TASNEE التصنيع

360° HEALTH LIVE MONITORING for FRP COOLING WATER SYSTEM

TASNEE ASSET INTEGRITY JOURNEY

2004 SAP Deployment

- Deployed SAP as frontline CMMS for management of maintenance work

2004-2010 PM Program Development

- Focused efforts for the development PM job for all assets

2010-2016 Asset Reliability Initiative

- Introduction of APM-Meridium
- Integrated APM with SAP
- Development of reliability Procedure

2016-2018 Asset Reliability Implementation

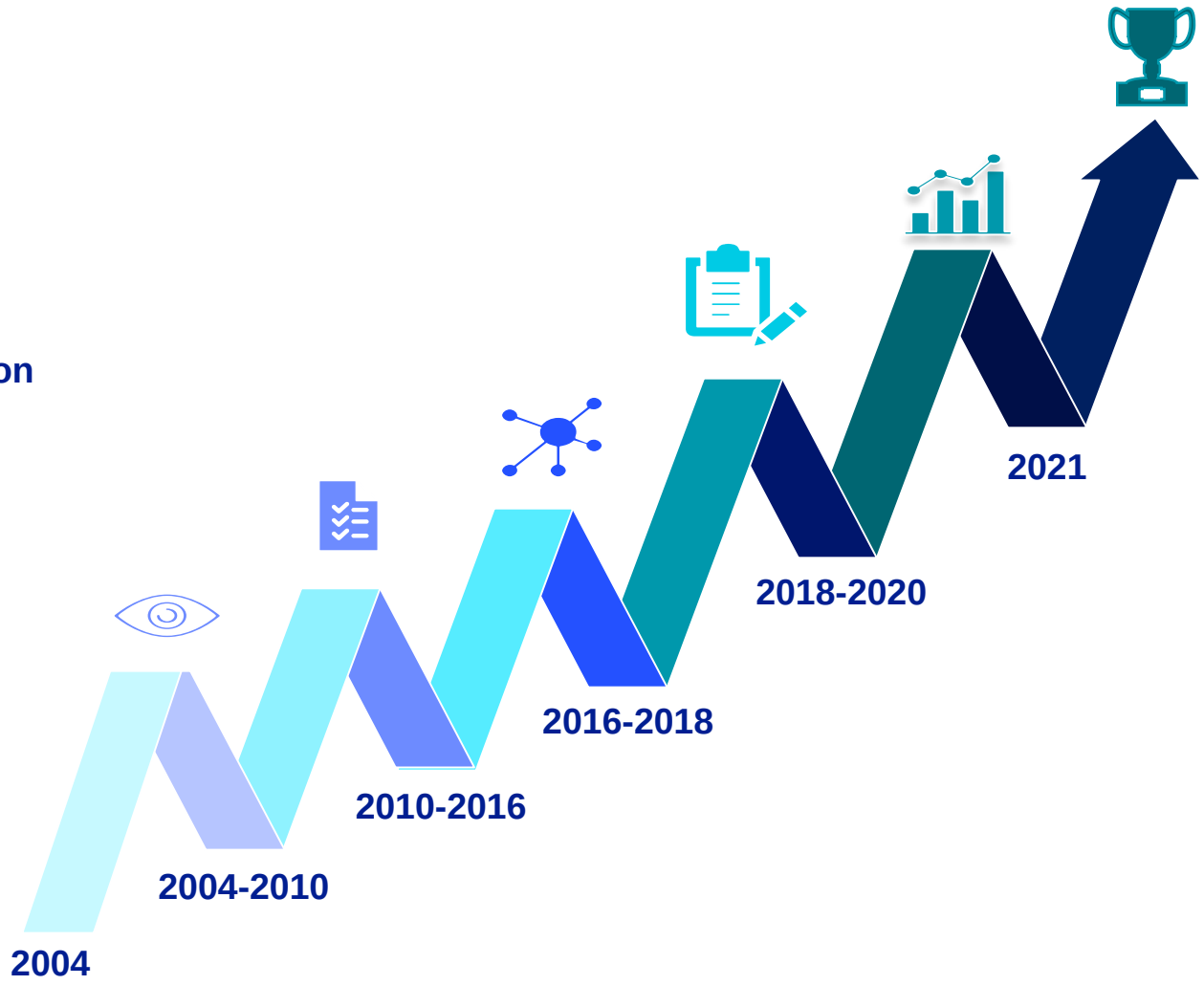
- Reinforced Reliability Manual and deployed best practices
- Introduced focus group of SMEs
- Implement all APM Methodologies

2018-2020 Asset Reliability Improvement

- Review developed PM for Critical Assets
- Identify/Eliminate Performance Killers, Bad Actors
- Reinforcement All APM Modules and ensuring full utilization

