Rockwell Automation

Knowledge is Power

Treat maintenance as an asset, not an expense, by designing a data-driven strategy that improves asset and worker performance

Introduction

Today's manufacturers face increasing expectations for asset management capabilities. According to Omdia's APM and Asset Health Analytics: Status of the Industry 2023 report, the increasing digital maturity of manufacturers enables asset management strategies in line with broader initiatives such as digital transformation and sustainability. The result is a need for greater connectivity, visibility, and information-sharing both from within and outside of enterprises.

Additionally, as manufacturers are pressed to increase productivity with lower operating budgets, it is crucial to optimize operations to sustain success.

One way to address such challenges is investing in a comprehensive asset management strategy. By executing a well-planned, comprehensive approach and implementing the right technology, manufacturers can transform maintenance from an expense into a strategic, competitive asset.

According to ARC Strategies July 2019 report, "Rethinking Asset Performance Management," successful asset management requires close cooperation between the maintenance, reliability, process engineering, and operations functions in an industrial facility. New digitalization tools can help make that cooperation easier.

Focusing on an asset management strategy can improve a range of metrics, such as overall equipment effectiveness (OEE) and return on net assets (RONA).

In turn, these metrics contribute to aggressive productivity targets, including various forms of risk mitigation, data-driven decision-making, workforce empowerment and predictable expenditures.

Maintenance is central to operations

Because equipment maintenance is one of the largest single controllable expenditures in a plant, it must be included in a lifecycle plan. It also should be an integral part of any reliability improvement program, because it's critical to machine throughput, availability and essential spare-parts stock.

Once you've organized your storeroom and have a repair strategy in place, you can optimize spare-parts inventory and reduce the number of unnecessary parts. Digitally enabled platforms provide ongoing visibility into your installed base.

Also, data gathered and analyzed as part of the process can be used to implement future improvements, such as developing a roadmap for managing the obsolescence and migration of aging equipment.

To justify capital expenditure projects, maintenance needs to be considered central to productivity. Your storeroom is the starting point for strategic maintenance improvement practices, such as reducing equipment lifecycle costs and maximizing productivity and performance of the equipment.

Research shows why asset management must be a priority

Many manufacturers struggle to prioritize the time and investment needed to put a comprehensive asset management strategy in place, simply because so many other expenses compete for their limited budgets. But trends in manufacturing employment and other factors are converging to make asset management a major priority.

Case in point: The U.S. Bureau of Labor Statistics estimates a **shortage of more than 2 million manufacturing workers by 2025, with more than 10,000 baby boomers retiring daily.** According to LNS Research in their 2019 Connected Worker eBook, this impacts manufacturers as valuable skills, experience and institutional knowledge are lost.

Although this intelligence gap appears daunting, an asset management strategy is relatively simple to initiate. Especially if you rely on existing relationships with components distributors and vendors to develop customized, scalable solutions. Some of the benefits of comprehensive asset management include:

Overall Equipment Effectiveness (OEE): Driving uptime is key to a smart asset management strategy because it's focused on assuring the people, parts and processes are optimized to support the equipment. It also provides trend data visibility into asset performance by both machine and shift, which helps drive continuous improvement priorities.

Return on Net Assets (RONA): Reducing inventory, maintenance costs and the number of downtime events raises productivity, while driving financial performance and predictability.

Empowered and engaged employees: With fewer maintenance workers, those who remain need the right technology and tools to make good decisions about supporting plant performance. According to LNS Research, the next generation of employees entering the workforce and advancing through the ranks are digital natives with an entirely new set of perceptions and expectations regarding technology and attitudes about work in general.

Getting started

Evolving asset management into a proactive, strategic component of better-managed manufacturing facilities can be done in phases, following these steps:

Step 1: Evaluate needs, set goals

The first step in any asset management strategy is examining your current situation while keeping in mind your business priorities, such as process validation over uptime or environmental impact over rate.

To establish a baseline for improvement, first understand your operation's process hierarchy to determine equipment priority and thus risk.

