



RISK-BASED MAINTENANCE

Optimise Asset Performance Management
with Risk-Based Maintenance

Through your HMI and SCADA systems, your organization has already experienced the impact that meaningful data has on your daily operations. Real-time information, displayed in context, means your personnel can easily identify abnormal conditions, focus their attention immediately on problems, and interact with your machinery from anywhere in the world.

Your assets are continually generating huge amounts of information, but how much of this data do you miss? How much do you not see, not interpret, and not use? By reading and responding to this data effectively, you can get much more out of what you already have. Asset Performance Management helps you streamline your processes, increase reliability, reduce downtime, and achieve asset performance excellence.

Wonderware[®]
by AVEVA

In a global economy with tightening regulations, achieving long-term success requires companies to develop an intimate knowledge of their business and assets. Adopting Industry 4.0 and Industrial Internet of Things concepts enables connectivity between people, processes, and equipment for a comprehensive view of where improvements and efficiencies can be made.

Risk-based Maintenance solutions enable a comprehensive view into current asset performance to identify improvement opportunities, perform analyses and simulation to determine the best maintenance strategies, and visualise deployment effects. A key component of our comprehensive Asset Performance Management platform, the risk-based maintenance solution is used by companies all over the world bridging OT and IT disciplines to enable digital transformation that drives business objectives and delivers tangible results with clear long-term benefits.

Risk-based Maintenance At-a-Glance

Defining the best way to manage your production assets is a key success factor in achieving your business objectives. AVEVA's risk-based maintenance solution uses smart APM technology to improve insight into operational performance and to reduce time to value, with less effort. Risk-based Maintenance software enables you to create and analyse the effects of different asset management strategies, providing clear insight into the consequences, results and benefits related to asset availability, HSE compliancy, productivity, and profitability. Asset Performance optimisation has never been easier or more efficient.

Features and Benefits

Risk-based Maintenance incorporates FMECA/Reliability Centered Maintenance (RCM), Inventory Management and Root Cause Analysis (RCA) functionalities with intelligent dashboard and reporting functions. The solution also includes asset template libraries for rapid build-up and deployment of asset hierarchies through simple drag and drop menus, as well as efficient inventory management through spare part optimisation. The FlexView module facilitates data management and allows asset data to be easily reviewed and managed.

With asset safety and reliability as the starting point, risk-based maintenance delivers significant cost savings and efficiency gains at remarkable speed.



The Value of Connecting Risk-based Maintenance and EAM

Improve asset performance by integrating risk-based maintenance to your EAM system. Risk-based Maintenance software generates optimised maintenance and spare parts strategies by looking at the big picture first and then prioritising before getting to the relevant details for each asset.



Integrating risk management to EAM system brings a systematic approach to continuous improvement.

Risk-based Maintenance software provides real-time data and analyses asset behavior down to component level if necessary to arrive at the optimum APM strategy based on facts and acceptable risks. Statistics can also be modified and updated to reflect experience and insights. With open integration to existing systems, the risk-based maintenance solution connects seamlessly with EAM solutions for direct integration with daily work procedures, maintenance planning and spare parts management. The solution also enables quick and complete RCM studies based on asset criticality.

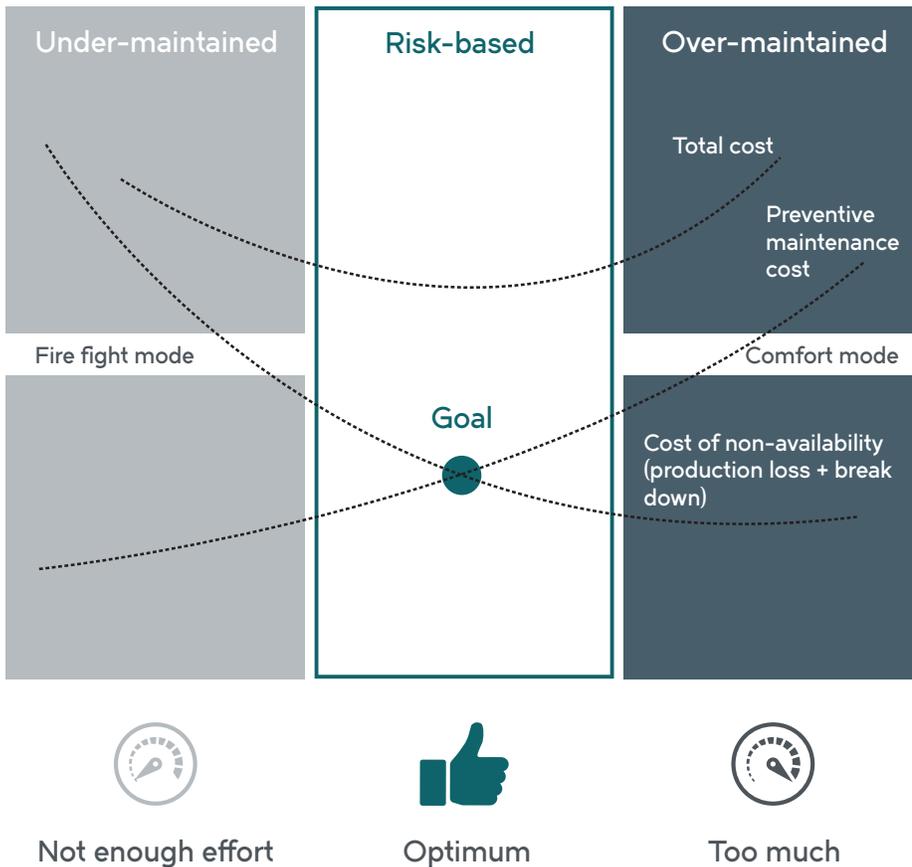
Risk-based Maintenance solutions interfaces seamlessly with existing EAM systems, to enable users to get the most out of existing investments and speed up installation, implementation and deployment.

