

SEPTMBER 2019

ABB Ability AssetVista

Plant Asset Management Solution

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Introduction to

Asset Management

What Types of Assets?

Based on ARC Advisory Group, Plant Asset Management is divided in two assets categories

Categories



Automation Asset

– Instruments Valves, Positioners



– IT, Switches, servers:

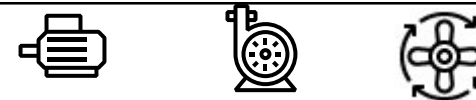


– Devices with built-in logics:

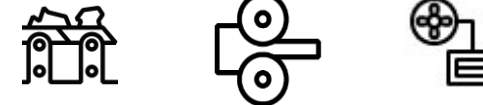


Production Assets

– Rotating equipment:



– Process equipment:



– Electrical equipment:



Maintenance strategies

From “run to failure” to “prescriptive”

Advanced maintenance Approaches

Condition-based

- Maintenance based on real time monitoring several conditions of asset are monitored indicating an upcoming failure is coming

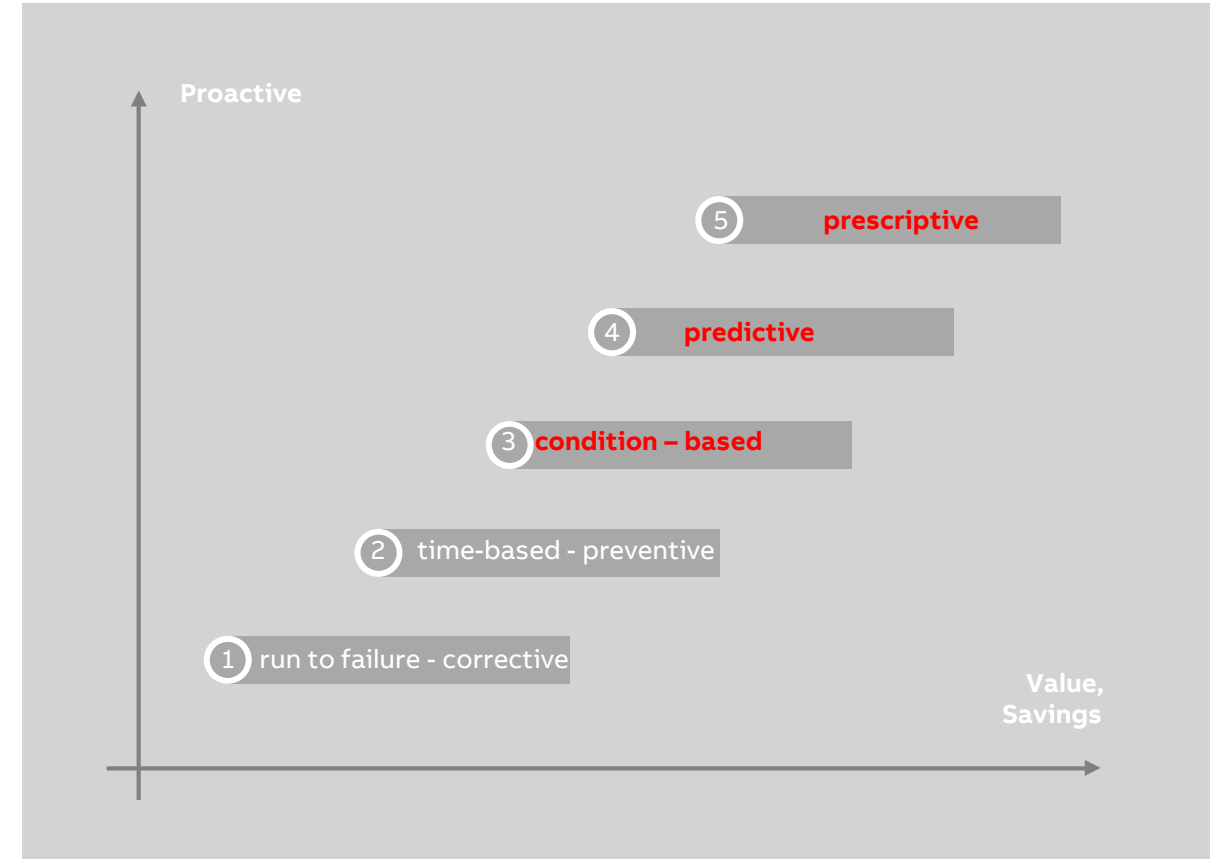
Predictive

- This includes the evaluation of the consequences of a failure and ensures the right amount of maintenance for the right equipment at the right time

