



Reliability Strategies in Maximo Application Suite

Northeast Maximo Users Group

May 8, 2026

Agenda

- RCM
- Reliability Strategies
- Conclusion
- Q&A

Speakers



Matt Midas – VP Sales and Business Development

Matt has been involved in maintenance and reliability for 30+ years. A graduate of the US Merchant Marine Academy, he has served aboard US flagged merchant vessels and was commissioned in the US Navy serving aboard the USS Jesse L Brown, FF1089, responsible for operations, maintenance, engineering, and safety programs. He has worked at the Charleston Naval Shipyard where he qualified for S5W and S6G reactor plant overhauls and worked on several submarine overhaul projects. He also held positions at ServiceMaster Facilities Management where he was responsible for the maintenance and operations of 186 buildings in Washington, DC, including all aspects of asset management, work execution, inventory management, and planning and scheduling. Matt has been part of the Maximo community since 1994, holding various positions at organizations helping customers improve asset management and reliability programs. With his current role he continues to help customers across many industries improve the use of EAM systems, maintenance/reliability processes, overall data quality, and digital twins. He has always strived to help customers implement a culture of continuous improvement with an eye to the future.

RCM

Response Centered Maintenance

- Focusing on the art of responding to failures
- No time for analytics (FMEA)
- No time for improvements

If it isn't broken, don't fix it!

Limited work plans

No planning, no scheduling

Hard to Improve

Reliability Centered Maintenance

- Maximize Equipment Availability
- Enhance Safety and Environmental Compliance
- Optimize Maintenance Resources
- Extend Asset Life

Asset Criticality

FMEA

Failure Consequences

Maintenance Strategies – PM, PdM, RTF

Monitor

RCM

Response Centered Maintenance

- Focusing on the art of responding to failures
- No time for analytics (FMEA)
- No time for improvements

- Continuous cycle
- Moving from one fire to the next
- Morale
- Cultural shift

Reliability Centered Maintenance

- Maximize Equipment Availability
- Enhance Safety and Environmental Compliance
- Optimize Maintenance Resources
- Extend Asset Life

- Reduces unplanned downtime
- Lowers maintenance costs by avoiding unnecessary repairs
- Improves overall plant efficiency and reliability
- Enhances workplace safety by preventing hazardous failures

RCM

Response Centered Maintenance

- Focusing on the art of responding to failures
- No time for analytics (FMEA)
- No time for improvements

Reliability Centered Maintenance

- Maximize Equipment Availability
- Enhance Safety and Environmental Compliance
- Optimize Maintenance Resources
- Extend Asset Life