Second, understand your equipment's serviceable components and their lifecycle status. For example, are the components new, available, repairable, replaceable or obsolete?

Finally, understand your storeroom content and identify all other locations holding spare parts.

This data will inform future decisions and allow immediate inventory optimization. It also will support risk mitigation on the most critical equipment, and provide the basis for all future management of your plant assets, including preventive maintenance (PM) program optimization, inventory and storeroom optimization, machine-builder changes and warranty capture.

Once you have completed data collection, assess critical areas of concern, outline needs for improvement, and define your objectives so you can build an attainable asset management plan.

Step 2: Design an asset management strategy

Your goal-setting activities will yield the building blocks for your asset management strategy design, which likely will include these elements:

- Maintenance, repair and operations (MRO) process management redesign
- Spare parts rationalization, lifecycle review and any vendor-managed agreements
- PM activity changes
- Reporting and dashboard creation

MRO process management redesign: A critical step is establishing best practices for part repair or replacement. Minimizing your stock, optimizing your repair process and building an actionable reporting structure is the most sustainable way to maximize your automation investment.

Reliability improvement uses a process risk assessment to track and understand the consequences of process and equipment failures, and recommend priority actions.

Optimizing your repair process involves keeping track of where each individual component is in its lifecycle. When a component on the line fails, you document where, when and why it failed, and determine if it's under warranty.

To keep track of warranty detail and ease the process, the labeling system in your storeroom should include warranty information for each part to track its eligibility. Effectively managing your organization's warranty recovery can significantly contribute to the operation's bottom line. Parts also should be tracked when sent for repair. Your equipment vendor may offer repair coverage agreements, eliminating spikes in your MRO spend and simplifying your repair budgeting.

Typical savings categories for effectively managing MRO repair include:

- Repair price vs. new
- Warranty recovery
- Inventory and carrying cost reduction
- Administration
- New purchase and repair reduction
- Increased production uptime

Having a person electronically track this data can help identify opportunities for system and process simplification or improvement.

Spare parts rationalization, lifecycle review and any vendor-managed agreements: Inventory reduction is a popular productivity target because it frees up budget for other assets. Remove or burn-off excess or inactive inventory while filling in critical gaps you've found during the assessment.

Remember that you may have resources to help with your storeroom goal. For example, your local distributor may be able to help supply half of your needed parts from its available stock, leaving you to identify a plan for the remaining half. Also, your equipment vendor could implement an on-site parts management agreement, allowing you to avoid purchasing the remainder of the spare parts until they're needed.

PM activity change: The more aware you become of your facility's needs and challenges, the more fine-tuned and efficient your PM activities will become. You might choose to use vendor specialists with the resources to develop and sustain a PM program through scheduled service visits, fully warranted replacement parts, and 24/7 remote troubleshooting — freeing your personnel to operate the equipment and manufacture products.

Reporting and dashboard creation: This phase can come in many forms and be accomplished in many ways. You might decide during the evaluation and goal-setting stages that an OEE information system is a necessary investment to create dashboards showing uptime, production rate and quality. The MRO process management redesign mentioned earlier also can provide significant information to be built into a usable and actionable reporting tool.

Step 3: Implement your unique solution

After establishing the right baseline of your facility and designing a plan that supports your business needs and mitigates your risk priorities, your asset management investment will be pointed, graduated and impactful.

The structure of your plan determines the implementation path. For example, you might be able to use your existing staff and processes to implement simple, immediate point solutions such as inventory disposition or burn-off. But when it comes to more complicated process implementations or redesigns, such as an MRO process redesign, seeking an external specialist to design and execute the right implementation plan might be an option.

Step 4: Measure and continuously optimize the process

The most successful asset management strategies evolve as equipment, process and people change. Therefore, be sure to investigate digital technology tools that provide a visual dashboard of critical plant assets and equipment changes.

After equipment purchases or retrofits, be sure to adjust inventory accordingly. This effort provides measurable data you can turn into actionable information to help inform future decisions to achieve continuous productivity gains.