- Simulate maintenance strategies to calculate effects and ROI over the entire asset life cycle and export strategies directly to the EAM system for planning and execution
- Comprehensive Root Cause Analysis (RCA) module for incident logging, solution definitions, and secure prevention – including an average 1:30 ROI within a year
- Industry libraries built with 20 years' worth of equipment reliability data, in order to speed up deployment time (up to 90% improvement)



The journey starts with quality data

Risk-based Maintenance data insights represent the strategy component of executing the journey to reach your business objectives. Productivity, safety, quality, compliance, and cost efficiency start with knowing the facts about current performance and where improvements can have the biggest impact on bottom line. Understanding the criticality of your assets, what deserves priority and what can wait to be serviced, can be crucial in today's increasingly competitive markets.

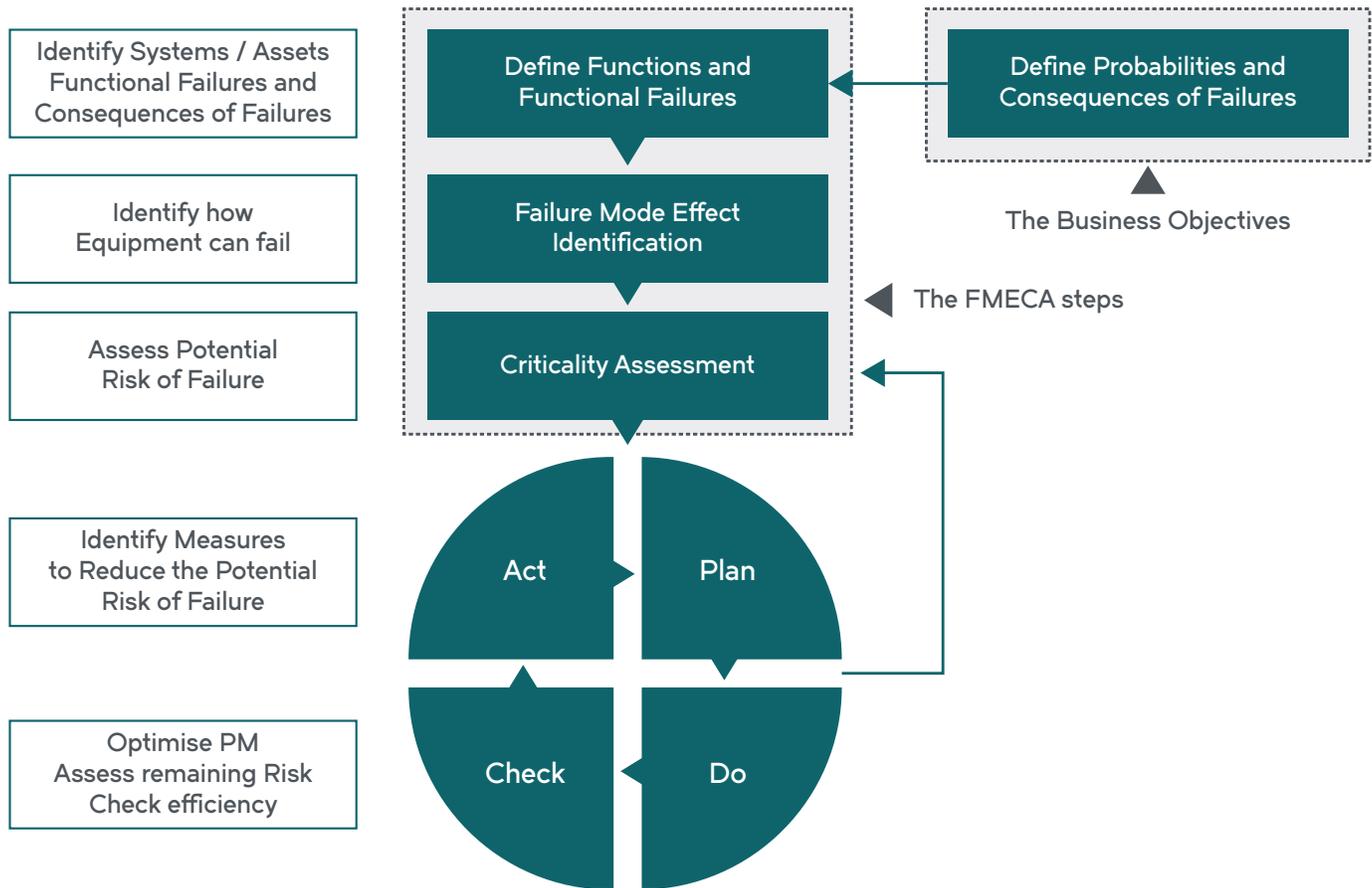


Actual Cost Benefits Achieved

- 30% Decrease in CAPEX
- 50% Maintenance & Inspection Cost Reduction
- 25% Reduction in Spare Parts Cost
- 15% Increase in Asset Availability
- 30 - 60% Less Equipment Opened During Turnarounds
- 80 - 95% Failure Risk Reduction

Hitting the sweet spot with optimised maintenance based on acceptable risk.

The Reliability Centered Maintenance (RCM) module offers direct insight into the effects of specific failures on reaching business objectives. Such acute awareness of consequences results in informed and timely decisions about cost savings, based on acceptable risk. RCM enables rapid criticality analysis, a first assessment to find the right way forward immediately and prevent wasting resources on what initially seemed important.



The methodic RCM approach that keeps your assets at optimum levels of availability and reliability.

Laying the Foundation

If high-quality data is the key to successful asset management, companies need the means to collect and manage that data. Enterprise APM allows you to structure, manage and use asset-related data in the most effective manner imaginable. In a highly structured process, data is laying the foundations for your ideal maintenance strategies. Decision-making is greatly simplified by quickly comparing existing strategies to industry libraries, best practices and the state of your assets.

Comprehensive asset libraries ensure rapid deployment by adding 20 years of failure mode data to complete the asset data in your EAM system. The asset library contains RCM-based equipment failure data and preventive maintenance (PM) templates for almost 5,000 components commonly found in asset-intensive industries:

- 10,000 failure causes with failure conditions
- 20,000 maintenance tasks (PM templates)
- 20 years and 22,000 man-years of experience



Once running, the solution allows users to explore all investment, production and maintenance scenarios to determine the best way forward.