ITS ALL ABOUT
THE DATA

Consistent and
Standardized

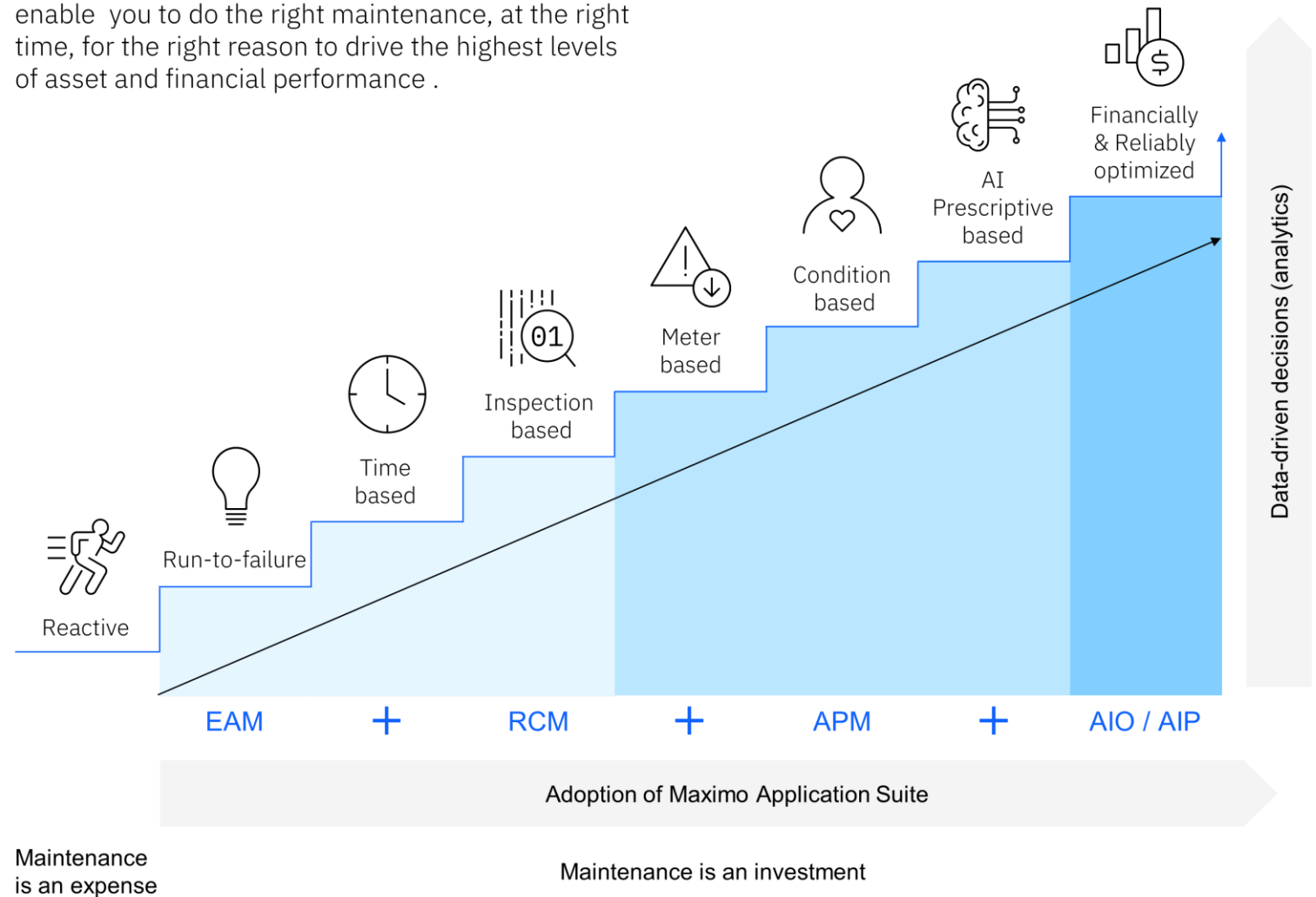
Reliability Strategies

Reliability Strategies is more than a library of FMEAs and Job Plans that can be used to accelerate the RCM journey

It allows you to apply RCM studies that have been done on assets across many industries

It also allows you to use an existing strategy and create your own custom strategies

Leveraging Reliability Strategies will quickly enable you to do the right maintenance, at the right time, for the right reason to drive the highest levels of asset and financial performance .



Source: IBM

Reliability Strategies

Release 8.11

- RSL Viewer
- Understand relationship between failure modes and maintenance tasks
- Additional information regarding failure timing, operational context impacts, and discovery opportunities

Release 9.0

- Custom strategies
- Ability to interact with and edit RSL failure modes
- Ability to create new failure modes
- Ability to risk rank failure modes
- Ability to create new recurring or one-time actions

Release 9.1

- Identification of Functions and Functional Failures
- Linkage to Failure Modes
- Mitigating Activities
- Develop Job Plan content
- Linked to failure modes
- Integration with Asset Type and Classifications
- Integration with Failure Classification (Problem and Cause)
- Integration between Asset and assigned Reliability Strategy
- FMEA Assistant

Source: IBM

Reliability Strategies MAS 9.2



Job Plan & PM support

View, manage, and create Job Plans, PMs, and Master PMs directly from mitigation activities.



Implementation Dashboard

Check your assets' coverage, identify common failure, and easily track your strategy implementation.



Enhanced FMEA Builder

Generate actions and mitigation activities for your failure modes, ready to be turned into actionable PMs.



Advanced Strategies

Build your strategies faster with more information from the *Reliability Strategy Library*, improved user interfaces such as component and mechanism management, multiple PCR codes, and more.



Meter support

Link failure modes, actions, and mitigation activities to your Maximo Meters to better document PM intervals and to quickly identify root causes.



Risk Matrices

Classify your failure modes with against your defined standards with custom risk matrices.



Strategy Import & Export

Import your existing reliability content or edit strategies in your preferred tool with pre-formatted data templates.