2021 and Beyond Best In class Manufacturing Excellence

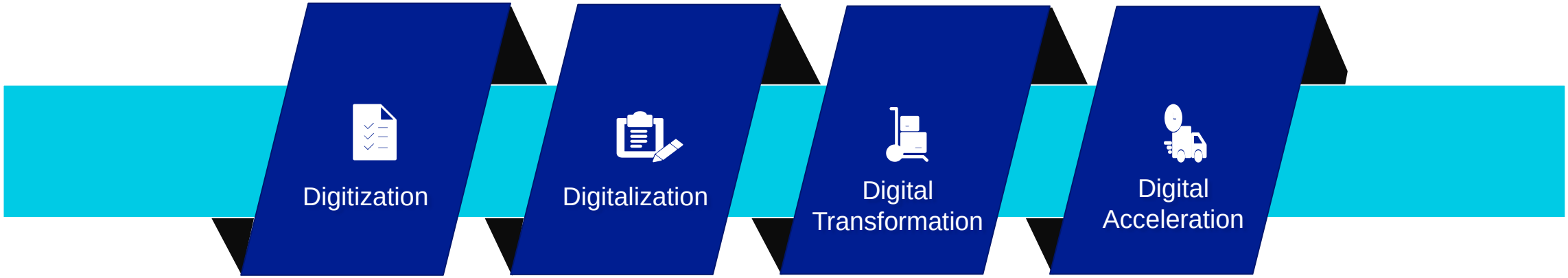
- Apply for ISO 55000 Certificate
- Implement Life Cycle Costing
- Initiate Industry 4.0 Digitalization and IoT Program



DIGITALIZATION AT TASNEE

- Value driven approach to realize the assets value and ensure proper resource utilization
- Support working together and engagement culture within all TASNEE complex
- Innovative Technologies towards Implementing Operational Excellence strategies
- Competitive advantage for TASNEE through more Effective and efficient manner

TASNEE DIGITAL TRANSFORMATION PROGRAM



Conversion of data into digital form. It is essential to first move from document-centric to data-centric information gathering.

Conversion of the digitized data into higher value information, and where feasible, automated improvements

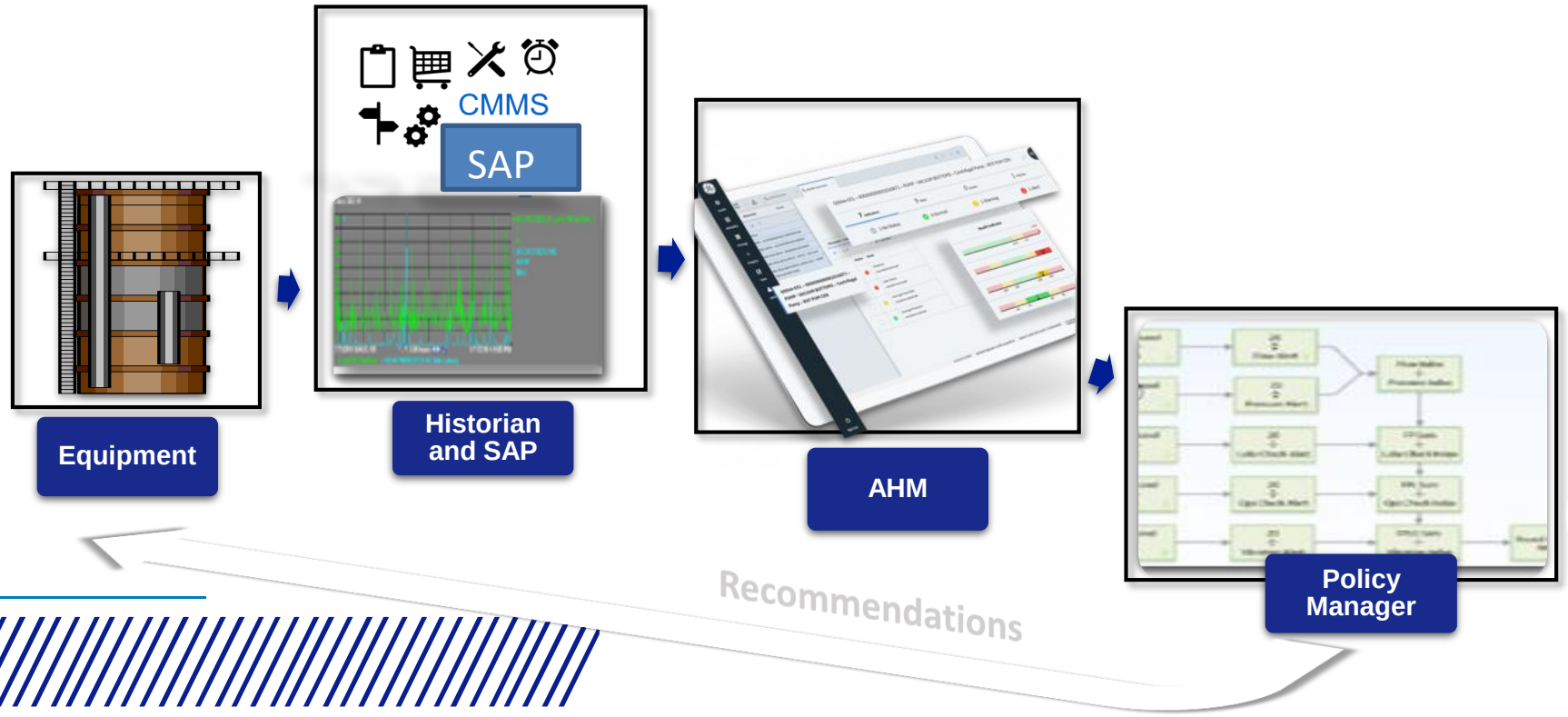
Transformation of work enabled by digitalization. Digitalization by itself does not produce enough value.

