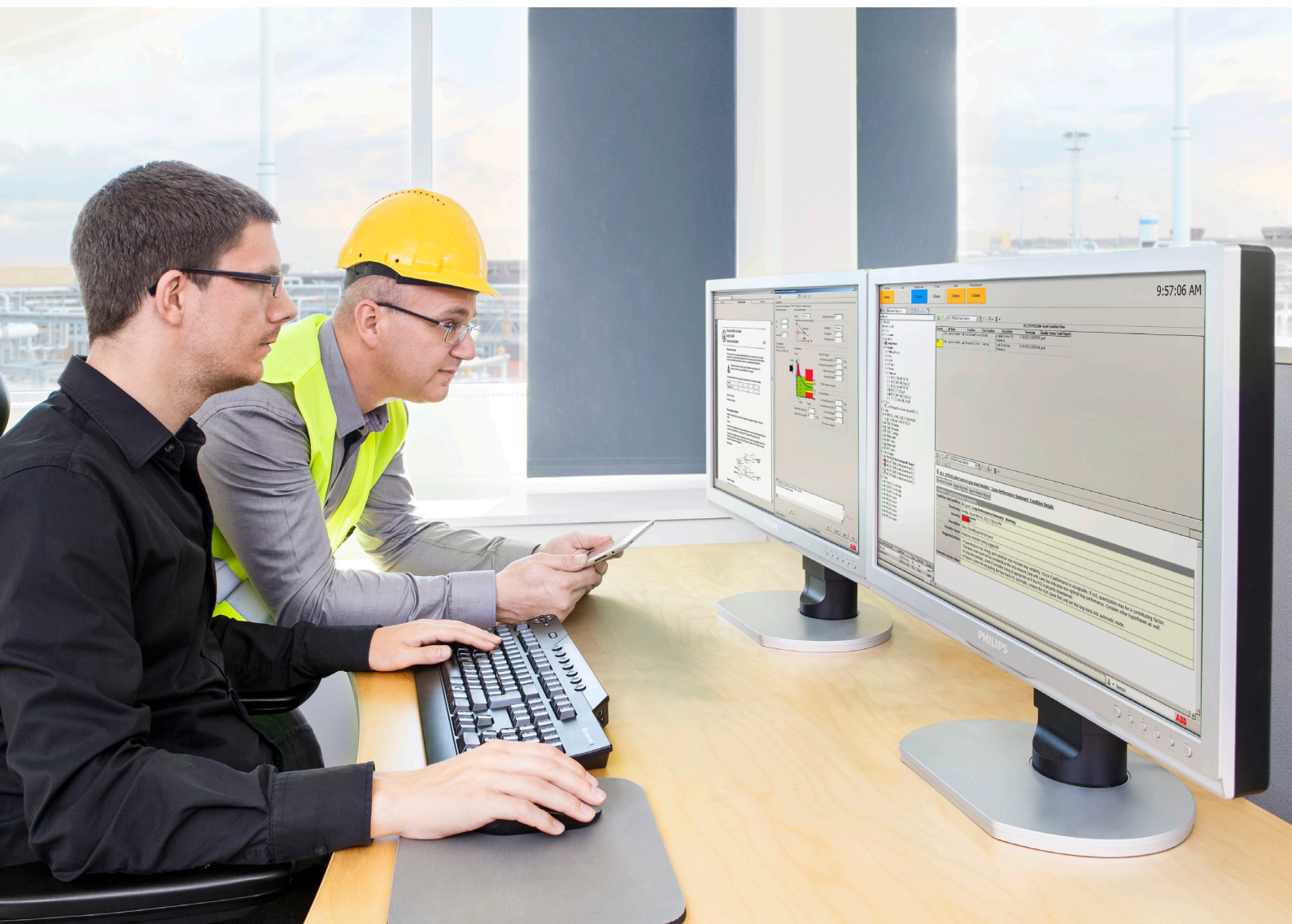

System 800xA Asset Optimization

Improving plant performance



Take advantage of hidden opportunities in your plant



Knowledge is the most valuable commodity in business today. Production facilities employing real-time Plant Asset Management systems significantly increase process uptime while reducing maintenance costs. The typical plant is teeming with information. The challenge, however, is having relevant information available at the right time, in the right form and to the right people.

