images.

The maintenance specialist says he appreciates the timeliness of the e-mail notification, and the convenient web access for checking out the reported problem. Now, instead of waiting for his Tuesday review, he's able to generate the SAP work orders throughout the week as they come up. "I always include the ICSR information in the work order", as well as a copy of the linked IR thermography image, to help out the assigned work team.

Now this maintenance specialist doesn't have to wade through different technology reports each week to decide what work orders to generate, so he uses his Tuesday review to look at the status of open condition-based work orders and check off those that have been completed. He includes comments taken from the work order summary (Fig 2), and RMI's analysts really appreciate the feedback.

Open Condition Entries

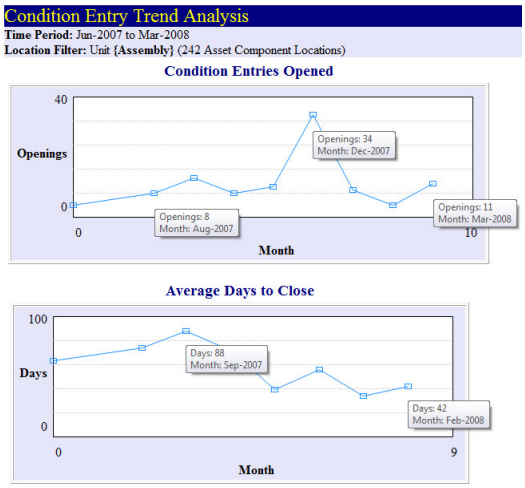
Severity	Asset	Component	Technologies	Days Awaiting Checkoff	Work Order Status	Work Order Numbers	Case Closure
1-D	ASM-6730C - Roll Booth 3	Rear Wheel Left Cooling Fan Motor - 3RLMTRCF	Vibration - Route	Checked Off	1 of 1	• Work Order # 1308169	Close Entry

Location: Assembly » Roll Booth » ASM-6730C - Roll Booth 3 » Rear Wheel Left Cooling Fan Motor - 3RLMTRCF (Locate In Tree)

Entry	Severity	Technology	Faults
Feb-10-2008 By:Steve Porter	1-D	Vibration - Route	• Late stage bearing • Looseness - rotating component

Recommendations:Replace blower Inspect for looseness
Comments:Possible blower bearing wear and looseness. Increase in vibration.
Work Order Request:Assign CMMS
Work Order Number: Work Order # 1308169
Checked OffOn:Mar-14-2008
Checked OffBy:BMW ASSEMBLY
Comment:Replaced blower on 2/18/08

According the Mike Newman, vibration analyst for RMI, it's hard to get enough feedback on maintenance actions at most plants. "I mark sensor locations on a piece of equipment with yellow paint dots to make sure measurements are consistent - so if the yellow dots aren't there I can tell that the equipment has been changed out. Then I have to find the maintenance supervisor to see if I got the call right". With the feedback Tango Web Service provides, Newman is able to check the work comments in the ICSR and save himself some time



RMI has been communicating condition monitoring results with Tango Web Service for about one year, and it appears to be helping the maintenance specialist drive condition-based maintenance work at the automotive plant. For most of 2007 the average time from condition call to work order closure exceeded 60 days; since fall 2007 it has averaged around 40 days, even when the number of condition calls jumped in December due to

monitoring some additional equipment (Fig 3).

Learn more about Tango Web Service at www.tf7.com, or call Forrest or Dick at 865-681-0282. To contact RMI, call Jimmy or Mike at 828-696-4960.

Trending Data Directly at the Component

In Previous versions of Tango if you wanted to measure a trend for a component, you had to add a gauge at the asset level. This meant that the gauge measuring the trend was on an equal level as the component. Tango now allows you to measure trends directly on the component, giving you the granularity to group and report on data associated with the component.