Acceleration of digital transformation

1. Make Digital Transformation a business priority, not an IT project.
2. Start the transformation by creating a strategic digital roadmap, visibly supported by Executive.
3. Think BIG but start small – create a proof of concept with high ROI in selected area.

ASSET HEALTH MANAGEMENT

Asset Health Manager combines health indicators from process historian along with work histories to provides the ability to respond and initiate action to the warnings and alarms through Recommendation Management.



Sequence of Workflow

1. Condition data checked periodically through inspection or activities, such as PM compline
2. Excursion events monitored directly from a process historian
3. Inclusion of Asset performance history, such as key performance indicators (KPIs)
4. Defined high and low criteria for warning and alarm conditions to take the appropriate follow-up and action

COOLING WATER SYSTEM DASHBOARDOVERVIEW

- Collect data
- Display
- Analyze
- Act

1 CW SYSTEM DASHBOARD

Provides overall health of cooling Water system

2 CW Health Summary

Provides consolidated health of CW asset

3 Parameter Health Details

Provides details of a specific Parameter and allows for additional follow up actions

Display and Analyze

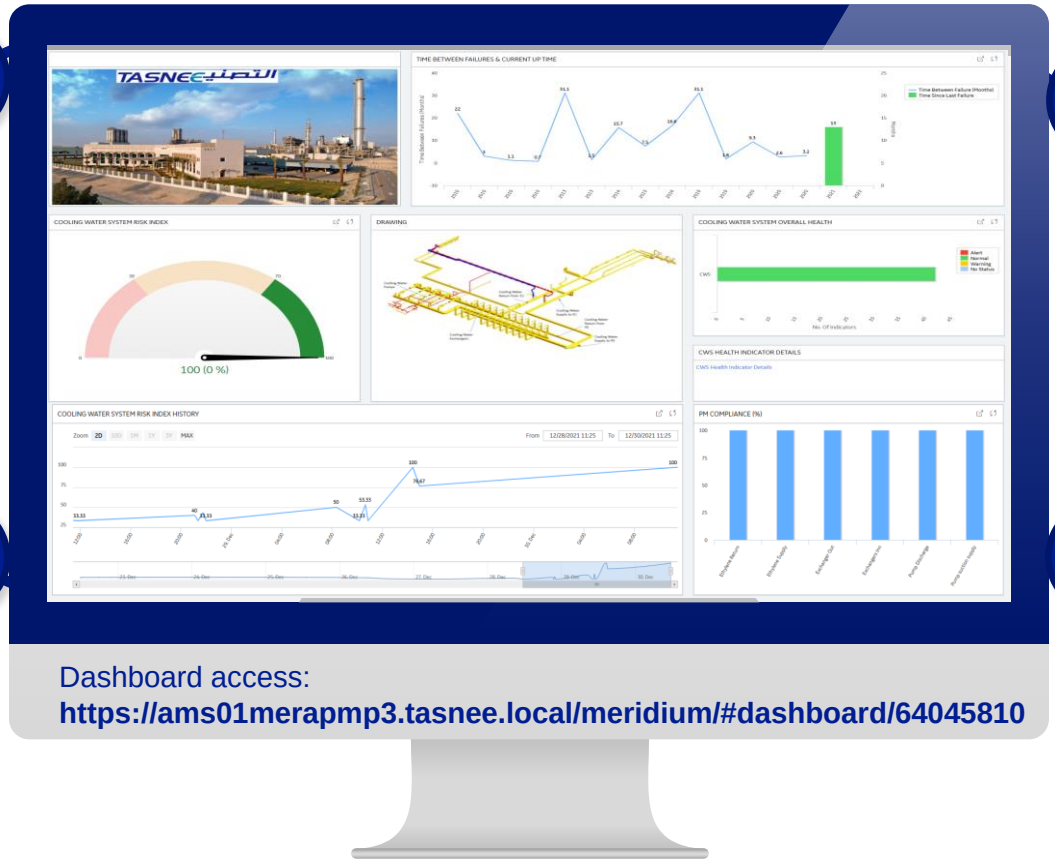
- Risk Scores
- Availability (MTBF)
- Alerts
- System/component/
- Parameter views

COOLING WATER SYSTEM DASHBOARD

Increased System Availability

Promoting form PM to PdM

Analyze Data For Ad-hoc Investigation And Root Cause Analysis.



