Foxboro Evo™ Process Automation System

Product Specifications



by Schneider Electric

PSS 31S-10MRC

Maintenance Response Center



The smart choice to improve your operational efficiency.

OVERVIEW

Maintenance Response Center (MRC) provides an action-oriented decision support platform to the plant maintenance organization. It provides *actionable early insight* into abnormal asset conditions, enabling maintenance to make smart decisions that can be efficiently executed.

FEATURES

Maintenance Response Center provides timely alerts for undesirable conditions, allowing you to proactively respond to emerging problems before they become major issues. The following features can help you maximize operational efficiency.

Asset Condition Monitoring

MRC provides real-time, automated condition monitoring of plant assets, providing users with increased awareness. Early insight into emerging abnormal asset conditions in real time drives a proactive maintenance approach that maximizes operational efficiency.

Single Unified Workspace

MRC provides a single unified workspace for easy access to the most up-to-date status of plant-wide asset conditions. It provides actionable early insight with clear and concise alerts and recommendations. Asset health information also indicates status, context, and criticality, i.e., NAMUR 107.

Mobility Enabled

It runs in web browsers on workstations or mobile devices for quick and easy access anywhere in the plant. For more information on how to access MRC, see "SYSTEM REQUIREMENTS" on page 12.

Asset Condition History

Diagnostic information and activities are captured for the operational life of the asset. Users can view the condition history of an asset, analyze the information, and proactively prevent failures that could result in plant downtime, or plan for work, reducing maintenance shutdown time.

User Groups and Roles

MRC allows plant supervisors to create and manage user groups and roles. Using the built-in workflow functionality, conditions, areas, and permissions can be assigned to the correct maintenance engineer or technician for remedial action. This streamlines the maintenance process and eliminates unnecessary paperwork.

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Foxboro Maintenance Response Center		4 Q \$ 9
	Administration Destal	
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General Settings		~
Roles		^
Role Name Permissions		
There are no items to display		
Add Role		
Manage Groups		v
	© 2016 -Foxboro. Maintenance Response Center	

Figure 1. Role Management Area

Add Role X						
Name: MRC User ×						
Permission Name						
Acknowledge Conditions						
Shelve Conditions						
Request Work Orders						
	Save					
	Role Name: MRC User × Permission Name Acknowledge Conditions Shelve Conditions Request Work Orders					

Figure 2. Adding a Role

Optional Workflow Management

MRC allows plant supervisors to create work order requests directly from an active condition, using the built-in workflow functionality. MRC utilizes Wonderware Skelta Business Process Management (BPM) workflow software, which enables business users to design and deploy BPM workflow applications. A workflow process has been designed in Wonderware Skelta BPM to automate the MRC Work Order process. The default Skelta workflow installed out of the box can be customized to suit the user's needs. For more information, refer to www.skelta.com.

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	Ack SI	helve		Create Work Order Request		Cancel				Submit



The maintenance planner can assign the work to a technician. All work that the technician performs is recorded and kept together with the Asset, so it can be used in the future for reference.

MRC Dashboard

The dashboard serves as the home page for the MRC application and provides an overview of all the features and functions of MRC. Auto refresh of the Dashboard gadgets occurs every 5 minutes.



Figure 5. MRC Dashboard

Condition Summary

Several screens within the MRC application provide full context of plant assets as well as the conditions that affect or have affected them. For example, the Condition Summary page displays the most recent highest-severity active condition, but it also contains features for viewing more asset and condition details. This information can provide more context for decision-making on prioritizing maintenance tasks. Auto refresh of the Condition Summary occurs every 5 minutes. From the Condition Summary page, you can:

- Navigate to the Condition Detail dialog, where you can choose to shelve a condition and set its shelve duration time.
- See immediately the total number of active conditions for each tag, without drilling down any further into a device's Tag Detail page.
- Determine Safety: if this is a safety-related device.
- Determine Impact: the criticality level of the device defined by the ISA 108 standard.