An effective asset management strategy combines the needs of the production and maintenance organizations. It increases both equipment availability and production rate by providing insight into asset health, corrective action instructions and organizational visibility.

The international adoption of the ISO 55000 standard within process industries, addressing asset management and highlighting best practices within the area, proves the importance of the topic.

Maintenance is the largest controllable cost in a process manufacturing facility. Knowing the status of critical assets tells you what needs maintenance and, just as important, what doesn't. This is the key for reducing maintenance costs.

The challenge is to achieve plant-wide real-time condition monitoring of all types of critical assets. Relevant information has to be available at the

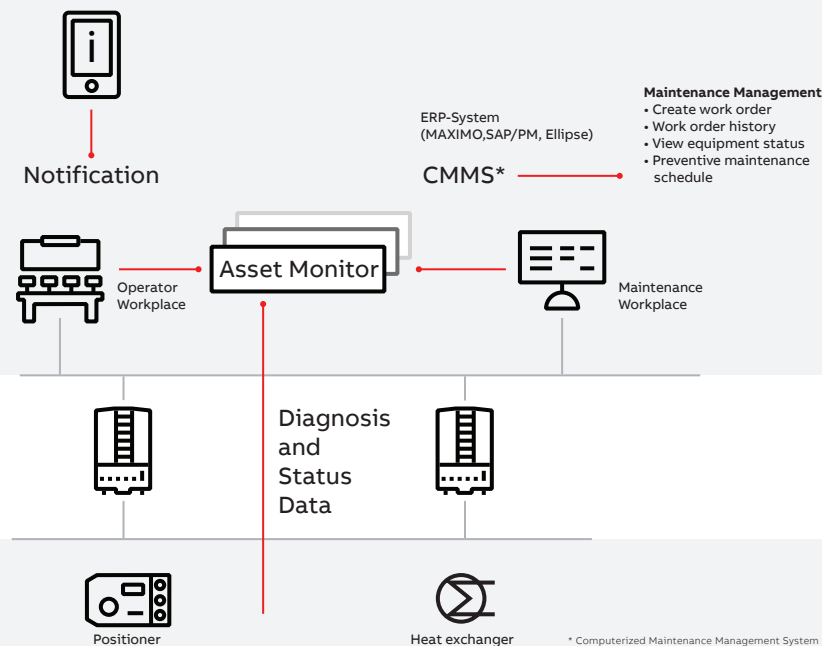
right time, in the right form and to the right people. To promote collaboration between operations and maintenance, and streamline the overall work processes, plant owners need to connect and share maintenance data between the DCS system and a Computerized Maintenance Management System (CMMS).

ABB has a unified approach to asset management with a wide range of products, solutions and services. System 800xA Asset Optimization provides plant asset management and condition monitoring solutions that presents real-time asset information to the people that can take action. As a result, continuous improvement initiatives such as the implementation of maintenance strategies and adoption of proactive maintenance practices; minimize unscheduled downtime, optimizes productivity and become more sustainable. These activities result in higher return on assets and greater profitability.

System 800xA Asset Optimization

Higher asset availability and reduced maintenance costs made easy

System 800xA ties the plant asset management and the enterprise asset management together for an optimal maintenance workflow.



System 800xA Asset Optimization brings together, in one user interface, all information resident in different, traditionally disparate, automation and monitoring systems to provide a composite view of the health and performance of an asset.

System 800xA Asset Optimization provides real-time asset monitoring, notification and maintenance workflow optimization of automation equipment, plant infrastructure, plant equipment, field devices, IT assets and production processes.

Unique single collaborative environment for seamless information sharing

System 800xA's common user interface enables improved collaboration between operation and maintenance personnel and is the corner stone for an efficient asset management. While transparently maintaining all the richness of information, advantages and capabilities of each specialized system, 800xA Asset Optimization eliminates the need for the user to switch between several systems, workplaces, application environments and navigation schemes. CMMS integration allows to keep track of assets from the plant floor and throughout the enterprise.

