Costs to be cut down

Merits of PRM

Improve Plant Availability

Increase Plant Lifetime

"PRM allows us to diagnose the instrument and get an alert before it actually fails and causes a process disturbance. This sort of preventive maintenance gives us a more reliable system with fewer suspect measurements, so the operations people have more confidence in the instruments. FOUNDATION fieldbus is not just for reducing the wiring cost. It transits a lot of information in an intelligent way, thus enabling remote monitoring, real-time self-diagnostics and predictive maintenance of field devices, as well as plant resource management using field communication. This will enable the cost of operating instrumentation systems to be greatly cut down."

Availability plus Diagnostics make Predictability

With PRM and intelligent field devices, operators and maintenance personnel can monitor the condition of plant assets remotely. PRM’s diagnostic functions detect early signs of performance deterioration such as valve sticking and impulse line blocking. By helping curtail excessive preventive maintenance and enabling more predictive and proactive maintenance, PRM opens the way to Asset Predictability.

Johan Veerman
CNOOC and Shell Petrochemicals Company Limited, Nanhai

Synaptic Business Automation creates sustainable value by connecting everything in our customers’ organization. To realize this, Yokogawa integrates its business and domain knowledge with digital automation technologies, and co-innovates with customers to drive their business process transformation.

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Asset Excellence PRM

Plant Resource Manager (PRM) is a key platform for the Yokogawa Asset Excellence initiative. An online and centralized automation asset management system, PRM helps both operators and maintenance personnel prevent downtime, and reduces maintenance costs.

### Before

**Q** Your next plant shutdown is approaching. How do you determine which devices need maintenance checks?

**A** We don’t. We check all devices.

Since the condition of individual devices is unknown, our procedures are to check all devices when the plant is shut down. The maintenance done on each device is determined by past experience and test data. Periodic preventive maintenance on all devices is necessary to ensure asset availability.

**Q** You are replacing a failed device. How do you configure the necessary parameters on the replacement device?

**A** We do it manually after checking the device records.

We retrieve the device configuration data from our database/document files and make the new device settings accordingly. Only a skilled maintenance person can configure a device correctly.

**Q** You need to check the condition of a critical field device installed in a harsh environment. How do you do that?

**A** No. The valves have different PST functions that require the use of a customized software from each vendor.

Not only must you use programs that have different user interfaces, the tasks must mainly be done in manual mode.

### After

**Q** Your next plant shutdown is approaching. How do you determine which devices need maintenance checks?

**A** PRM helps us focus on the right devices.

We use PRM to check the performance of devices online and determine which ones require maintenance. The information on device conditions acquired through PRM also enables us to identify which maintenance tasks need to be performed.

**Q** You are replacing a failed device. How do you configure the necessary parameters on the replacement device?

**A** PRM simplifies device replacement.

We reuse the setting data that is stored in PRM. With just the click of a mouse, you can download the parameters of the failed device from PRM to the replacement device, reducing set-up time and preventing mistakes.

**Q** You need to check the condition of a critical field device installed in a harsh environment. How do you do that?

**A** PST Scheduler runs under PRM and can be used with any of the safety valves from the four major vendors.

In addition to having PRM’s user-friendly interface, PST Scheduler allows you to schedule the execution of a PST in manual, semi-automatic, or automatic mode.

**Q** You need to check the condition of a critical field device installed in a harsh environment. How do you do that?

**A** PRM enables us to check it immediately from a remote location.

PRM can confirm the condition of all devices online, anytime, from a control room or maintenance shop.

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### Availability plus Diagnostics make Predictability

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### Merits of PRM

- **Increase Plant Lifetime**
- **Improve Plant Availability**
- **Reduce OPEX.**

### Costs to be cut down

“PRM allows us to diagnose the instrument and get an alert before it actually fails and causes a process disturbance. This sort of preventive maintenance gives us a more reliable system with fewer suspect measurements, so the operations people have more confidence in the instruments. FOUNDATION fieldbus is not just for reducing the wiring cost. It transits a lot of information in an intelligent way, thus enabling remote monitoring, real-time self-diagnostics and predictive maintenance of field devices, as well as plant resource management using field communication. This will enable the cost of operating instrumentation systems to be greatly cut down.”

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You need to check the condition of a critical field device installed in a harsh environment. How do you do that?

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Your next plant shutdown is approaching. How do you determine which devices need maintenance checks?