Maintenance Strategy Defined and Deployed

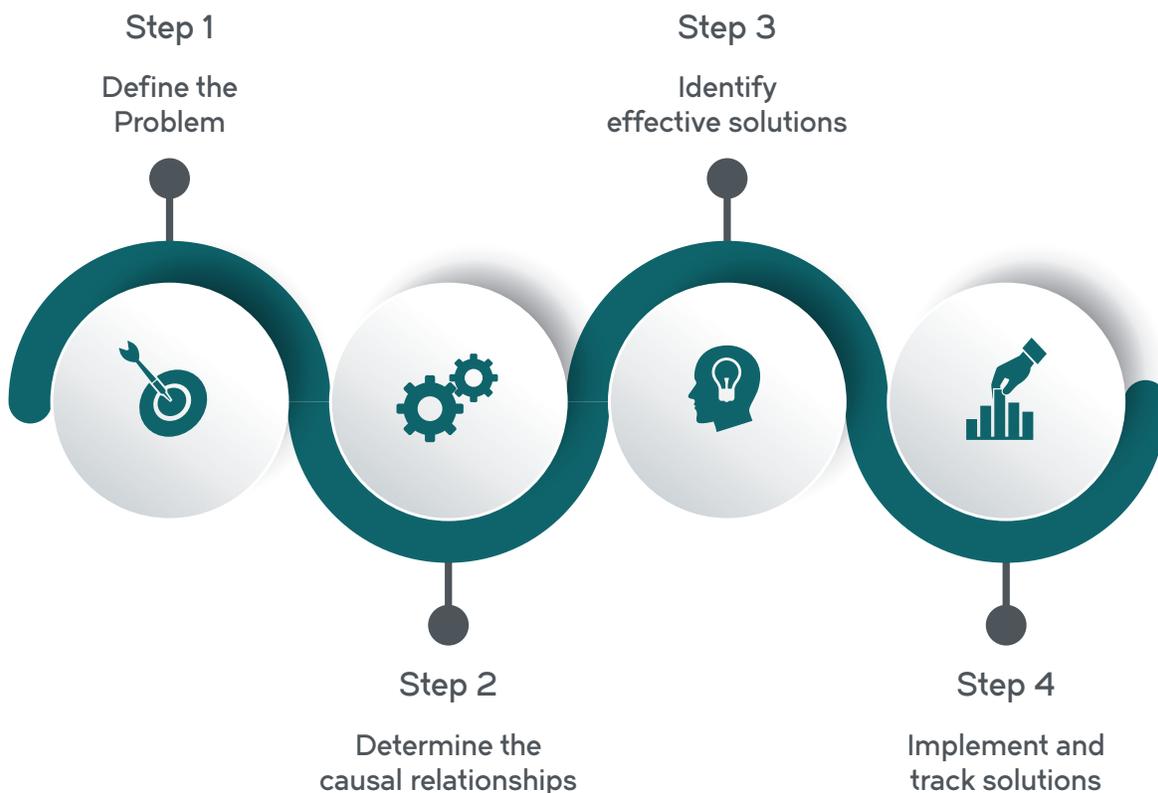
Systematic Reliability Centered Maintenance analysis leads to development, sharing, and deepening of the knowledge of your assets. The solution helps to define acceptable risks, your maintenance strategy, and the best route to your business objectives. Decisions on capital-intensive replacements can have a high impact on profitability and continuity. RCM also shows when ageing assets become too expensive to maintain, and calculates the impact of different renewal scenarios on CAPEX and OPEX.

Predict Outcomes

With the ability to predict the effects of different maintenance and investment scenarios, users can choose the optimum strategy to cover the entire asset lifecycle. Asset design and condition, market demand, regulatory compliance and risk analysis are the basis for maintenance strategies. As all these elements can and will change over time, risk-based maintenance enables you to explore multiple scenarios and predict the impact of changes to arrive at the most cost-effective strategy.

Simulate Effects

The simulation module helps users calculate the ROI and effects of maintenance strategies for this month, next year or anywhere in the asset lifecycle. The chosen strategy is automatically translated to maintenance tasks and preparations can be easily operationalised in your EAM system. With the FlexView module, you can easily tailor to specific needs, for example by fast mass mutations when a change in business objectives warrants a entirely new maintenance strategy.



Learn from the Past to Prevent in the Future

Frequent failures and safety incidents have a big impact on operations. Jumping to conclusions and resorting to stopgaps usually means treating symptoms instead of causes. When the root causes have been established, and all measures and solutions have been systematically registered and analysed, it will be possible to prevent future incidents.

The immediate harmful effects of failing assets may go far beyond production losses, and endanger the safety of people and the environment. Prevention is the better option in all cases. Asset Performance Management helps to predict and prevent failures and get the most out of your assets. Risk-based maintenance also supports business objectives such as production optimisation, safety, quality and cost control, while dealing effectively with compliance issues and environmental care.