Maint	Maintenance Response Lenter - Londition Summary - Internet Explorer									
A										
	Maintenance	Response	e Center							
			Con	dition Summary						
4	Tag	State	Message	Area	Manufacturer	Туре	Safety	Impact	Timestamp	,
8		Active	Sensor electronics error, temperature signal too small.	CrudeUnit.Distillation	Foxboro Eckardt	Valve Positioner		Major	01/12/2016	02:57:49 PM
V		Active	Bad Configuration, invalid undefined parameter values.	CrudeUnit1.Distillation	Foxboro Eckardt	Valve Positioner		Moderate	01/21/2016	02:57:49 PM
8		Active	Terminal Temperature is outside the internal RTD's specified operating range.	CrudeUnit.Distillation	Invensys	Pressure Transmitter	Yes	Minor	01/20/2016	02:57:49 PM
8		Active	Friction Problem.	CrudeUnit.Distillation	Invensys	Pressure Transmitter		None	01/08/2016	02:57:49 PM
V		Active	Cycle Count Alarm	CrudeUnit.Distillation		Hydrostatic Level Transmitter		None		02:57:49 PM
\diamondsuit		Active	Low Air Supply Pressure	CrudeUnit2.Distillation	Foxboro Eckardt	Valve Positioner		None	01/20/2016	02:57:49 PM
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Figure 6. Condition Summary Page

Tag Detail

From the Condition Summary page, you can access the Tag Detail page, one of many pages that displays Asset Information, such as the manufacturer, type, protocol, and model. Below the Asset Information, a grid displays the Active Tag Conditions for the asset. Below the Active Tag Conditions, a Work Order grid displays the latest state of open work orders. You can gain further insight by accessing a log of conditions associated with the asset in the Asset Condition History section. The history provides you with information that helps in evaluating the state and performance of an asset over time.

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							Active Tag Co	onditions				
			State		Message				Manufacturer	Model	Туре	Timestamp
					nearisation curve	is not monotone ascending		CrudeUnit.Distillati	on Foxboro Eckard	it SRD991	Valve Positio	ner 01/15/2016 02:57:49 PM
			Active		alibration error s	ame presure value for empty and full calibra	ition	CrudeUnit.Distillati	on Foxboro Eckard	tt SRD991	Valve Positio	ner 01/14/2016 02:57:49 PM
			Active	Se	ensor electronics	error, temperature signal too small.		CrudeUnit.Distillati	on Foxboro Eckard	tt SRD991	Valve Positio	ner 01/12/2016 02:57:49 PM
	8		Active	Se	ensor electronics	error, signal exceeded or not achieved.		CrudeUnit.Distillati	on Foxboro Eckard	it SRD991	Valve Positio	ner 01/10/2016 02:57:49 PM
Ack												
						G	reate Work Or	der Request				
							Work Or	ders				
					State	Condition	User Role	Acted by User	Timestamp			
					Completed	Sensor electronics error, temperature signal too small.	Technician	ERP Technician1	01/21/2016 09:28:56 PM	Comments for Wor Completed	k Order	

Figure 7. Tag Detail Page

Generating Condition Reports

MRC uses SQL Server Reporting Services (SSRS), allowing you to generate customized condition reports. MRC's reporting feature not only provides you with a glimpse of what is currently happening with your assets, but it also allows you to run an inquiry on the asset condition history, providing you with more background knowledge and a broader view of the conditions, which can better assist you in making maintenance-related decisions.



Figure 8. SSRS Page and Reports Portal

Tag Search

Tag Search helps to find all information about a specific tag in the MRC system. Click the Magnifying

Glass icon, type 3 characters of the tag, and a list with all possible tags will show, up to a maximum of 15 search results.

Т	ag Search				x
		SRD		٩	
		Tag	Search Results		
	Tag	Manufacturer	Туре	Area	
		Foxboro Eckardt	Valve Positioner	CrudeUnit2.Distillation	
		Foxboro Eckardt	Valve Positioner	CrudeUnit.Distillation	

Figure 9. Tag Search Results Grid

Web Help

Context-sensitive Web Help is available from every screen:



Figure 10. Web Help Getting Started Page

ENGINEERING

MRC requires only user group and role configuration once installed. There is no system engineering required because MRC self-learns about the asset environment as devices are commissioned into the system and as each device begins to deliver conditions.

Devices should be configured via condition monitor applications, however, in order to report their conditions to the MRC application. Condition monitor configuration allows you to customize which conditions to monitor on the device as well as their severity.

For HART and FOUNDATION fieldbus devices, configuration is completed using the FDM in Foxboro Evo Control Editors v6.2 (or later) with Asset Condition Monitor installed. It is done at the template level only and includes automatic linking to compound block parameters.