Dashboard access:
https://ams01merapmp3.tasnee.local/meridium/#dashboard/64045810

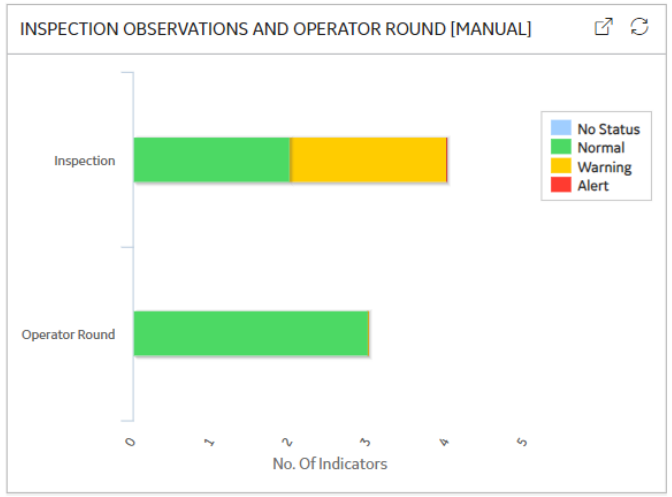
Safety Incident Reduction

Manage Risk

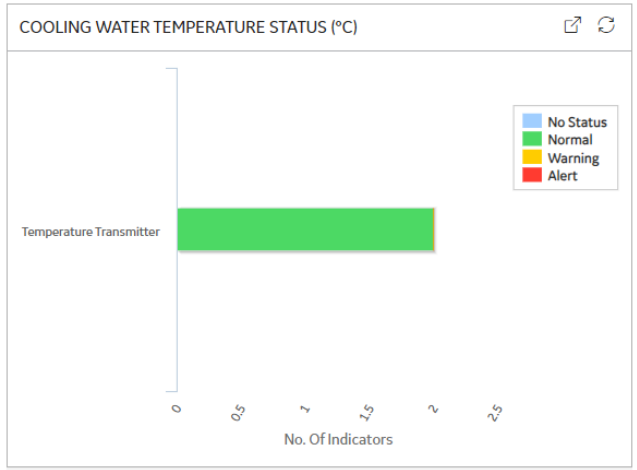
Reduce Production Losses

COOLING WATER FAILURE MODES

Delamination



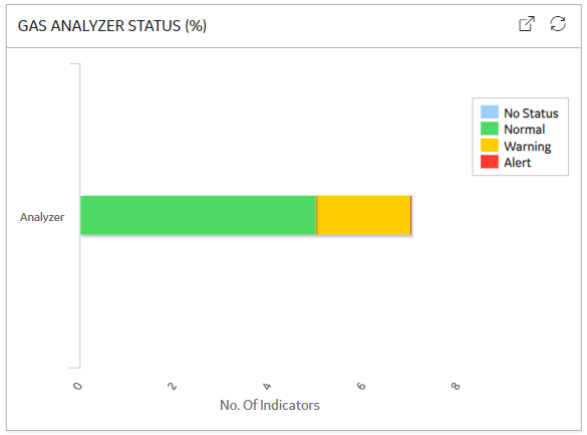
Blisterin

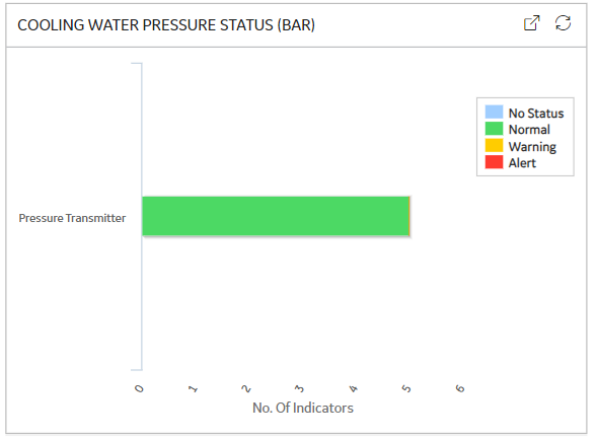


Each failure mode was linked with related sensors and ranges defined to create early warning before actual failure