Role of a reliability solutions specialist

When production is lagging, unplanned downtime is mounting, maintenance budgets are shrinking and plant staff is overburdened, an asset management evaluation might be a good investment to help you regain your competitive edge and achieve your business goals.

With fresh eyes, an outside experienced professional can provide guidance that encompasses everything from inventory management, to employee training and workforce development, to plantwide optimization.

By understanding your environment, the consultant can help compare it to applicable industry standards and specifications, such as ANSI, TIA, ODVA, NIST, ISO, IEC, CE, OSHA, NERC CIP, Energy Star, and DOE[1]. From there, your consultant provides recommendations for remediation and improvements to address any gaps, hazards and cost-savings opportunities, plus the applicable cost-benefit analysis.

In the case of a strategic maintenance-consulting engagement, an asset management professional starts with a detailed evaluation of your current operation to understand your business priorities and companywide goals, and to identify any potential inhibitors to your plant's success.

Once those are identified, reliability solution consultants can develop a risk-mitigation plan to help you increase production output while reducing costs through improvements to equipment and process reliability.

Often, a comprehensive mitigation plan includes safety improvements and reduced environmental impact. For example, when evaluating downtime during a risk assessment, an asset management professional analyzes any potential fallout from such an event. If downtime endangers the environment or worker safety, the incident can pose far greater concerns to a company's public image.

The goal is to transform maintenance from an expense into a strategic, competitive asset.

Use case of improved uptime

A successful asset management strategy helps you maximize uptime and minimize unnecessary costs, allowing you to focus on what you do best – producing quality products and keeping customers happy.

This was the experience of a leading heavy equipment manufacturer that previously struggled with a lack of clear metrics and inefficient inventory-management practices at its transmission manufacturing plant. Its inventory growth and stock inaccuracies were leading to higher carrying costs and frequently putting its Midwest plant at risk for incurring substantial downtime.

By relying on asset management tools for its inventory management, the manufacturer realized an overall inventory reduction valued at $1.9 million. The storeroom assessment identified more than 41,000 specific line items, showing the plant was carrying about 20,000 more parts than managers realized.

The right strategy

Leaders at smart companies like this heavy equipment manufacturer know that successful asset management programs maximize uptime and offer other profitability benefits. With the right asset management strategy in place, you can achieve sustained growth and competitiveness.

Rockwell Automation asset management solutions

Rockwell Automation has more than 120 years of experience helping its customers address their manufacturing and maintenance challenges. Based on work with thousands of manufacturers around the world, the company offers comprehensive, scalable asset-optimization solutions tailored to each customer's needs. Maintenance solutions are designed to help customers reduce assets, maximize uptime and focus on what they do best – producing quality goods at the lowest possible cost.

To prioritize, plan and implement an effective asset management program, a Rockwell Automation **Installed Base Evaluation™ (IBE® service)** helps you understand the current state of your parts strategy. Once that baseline is established, Rockwell Automation can recommend solutions based on the biggest challenges and most important priorities discovered during the assessment. This critical step allows you to make educated decisions on where to initiate improvements and how to implement an effective asset management strategy. Included with an IBE is the digitally enabled platform, **My Equipment**. This portal provides ongoing visibility into your installed base for updated lifecycle and product alerts, grants easier access to data to reduce obsolescence risk and maintenance costs, and simplifies collaboration across your team.

When a repair is necessary, **Remanufacturing and Repair Services** can help restore equipment to its original operating condition for optimum functionality. There are 14 Rockwell Automation remanufacturing and repair facilities globally – each using the same high-quality parts, standards and specifications as the original manufacturing process. Remanufactured parts are returned to you quickly, having undergone engineering changes impacting safety, reliability or performance; replacement of aged and worn components; functional testing to OEM specifications; and cosmetic restoration. Rockwell Automation also provides comprehensive repair services for over 200,000 items from more than 7,000 manufacturers. To reduce your repair spend and provide more predictability for MRO budgeting, a **Repair+ service agreement** offers additional buying power by bundling your repairs, with no individual purchase orders or invoices, and multiple repair service levels to choose from.