System 800xA can perform real-time condition monitoring on all assets in a plant

Every key asset in the plant is equipped with an Asset Monitor that continuously monitors the health of an asset. The Asset Monitor detects plant equipment problems before they occur.

The Asset Monitor provides additional information like the Possible Cause of a problem and the Suggested Action to resolve it. This significantly reduces the time to determine the correct maintenance action.

System 800xA Asset Optimization offers a complete range of condition monitoring with a common user interface to display and analyze data about health assets.

Lower cost of ownership

System 800xA Asset Optimization is an embedded Plant Asset Management system which reduces the total cost of ownership compared to a separate system. Purchasing separate condition monitoring solutions will add costs linked to configuration, software maintenance and testing during upgrades for example.



Your challenges

- Demand for reduced maintenance and operation costs while increasing productivity
- Need for improved equipment reliability and reduced unplanned shut-downs



Our solution

System 800xA Asset Optimization provides a complete asset overview with one single interface for operations, maintenance, engineering and management to optimize asset availability and utilization.

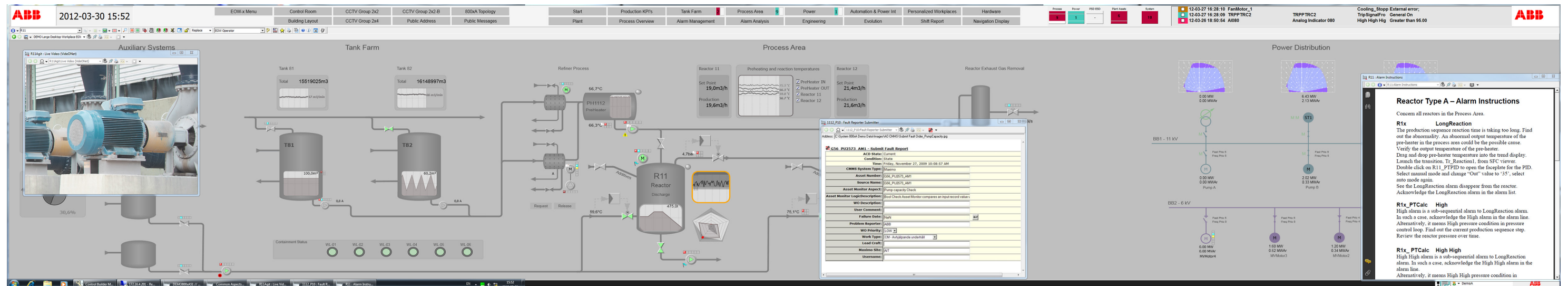
Benefits

- Increased asset availability and performance
- Optimized Operations and Maintenance effectiveness
- Reduced Time to Repair through Optimized Work Processes between 800xA and CMMS
- Improved collaboration between operation, automation and maintenance personnel
- Plant-Wide Adoption of Predictive and Proactive Maintenance Strategies
- Consistent Reporting of Plant Asset Health
 - Visualization of current health conditions with Analysis features provides the ability to drill down to the root cause of failure

Features

- Automatic Monitoring of Maintenance Conditions
 - Real-time monitoring and alarming of asset Key
 - Maintenance Workplace to empower maintenance users
 - Performance Indicators (KPI's)
- Integration of disparate Computerized Maintenance Management Systems (CMMS), IMS Calibration Systems, Dynamic Overall Equipment Effectiveness (OEE) Tools





Increased plant availability and reduced costs with CMMS integration

To promote collaboration between operations and maintenance, and streamline the overall work processes, plant owners must connect and share maintenance data between the DCS system and a Computerized Maintenance Management System (CMMS).

With System 800xA, CMMS integration maintenance data such as active work orders and work order history can be shared seamlessly between 800xA workplaces and the CMMS.