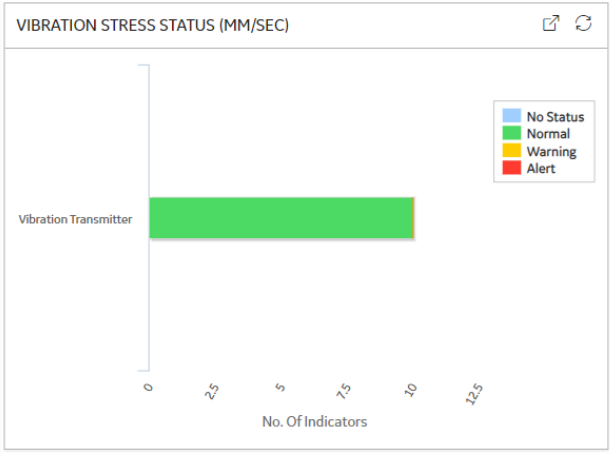
COOLING WATER RISK SCORE

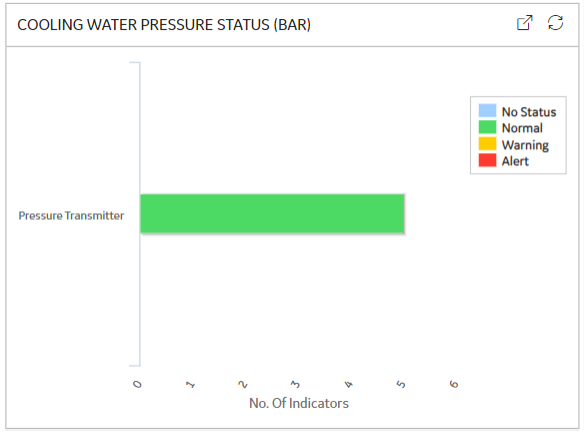
Rupture





Pipe Cracking





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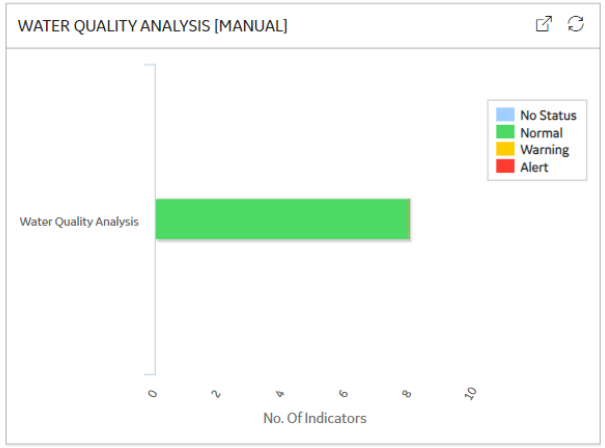
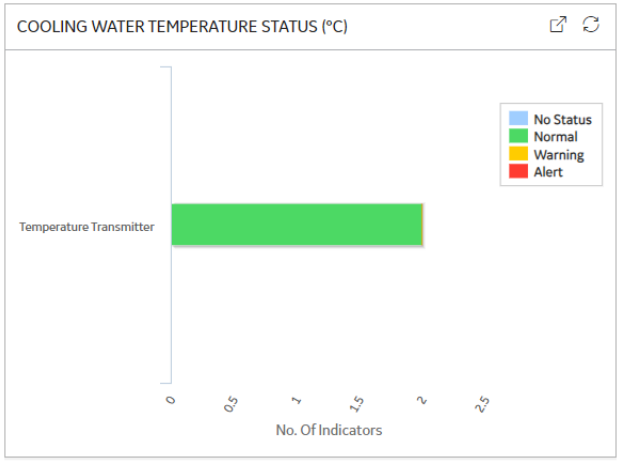
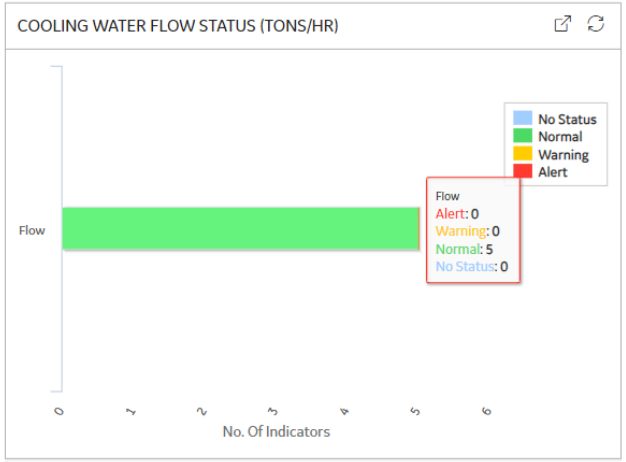
COOLING WATER FAILURE MODES

Liner Decay







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COOLING WATER RISK SCORE

Score (S)		Weights (W)							
		Pressure (5 Nos)	Temperature (2Nos)	Vibration (10 Nos)	Flow (5 Nos)	Analyzer (7 Nos)	Inspection (4 Nos)	Operator Round (3 Nos)	Water Quality (8 Nos)
		15	10	5	10	25	15	10	10
Normal	1	Score for each category is selected based on highest score among all the given sensors for that category							
Warning	2								
Alert	3								