Streamlined Inventory Management

Spare parts and components can be crucial for safety, compliance, asset availability, even business continuity. A small part can cause big problems when it fails and can't be replaced rapidly. At the same time, keeping large numbers in stock is obviously not the most efficient way to mitigate risks in terms of costs and logistics.

To learn more about risk-based maintenance or our comprehensive Enterprise APM portfolio, visit: sw.aveva.com/asset-performance

The Risk-based Maintenance Module delivers additional functionality to your EAM inventory management module. It takes inventory management to the next level by identifying which spare parts are critical to overall asset performance and business objectives. By combining all available data with risk profiles, it allows you to strike exactly the right balance in inventory management. It allows you to determine minimum stock levels and uses the Economic Order Quantity (EOQ) model to calculate the most cost-efficient procurement options.

Risk-based Maintenance Module has proven to reduce repair time by 10% and inventory costs by 25%.

Flexible Hosting and Services Model

AVEVA ensures that you get the full range of benefits from risk-based maintenance including installation and integration services, in addition to consulting services. The solution is available on premises and as a service (SaaS). User training and e-learning courses help our customers discover best practices and get the most out of their systems.

AVEVA Worldwide Offices | www.aveva.com/offices

AVEVA believes the information in this publication is correct as of its publication date. As part of continued product development, such information is subject to change without prior notice and is related to the current software release. AVEVA is not responsible for any inadvertent errors. All product names mentioned are the trademarks of their respective holders.

© 2019 AVEVA Group plc and its subsidiaries. All rights reserved.