Category	Description	NAMUR NE 107 Symbol
Maintenance Required	Output signal is valid, but the wear reserve is nearly exhausted or a function will soon be restricted due to operational conditions (deposit build- up, for example).	
Out of Specification	The device is operating outside its specified range or an internal diagnostic indicates deviations from measured or set values due to internal problems.	?
Function Check	Output signal is temporarily invalid.	
Failure	Output signal is invalid due to malfunction in the field device or its peripherals.	$\overline{\mathbf{X}}$

Table 1. NAMUR NE 107 Symbols

Asset Condition Monitor Configuration

The Asset Condition Monitors are configured in Field Device Manager, where a new Tab has been added for this configuration.

In this Condition Tab, conditions can be easily selected from the dd file, and optional recommended actions can be added. NAMUR 107 symbols are added here to each of the different conditions. It is simple click configuration, and because it is done at the template level, immediately available for all device instances created from this template. Configuration is only done for the template — all devices will automatically inherit the Conditions. When assigned to an Area, the devices will, if a condition occurs, automatically send the information to the MRC.

During the commissioning of a device in Field Device Manager (using the Prepare Device Wizard), all details of the device are sent to the MRC. This includes information about the manufacturer, device type, and the serial number or unique identifier.



Figure 11. Selecting Conditions in the Parameter Select Dialog Box and Condition Details

SYSTEM ARCHITECTURE

The process control systems that source condition and asset information to MRC must be one of the following:

- members of the same domain as MRC
- members of a different, but trusted domain of MRC
- members of no domain (i.e. in a workgroup)

Standard deployment of MRC requires two Windows Server 2008 R2 64-bit SP1 systems. One system running Internet Information Services (IIS) will host the MRC web application and a second with SQL Server 2012 64-bit SP1 installed will be used for the Asset Repository and Windows Communication Foundation (WCF) service hosting. See "SYSTEM REQUIREMENTS" on page 12 to learn about the system requirements for each machine.



Figure 12. Standard MRC Deployment Configuration

SYSTEM REQUIREMENTS

The following table provides the operating system and hardware platform (virtualized or physical) system requirements for each of the distinct system roles required to run the MRC application.

Role	Recommended Operating System	Hardware Requirements
Active Directory Server	Windows Server 2008 R2 SP1 64-bit	2GB RAM, C Drive 100GB
Internet Information Server	Windows Server 2008 R2 SP1 64-bit	4GB RAM, C Drive 100GB
SQL Server 2012 SP1 64-bit Standard Edition	Windows Server 2008 R2 SP1 64-bit	8GB RAM minimum, 16GB recommended. C Drive 100GB; D Drive 100GB
Wonderware Skelta BPM	Windows Server 2008 R2 SP1 64-bit	8GB RAM minimum, 16GB recommended. C Drive 100GB; D Drive 100GB.

Table 2. System Requirements for MRC

The Internet Information Server, SQL Server 2012 SP1 64-bit Standard Edition, and Wonderware Skelta Workflow BPM can be installed on one machine. This can be a virtualized machine as well, or virtualized machines if installed on different machines.

To run the MRC web application in a desktop or mobile device web browser, the following browser requirements must be met:

Device	Browser
Desktop	Internet Explorer 10 or later
Windows 8.1 tablets	Internet Explorer 11 or later
iPad	Safari 8.1 or later
Android tablets	Chrome 40.0 or later

Table 3. Browser Requirements for MRC

MRC can be integrated with any process control system. It is designed to run on Foxboro Evo Process Automation Systems with HART FBM support, FOUNDATION fieldbus FBM support, and Foxboro Evo Control Software v6.2 or later.

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Foxboro Evo™ Control Core Services and I/A Series® workstation software is supported only on the workstation hardware and configurations shipped from Foxboro® manufacturing, as listed in the most recent Control Core Services release notes. Control Core Services undergo rigorous qualification testing with specific software and hardware configurations to ensure it meets the demanding requirements for process automation. Any use of non-supported computers for Control Core services software is not covered by our standard warrantee or support agreements unless specifically addressed and documented. The exception to this policy includes support for some Control Core Services engineering tools (e.g. IACC, FoxCAE™ tool). Details on what platforms are approved for use for these tools are documented in their respective Product Specification Sheets.



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