$$Overall\ Risk\ index = \sum\left(\frac{Weight}{Score}\right)$$

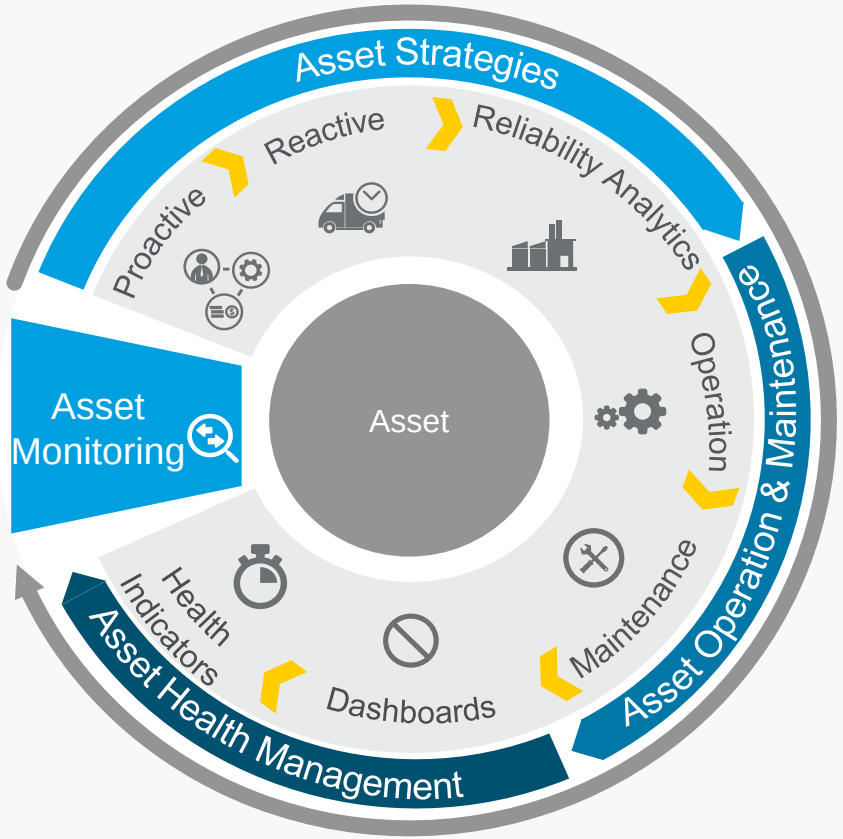
$$= \frac{W_{Press}}{S_{Press}} + \frac{W_{Temp}}{S_{Temp}} + \frac{W_{Vib}}{S_{Vib}} + \frac{W_{Flow}}{S_{Flow}} + \frac{W_{Ana}}{S_{Ana}} + \frac{W_{Insp}}{S_{Insp}} + \frac{W_{Opr}}{S_{Opr}} + \frac{W_{water\ Q}}{S_{water\ Q}}$$