Strategy Validation

Identify common errors in your strategies, such as unlinked failure modes, missing action effectiveness, and more.



Asset Groups

Bring together assets with common attributes and share strategies with context-specific overrides.



Nested Strategies

Build composable strategies with parent-child relationships.



Strategy Revisions

Keep your maintenance strategies up to date with revisioning capabilities.

Source: IBM

Reliability Strategies

Pre-Built Strategies for 800+ Asset Types
Based on 25 years of large-scale RCM studies and 32,000 years of professional industry experience

Reliability Strategy Library

- **800+ Equipment Types**
- **58,000+ Failure Modes**
- **5,000+ PM Tasks with step-by-step instructions**

Features for each asset include

- Defined Boundary Conditions
- PM tasks and intervals organized by operating context (criticality, duty cycle and service conditions)
- PM tasks one to one mapping with failure modes
- PM effectiveness ranking at detecting specific failure modes
- Cross industry asset coverage

Reliability Strategies

Pump - Horizontal – Multi Stage - Double Suction - Axially Split Case – Mechanical Seal – Radial Bearing – Oil Lube



20 Failure Locations

124 Failure Modes

- Degraded Lubricant
- Gear Drive Oil Pump Failure
- Misalignment

Operating Context

Select Operating Context:

- Duty Cycle
- Criticality
- Service Conditions

Tailor based on context:

- Commercial Real Estate
- Oil & gas
- Manufacturing
- Utilities / Powergen
- Mining
- Hydro
- Wastewater

Reliability Strategies

Baseline

PMs with intervals by operating context

Job Plans

- Tasks
- Step-by-Step Guides

Source: IBM

Reliability Strategies

The screenshot displays the IBM Maximo Application Suite interface for Reliability Strategies. The top navigation bar shows 'IBM Maximo Application Suite' and 'Reliability Strategies'. A sidebar on the left contains various icons for navigation. The main content area is titled 'Strategy library /' and features filters for 'Asset' (Pump), 'Asset type' (Centrifugal), and 'Asset configuration' (Pump - Horizontal - Multistage - Axially Split Case - Mechanical). The selected strategy is 'Pump - Horizontal - Multistage - Axially Split Case - Mechanical Seal - Radial-Sleeve Bearings-Oil Lubed', with a 'Duplicate as custom strategy' button. Below this, there are tabs for 'Overview', 'Failure modes', and 'Mitigation activities'. The 'Overview' tab is active, showing a 'Failure and mitigation summary' with 128 failure modes and 10 mitigation activities. There are buttons to 'View failure modes' and 'View mitigation activities'. The 'Boundary includes or excludes' section defines the boundary of a Multi Stage Axially Split Case Type horizontal pump and lists included components: Suction and Discharge flanges, Gear drive oil pump and auxiliary oil pump, Lube oil cooling heat exchanger or internal bearing cooler, Pump and its foundation, and Detectors, sensors, and alarms (e.g. bearing temperature and vibration, aux. oil pump pressure switch).

IBM Maximo Application Suite | Reliability Strategies

Strategy library /

Asset: Pump × Asset type: Centrifugal × Asset configuration: Pump - Horizontal - Multistage - Axially Split Case - Mechanical × →

Pump - Horizontal - Multistage - Axially Split Case - Mechanical Seal - Radial-Sleeve Bearings-Oil Lubed [Duplicate as custom strategy](#)

Overview Failure modes Mitigation activities

Failure and mitigation summary

Failure modes	Mitigation activities
128	10

[View failure modes →](#)

[View mitigation activities →](#)