You need to check the condition of a critical field device installed in a harsh environment. How do you do that?

Periodic preventive maintenance on each device is determined by past experience and test data. The procedure is to check all devices when the plant is shut down. Since the condition of individual devices is unknown, our maintenance team relies on the Plant Resource Manager (PRM) to help us focus on the right devices.

Historical Records

Easy and flexible access to historical data

PRM’s historical records automatically store information on the who, when, why, and what of the changes that occur on field assets, along with all alarms, diagnosis results, and maintenance work records. The historical record data can be filtered and sorted for quick analysis.

PST Scheduler

Reliable and efficient safety valve testing

PST Scheduler brings precision, efficiency, and integration to the PST process. PST Scheduler can schedule an automatic, semi-automatic, or manual PST and automatically record test results for a safety valve connected either to Yokogawa’s ProSafe-RS Safety Instrumented System or a media converter. This software works with safety valves from the four leading vendors. Reference: ProSafe-RS Partial Stroke Test Bulletin 32S51Q10-01E

KPI Report

Efficiency improvements based on device condition

Using the intelligent functions of the field devices, the tool acquires device status, availability, number of alarms & events, and their ranking to automatically create the KPI report.

Online and Centralized Automation Asset Management System

Intelligent and Integrated Diagnostic Information

A more holistic approach to diagnostics

Going beyond individual device diagnostics, PRM Advanced Diagnostics Applications (PAA) integrate device and process data for a more holistic approach to process equipment and unit diagnostics. An embedded long-term historical diagnostics database supports deterioration/degradation diagnostics for field assets. User-friendly PAA templates simplify the implementation of online diagnostics for all plant assets. Users can use the library of PAA templates to create customized diagnostic applications. For example:

<table>
<thead>
<tr>
<th>PRM diagnostics (PAA) templates</th>
<th>Typical applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper/lower limit check</td>
<td>• Impulse line blocking diagnostics for differential pressure transmitters</td>
</tr>
<tr>
<td>Area monitoring</td>
<td>• Gland packing diagnostics for control valves</td>
</tr>
<tr>
<td>Data analysis for multiple devices</td>
<td>• Electrode adhesion diagnostics for magnetic flowmeters</td>
</tr>
</tbody>
</table>

Special thanks to: CMRCCX and Shell-Petrochemicals Company Limited, Namoi.

The right information to the right people at the right time

Maintenance Information immediately notifies the right people (operators and/or maintenance personnel), depending on the type and criticality of the diagnostic data analysis.

For operators

The Operator Guide Message generated by a predictive maintenance alarm give operators enough time to manage process changes when an asset fails. Operators can launch the Device Viewer by clicking the Operator Guide Message and checking the device diagnostics information.

For maintenance personnel

PRM action guidance messages help maintenance personnel determine what actions are needed based on alarm details and probable cause. This allows field maintenance personnel to make the most efficient and effective use of their time.

A single window for managing plant-wide assets

The Device Navigation displays the status of plant-wide assets with a Windows Explorer-like interface. Flexible navigation mechanisms enable maintenance personnel to quickly identify areas of the plant that require online diagnosis.

Intuitive status icons for the field devices change colors depending on the diagnostic conditions. Maintenance personnel can easily focus on specific plant areas and assets that require attention.

The Device Viewer window displays real-time diagnostic and trend data for field devices.

The System 1 client window displays diagnosis and condition for the plant machinery assets.

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Easy and flexible access to historical data

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Online and Centralized Automation Asset Management System

PRM FieldMate Synchronization

FieldMate for fast and easy device configuration in the field

PRM and FieldMate device data can be synchronized. With the FieldMate data, PRM can manage the device maintenance history, including commissioning and start-up work.

Multi-vendor, multi-protocol support

A variety of connection methods:

- Via CENTUM VP/3000 R3, STARROOM, and ProSafe-RS
- Via HART multiplexer and HART modem
- Via FOUNDATION Fieldbus communication card
- Via PROBUS commgateway DTM
- Via ISA100 Field Wireless gateway

Innovation

PRM fully embraces the FDT/DTM and EDDL technologies that enable open, rich, and intuitive access to intelligent field devices.

CMMS Interface

To facilitate maintenance, PRM has a CMMS interface with Maximo.
Merits of PRM

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OPEX: Operational Expenditure Reduce OPEX

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