Lower value indicates HEALTH IS DETERIORATING AND RISK IS INCREASING

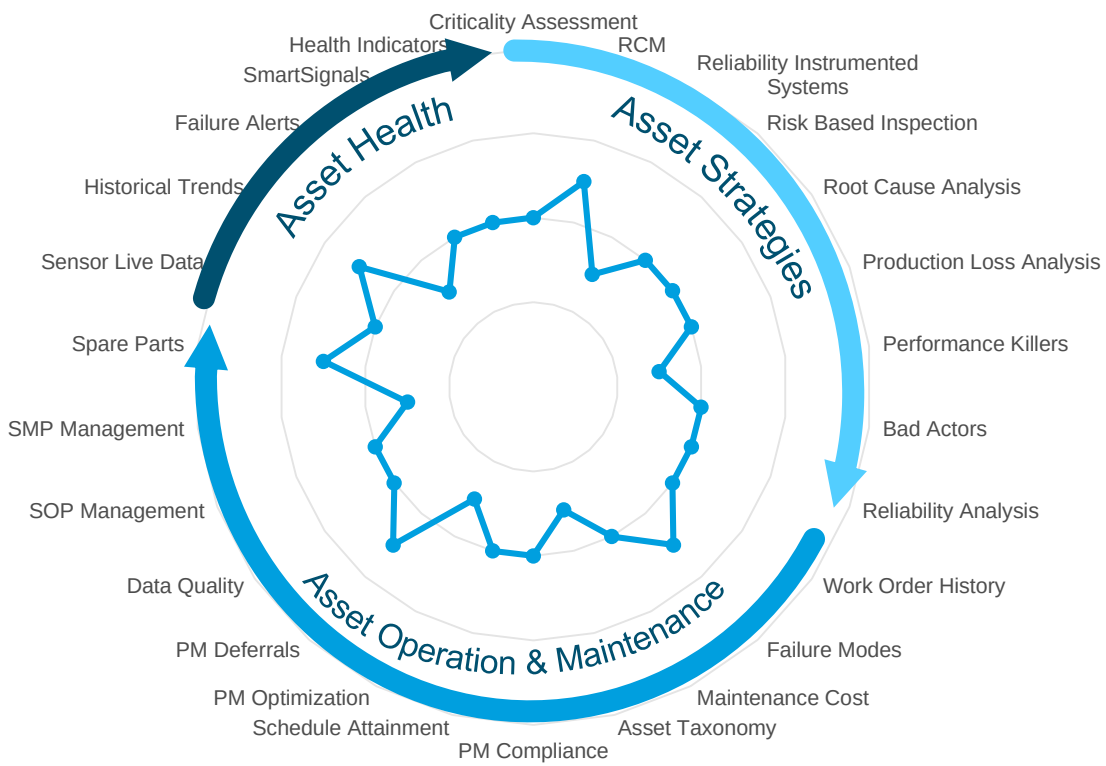
Higher value indicates BETTER HEALTH

360 MONITORING COOLING WATER SYSTEM

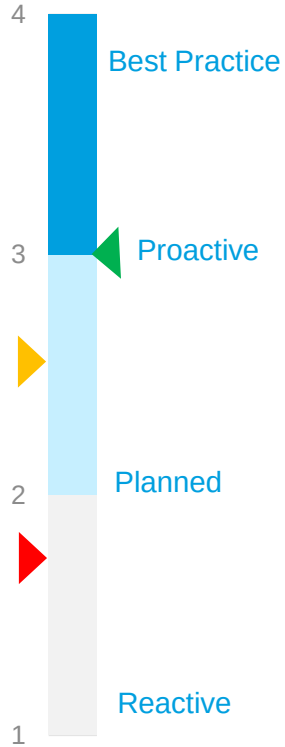
360-Degree Monitoring



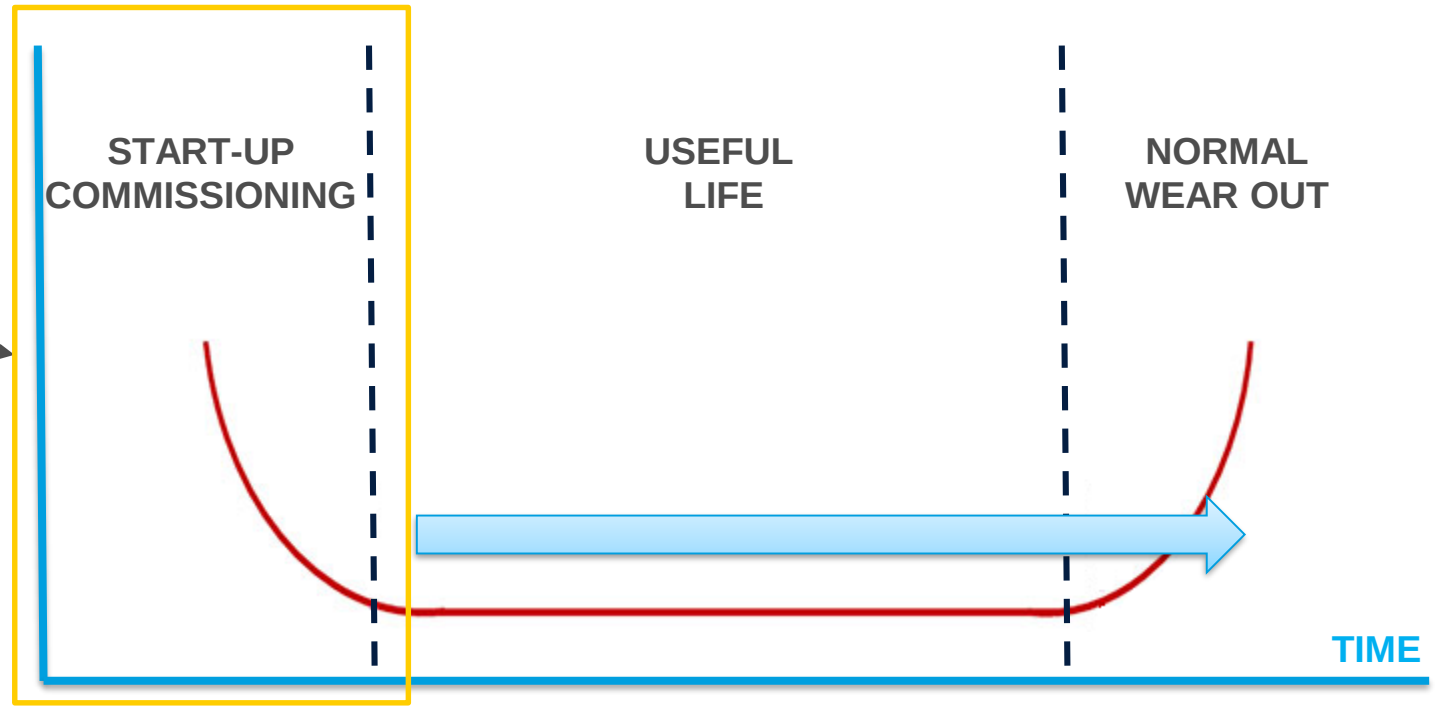
Monitoring Elements



Maturity Level



360 MONITORING COOLING WATER SYSTEM



DEAD ON ARRIVAL

We can reduce this impact by having Suitable specifications and adequate design tolerances