Boundary includes or excludes

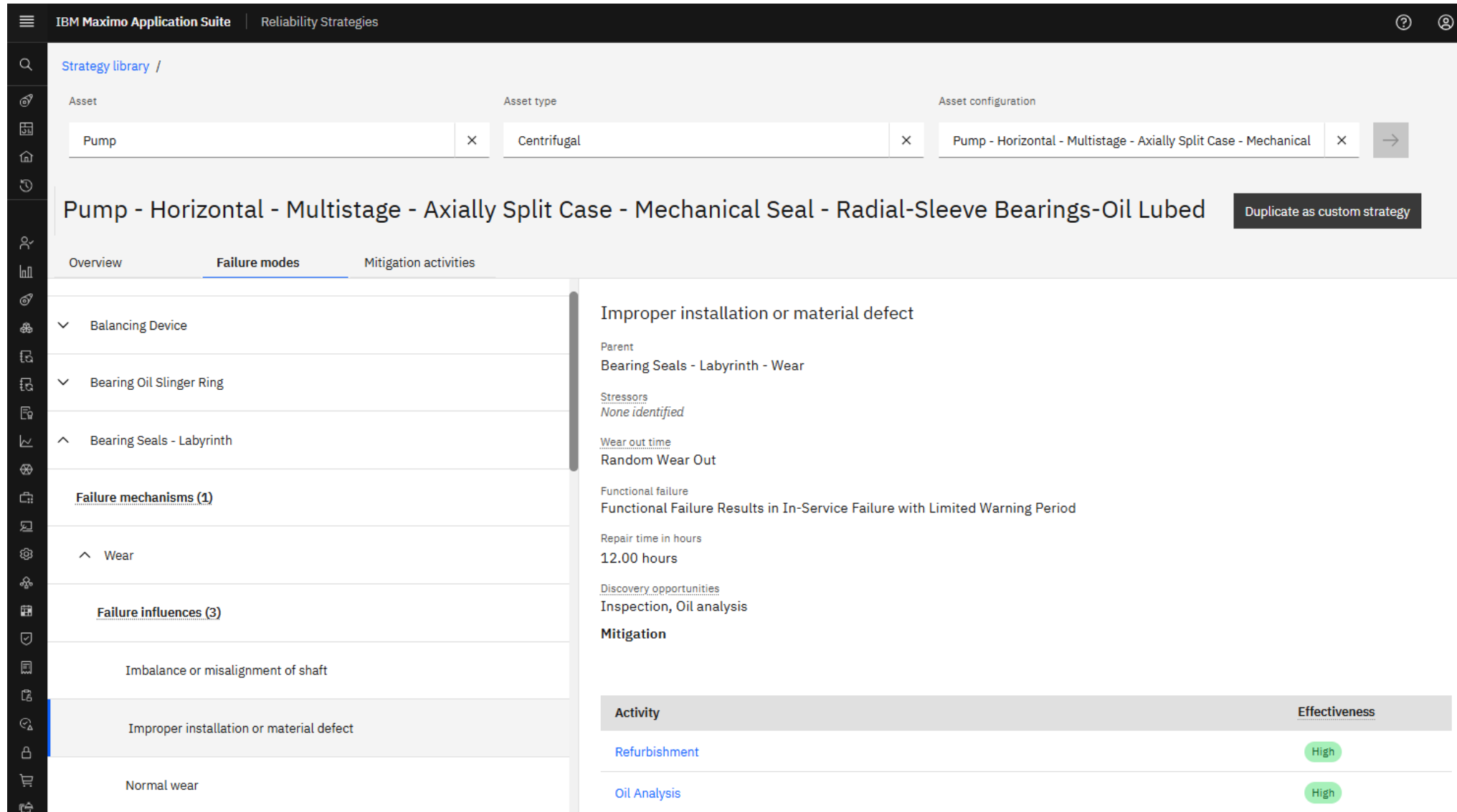
Boundary

The boundary of a Multi Stage Axially Split Case Type horizontal pump with mechanical seals and oil lubricated radial and sleeve bearings for the purpose of this database is defined to include the following:

Includes

- Suction and Discharge flanges
- Gear drive oil pump and auxiliary oil pump
- Lube oil cooling heat exchanger or internal bearing cooler
- Pump and its foundation
- Detectors, sensors, and alarms (e.g. bearing temperature and vibration, aux. oil pump pressure switch)

Reliability Strategies



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Strategy library /

Asset: Pump × Asset type: Centrifugal × Asset configuration: Pump - Horizontal - Multistage - Axially Split Case - Mechanical × →

Pump - Horizontal - Multistage - Axially Split Case - Mechanical Seal - Radial-Sleeve Bearings-Oil Lubed [Duplicate as custom strategy](#)

Overview **Failure modes** Mitigation activities

Failure modes list:

- ✓ Balancing Device
- ✓ Bearing Oil Slinger Ring
- ^ Bearing Seals - Labyrinth
- Failure mechanisms (1)**
- ^ Wear
- Failure influences (3)**
- Imbalance or misalignment of shaft
- Improper installation or material defect**
- Normal wear