System 800xA bridges the gap between daily operations and the maintenance organization within the plant. With 800xA CMMS integration, work orders are easily scheduled and all maintenance data is easily accessed from the control

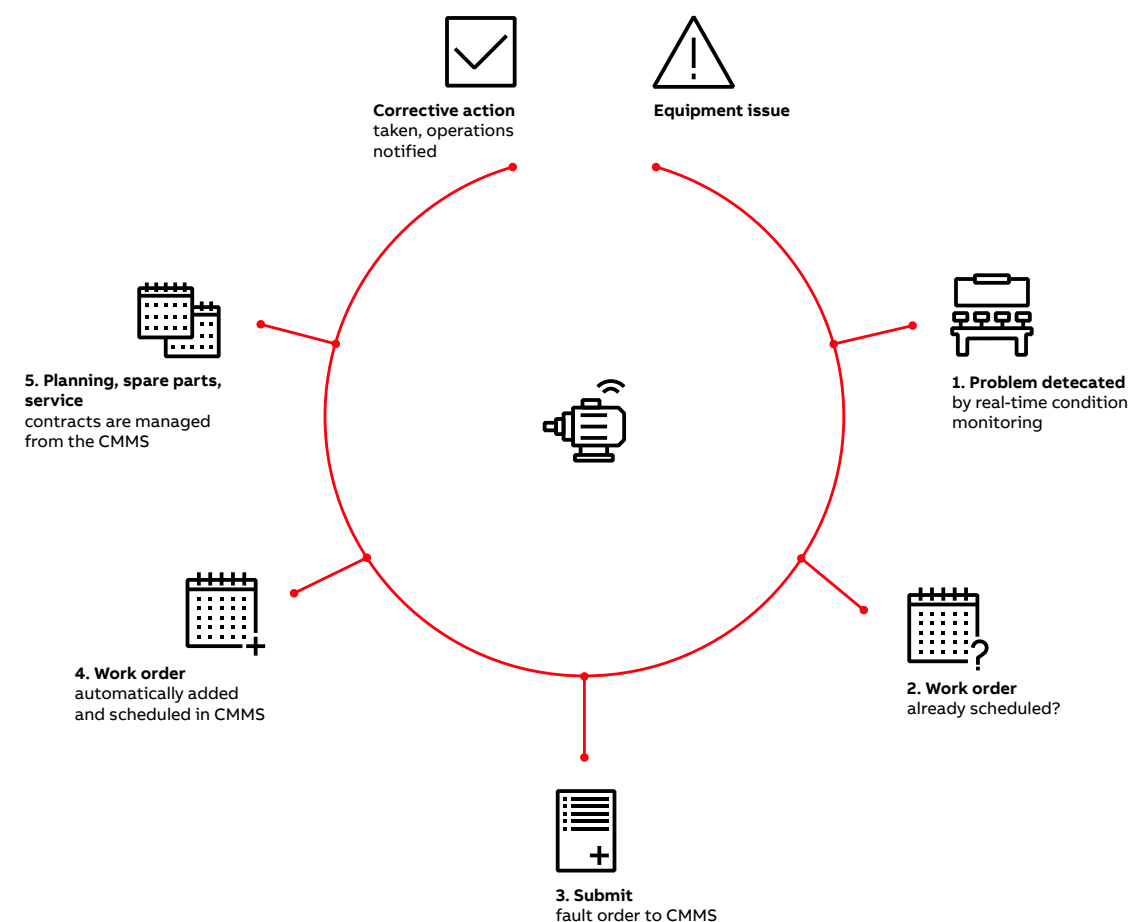
room. Production can be planned according to current maintenance activities and operators assume a proactive role in plant maintenance by adding new maintenance work orders as problems occur during production.

The main benefits with CMMS integration are:

- Reduced Time to Repair through Optimized Work Processes and overview
- Improved collaboration between operation, automation and maintenance personnel

System 800xA provides predefined interfaces to CMMS such as IBM MAXIMO® and SAP PM®.

System 800xA enables an efficient maintenance workflow with the integration between 800xA Maintenance, Operator Workplaces and Enterprise Asset Management system.



Condition Monitoring enables optimized time to repair and consistent reporting of plant asset health

System 800xA offers a plant-wide real-time condition monitoring of all types of critical assets. Relevant information is available at the right time, in the right form and to the right people.

System 800xA Asset Optimization includes a comprehensive library of Asset Monitors. Asset monitors vary in complexity from those that simply identify status changes in an intelligent device or identify high, low, or deviation limit conditions in the control system, to those that utilize advanced process equipment condition monitoring applications. When a performance condition is detected, the asset monitor issues an Asset Condition Document (ACD) and notifies the system.