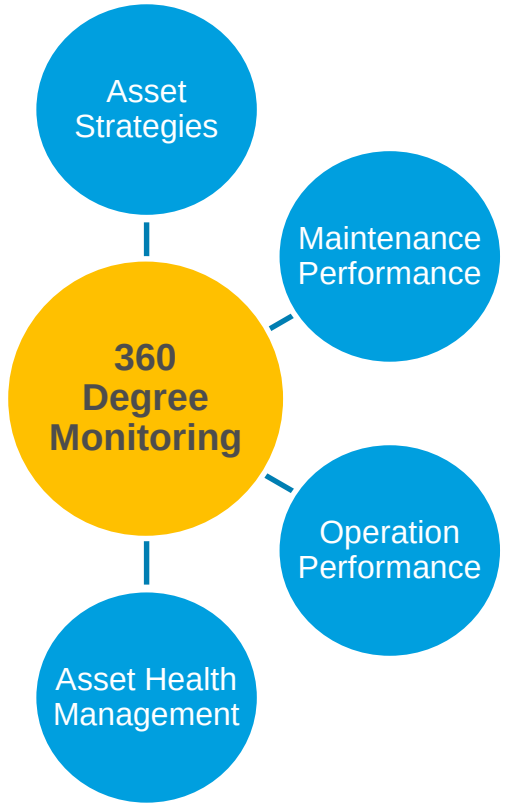
but even the best design intent can fail to cover all possible interactions of components in operation

FAT

still best tested design intent can fail due to improper Installation, assembly, pre-commissioning, Commissioning ..etc

SAT **QA/QC**

Also Successfully commissioned design intent can fail due to improper startup, run & maintain activities



FAT: Factory Acceptance Test

SAT: Site Acceptance Test

QA/QC: Quality Assurance / Quality Control

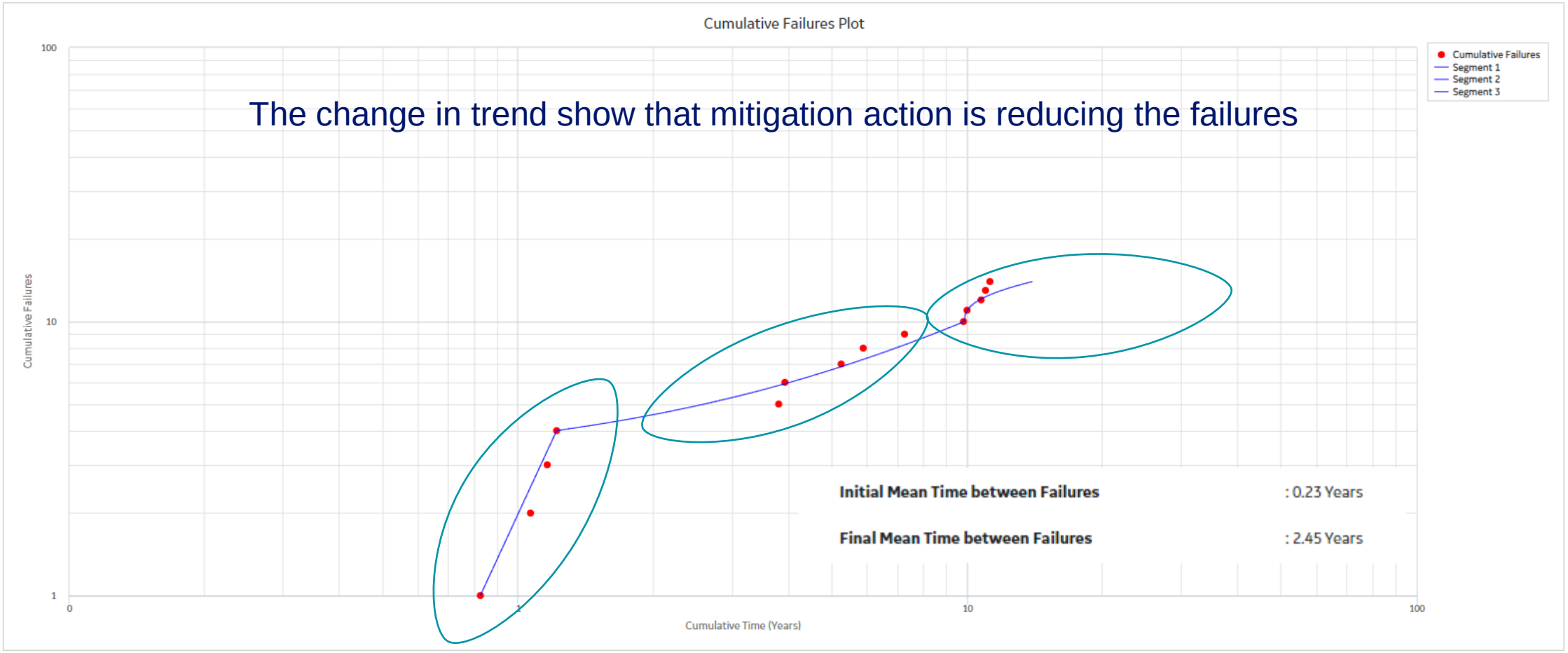
COOLING WATER RISK SCORE

Cooling Water Line Analysis

Last modified by langanbi on Wednesday, September 06, 2023 10:55 AM

Report | Site: Tasnee

Growth Options | Analysis Tasks | Analysis Data



THANK YOU

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