Improper installation or material defect

Parent: Bearing Seals - Labyrinth - Wear

Stressors: None identified

Wear out time: Random Wear Out

Functional failure: Functional Failure Results in In-Service Failure with Limited Warning Period

Repair time in hours: 12.00 hours

Discovery opportunities: Inspection, Oil analysis

Mitigation

Activity	Effectiveness
Refurbishment	High
Oil Analysis	High

Reliability Strategies

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Strategy library /

Asset: Pump X Asset type: Centrifugal X Asset configuration: Pump - Horizontal - Multistage - Axially Split Case - Mechanical X →

Pump - Horizontal - Multistage - Axially Split Case - Mechanical

Overview Failure modes Mitigation activities

Operating context ⓘ

[Preview activities in all contexts](#)

Criticality: ☒ Critical ☐ Minor Duty cycle: ☒ High ☐ Low Service condition: ☒ Severe ☐ Mild

Activities

Activity	CHS	CLS	CHM	CLM	MHS	MLS	MHM	MLM
Refurbishment	AR	AR	AR	AR	AR	AR	AR	AR
Functional Testing	NA	AR	NA	AR	NA	AR	NA	AR
Vibration Analysis	1M	3M	1M	3M	3M	1Y	3M	1Y
Oil Analysis	3M	6M	3M	6M	2Y	2Y	2Y	2Y
Performance Trending	2Y	2Y	2Y	2Y	NR	NR	NR	NR
Oil Filter Change, Clean, and Inspect	2Y	2Y	2Y	2Y	2Y	2Y	2Y	2Y
System Engineer Walkdown	3M	3M	3M	3M	3M	3M	3M	3M
Operator Rounds	1S	1S	1S	1S	1D	1D	1D	1D
Acoustic Monitoring	AR	AR	AR	AR	AR	AR	AR	AR
Seal Replacement	AR	AR	AR	AR	AR	AR	AR	AR

Activity frequencies for all operating contexts

The following table contains all recommended mitigation activities and frequencies. For example, 2Y means that the activity is recommended every two years.

Recommended frequency per operating context

Activity	CHS	CLS	CHM	CLM	MHS	MLS	MHM	MLM
Refurbishment	AR	AR	AR	AR	AR	AR	AR	AR
Functional Testing	NA	AR	NA	AR	NA	AR	NA	AR
Vibration Analysis	1M	3M	1M	3M	3M	1Y	3M	1Y
Oil Analysis	3M	6M	3M	6M	2Y	2Y	2Y	2Y
Performance Trending	2Y	2Y	2Y	2Y	NR	NR	NR	NR
Oil Filter Change, Clean, and Inspect	2Y	2Y	2Y	2Y	2Y	2Y	2Y	2Y
System Engineer Walkdown	3M	3M	3M	3M	3M	3M	3M	3M
Operator Rounds	1S	1S	1S	1S	1D	1D	1D	1D
Acoustic Monitoring	AR	AR	AR	AR	AR	AR	AR	AR
Seal Replacement	AR	AR	AR	AR	AR	AR	AR	AR

Activities

Activity	Frequency	Description
Refurbishment	AR	- Document as-found / as-left dimensions on machine fits, clearances, and motor and pump lift
Functional Testing	AR	- Inspect and document condition of welds, piping, and hardware such as bolts and fasteners
Vibration Analysis	1M	- In general replace all components beyond OEM tolerances and specifications; document wear and condition
Oil Analysis	3M	- Inspect for damage, wear, and deterioration of all gaskets, O-rings, and elastomers
Performance Trending	2Y	- Replace all gaskets, O-rings, and elastomers
		- Inspect casing, volute, and diffuser assemblies for thinning, cracking, and corrosion or erosion
		- Inspect shaft for damage, defects, run out, and radial position
		- Inspect impellers and wear rings for wear and damage; balance and size if required

Conclusion

- Reactive is not good!
- Data is vital and valuable
- Do you have a long-term plan
- Reliability Strategies in MAS is a great starting point
- Improved asset availability
- Reduced downtime
- Increased productivity
- Reduced costs
- Increased efficiency
- Better decisions
- Reduced risk

MAS expands the tools available to further optimize asset performance, minimize downtime, and maximize operational efficiency.

Contact us for a Demo





Thank You!

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