Add an **Extended Warranty,** and rest assured knowing repairs are covered, avoiding the costly expense of new parts.

Through an **Inventory+ service agreement**, you can reduce your inventory investment and simplify budgeting while ensuring ready access to critical spare parts that are Rockwell Automation owned, but located on-site at your facility. This eliminates the large, capital outlays that are often required to purchase spare parts inventory and provides the ability to choose which parts are needed, with flexibility to update the agreement as needed.

The **Rockwell Automation® Asset Management Program™** provides a proven methodology to help customers manage their repair process, improve reliability, reduce inventory, and help mitigate obsolescence risk. An on-site, asset management professional integrates with your maintenance and production teams to help reduce maintenance repair and operations costs through proven demand management processes. Your asset management professional can help manage and optimize critical spare parts, identify opportunities for standardization, help reduce common failure modes, reduce the number of repairs, minimize repair turnaround time, and provide comprehensive asset and online reliability reports. The program has documented millions of dollars in combined annual cost savings for customers.

Storeroom and Reliability Consulting Services identify your challenges, assess your current state, and build improvement plans to achieve best-in-class storerooms and improve reliability throughout your facility.

Preventive Maintenance prolongs the life of your parts and increases production uptime with regular servicing from our experienced team of field service engineers.

Digital Services enable you to track and manage your installed assets to make data-driven decisions within the MyRockwellAutomation portal. Benefits include self-service installed base reporting, critical spares recommendations, visibility into obsolescence risk, product safety advisories and more. The **Fiix® Platform** digitizes services delivery and provides you with analytics and insights to drive business outcomes.

Resources

[1]American National Standards Institute (ANSI); Telecommunications Industry Association (TIA); Open Devicenet Vendors Association (ODVA); National Institute of Standards & Technology (NIST); International Organization for Standardization (ISO); International Electrotechnical Commission (IEC); Conformité Européenne (CE); Occupational Safety and Health Administration (OSHA); North American Reliability Corp - Common Industrial Protocol (NERC CIP); Department of Energy (DOE)

The right expertise, at the right time.

Professional and managed services that expand your capabilities to help you achieve business outcomes.

DIGITAL THREAD

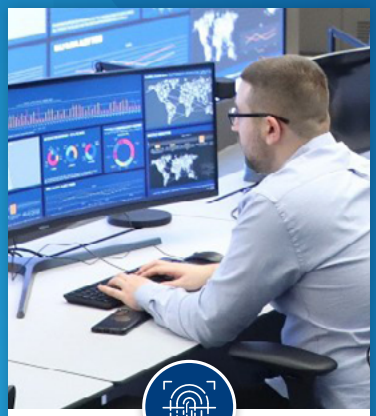
Connect business processes, systems, equipment and products with data

- Digital strategy & organizational change management
- Data science & artificial intelligence
- Manufacturing execution systems (MES)
- Product lifecycle management (PLM)
- Extended reality (AR/VR/MR)
- Supply chain management (SCM)
- Enterprise resource planning (ERP)

PRODUCTION AUTOMATION

Automate manufacturing and production operations

- Industrial automation control systems
- Distributed control systems (DCS)
- Power systems
- Drive systems
- Safety systems
- Custom/configured panel solutions



CYBERSECURITY & NETWORK INFRASTRUCTURE

Enable and secure industrial network connectivity

- Industrial cybersecurity
- Industrial network infrastructure & remote support
- Industrial data centers

ASSET OPTIMIZATION & WORKFORCE

Optimize performance of machines, equipment, systems and people

- Equipment repair & remanufacturing
- Asset & equipment inventory management
- Remote support & monitoring
- On-site & field services
- Safety solutions
- Training & learning

To learn how we can help you solve your unique business challenges, contact your local authorized Allen-Bradley® distributor or Rockwell Automation sales office, or visit: **rok.auto/lifecycle.**

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Publication GMSA-WP001C-EN-P - August 2023 | Supersedes Publication GMSA-WP001B-EN-P - August 2020