An ACD contains all information necessary to describe an asset condition. In turn, this information may be used to generate a work order for maintenance purposes. Asset monitors can exist in any part of the plant hierarchy, such as the device, loop, equipment, process, plant or enterprise. They can be written for higher-level assets (parents) that are themselves composed of many sub-assets (children). In addition, System 800xA preconfigured asset monitor types are available for assignment to assets of all levels.

System 800xA Asset Monitors are compliant with NAMUR NE107. This ensures consistency throughout all asset diagnostic data and support maintenance users to easy benchmark data regardless of the source of the diagnostic data.

Process instrumentation and valves

System 800xA has a wide support for various fieldbus protocols and allows users to choose the best instrumentation and valve positioners for a particular application. All fieldbus information like topology design, device configuration and diagnostics is available in System Workplaces. Automatic condition monitoring detects upcoming maintenance conditions before a device failure can cause production disturbances.

Electrical systems

Reliable electrical systems for power generation and power distribution are essential for plant uptime. The unique integration of power automation, using IEC 61850 protocol in System 800xA, allows not only control and supervision but also condition monitoring of high and medium voltage electric systems. Additionally, condition monitoring of low voltage equipment like ABB MNSiS switchgear and motor control gives maintenance personnel a complete picture of the plant. This complete scope of electrical integration ensures uptime and reduce maintenance costs.

Vibration monitoring

Mechanical equipment, e.g. large rotating machines, are often the key assets in industrial plants. Failures are costly and can cause lost production. System 800xA Asset Optimization provides various levels of mechanical condition monitoring from basic vibration monitoring to complete mechanical asset analysis with detailed root cause tools.

PID loop performance

Good performance of PID control is required to maintain the defined process state and reduce wear on equipment. System 800xA Control Loop Asset Monitoring (CLAM) performs automatic loop monitoring and detects both malfunctioning PID loops and control valves. Automatic loop monitoring with CLAM improves control performance and reduce costs due to less consumption of instrumentation air, less wear of control valves, etc.

Heat exchanger performance

The overall energy efficiency in industrial plants is to a large extent dependent on the performance of heat exchangers. The System 800xA Heat Exchanger Asset Monitor (HXAM) monitors deviations from defined operating points. The result is improved process performance and also reduced maintenance costs for heat exchangers.

IT equipment monitoring

Modern control systems and the required integration to other type of systems rely on the availability of IT systems like servers, clients, networks and network components. With PC, Network, and Software monitoring functions, our 800xA Asset Optimization monitors and ensures the reliability of the IT infrastructure for the entire system.

Generic asset monitoring library

System 800xA Asset Optimization contains a wide range of generic asset monitors that can be applied to any asset connected on the system. Generic monitors can be used for any type of monitoring. Examples are runtime monitors, counter monitors, X-Y profile deviation monitors and limit monitors.

Custom defined condition monitoring

The 800xA Asset Optimization framework allows customers to specify their own condition monitoring algorithm based on any available input data in the system. This framework allows custom defined condition monitoring. A typical use case is mechanical equipment with unique asset characteristics, which requires special condition monitoring algorithms.

Higher plant availability and profitability with system 800xA Asset Optimization

Benefits of an asset optimization strategy extend beyond the maintenance organization to all the stakeholders throughout the enterprise. An effective asset management strategy combines the needs of the production and maintenance organizations. It increases both equipment availability and production rate by providing insight into asset health, corrective action instructions and organizational visibility. Its ability to share contextual information to those who need it – when they need it – reduces time-to-decision and coordinates production and maintenance activities. Executing an asset management strategy to increase equipment effectiveness and reduce maintenance costs is an effective approach to remain competitive in the marketplace.

System 800xA provides the asset management solution that present actionable data seamlessly and in the proper context, to the right people. As a result, continuous improvement initiatives such as Reliability Centered Maintenance (RCM) strategies, plant-wide adoption of proactive maintenance practices and autonomous maintenance minimize unscheduled shutdowns, optimize product quality and become more effective. These activities can be employed regardless of industry. The results are higher return on assets and greater profitability.

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