Prescriptive

- One further maintenance strategy is to investigate the options. A device that is suffering from reduced health condition may deteriorate slower, if not loaded to full capacity

Implementing the right action to the right time



Maintenance Optimization

From “non essential” to “critical” assets

50%		4		FINAL LIKELIHOOD			2	18
DETECTABILITY	Almost certain	M	S	H	H	H		
	Likely	M	M	S	H	H		
	Possible	L	M	M	S	S		
	Unlikely	L	L	M	S	S		
	Rare	L	L	L	M	S		
CONSEQUENCE		Insignificant	Minor	Moderate	Major	Extreme		
Equipment (EQR)	Minimal damage to equipment. No effect on other equipment. Spare held on site.	Moderate damage to equipment. Minimal damage to other equipment. Spare held in region.	Major damage to equipment. Damage to other equipment. Spare available in <1 day.	Destruction of equipment. Major damage to other equipment. Spare held in state but available >1 day.	Destruction of equipment. Destruction of other equipment. Spare not available in state.		3	
People (HSR)	Minor first aid. No medical treatment. Low level short term inconvenience or symptoms.	Restricted work injury (RWI), occupational illness (OI) or medical treatment injury (MTI). Objective but reversible disability/impairment.	Loss time injury (LTI). Moderate irreversible disability or impairment to one or more persons.	Single or multiple serious injury. Severe irreversible disability or impairment.	Single or multiple fatality.		1	
Environment (EVR)	Negligible spillage or emissions (technical ENCR)	Spillage or emission on site but contained (internal ENCR)	Discharge to the environment outside of consent conditions (external ENCR rating Minor), prosecution not likely.	Discharge to the environment outside of consent conditions (external ENCR rating Moderate). Infringement fine likely, prosecution possible.	Major event, pollution of air or river, fish kill, public outcry, prosecution certain (external ENCR Major).		2	
Production (PPR)	Negligible plant downtime. Output targets affected but not missed. Net cost of issue <\$0.5m USD	Plant downtime ≤ 1 day. Less important output targets missed. Net cost of issue >\$0.5m ≤ \$2m USD	Plant downtime > 1 ≤ 2 days. Critical output target missed. Net cost of issue >\$2m ≤ \$5m USD	Plant downtime > 2 ≤ 5 days. Several critical output targets missed. Net cost of issue > \$5m ≤ \$10m USD	Plant downtime > 5 days. Several critical output targets missed by significant margin. Net cost of issue >\$10m USD		2	
Product Quality / Safety	Minor product quality issue, negligible harmful food safety implications.	Moderate product quality issue or mildly harmful food safety issue.	Significant product quality issue or harmful food safety issue with potential consumer illness or discomfort.	Highly harmful product safety issue with potential single consumer death or widespread illness.	Highly harmful food safety issue with potential multiple consumer deaths or widespread serious illness.		1	
FINAL CONSEQUENCE							9	

Asset Criticality Ranking – Focus where it’s needed

Why Plant Asset Management (PAM)?

Can I save money monitoring the health of my assets?

Cone crusher case @ mining (one event)

Air filter saturation

First alarm by
AssetVista.
Pressure drop.

Dust contamination into hydraulic unit

Oil filter saturation by dust

Bypass valve opened

Dust in the lubrication and hydraulic systems

Second
alarm by
AssetVista.
Pressure
equalization.

Production Savings (avoided shutdown)

Downtime: 08 hours

Hourly production: 4.000t/h

Contribution margin per ton.: 15USD

Savings: $8 \times 4.000 \times 15 = 480.000$ USD

Repair Savings

At least 120.000 USD in parts and man-hours

Total estimated saving: 600kUSD in a single event

Asset Management Solution for Process Industries

ABB Ability AssetVista

The AssetVista

User friendly intuitive interfaces, multiple arrangements with detailed info

Definition and purpose

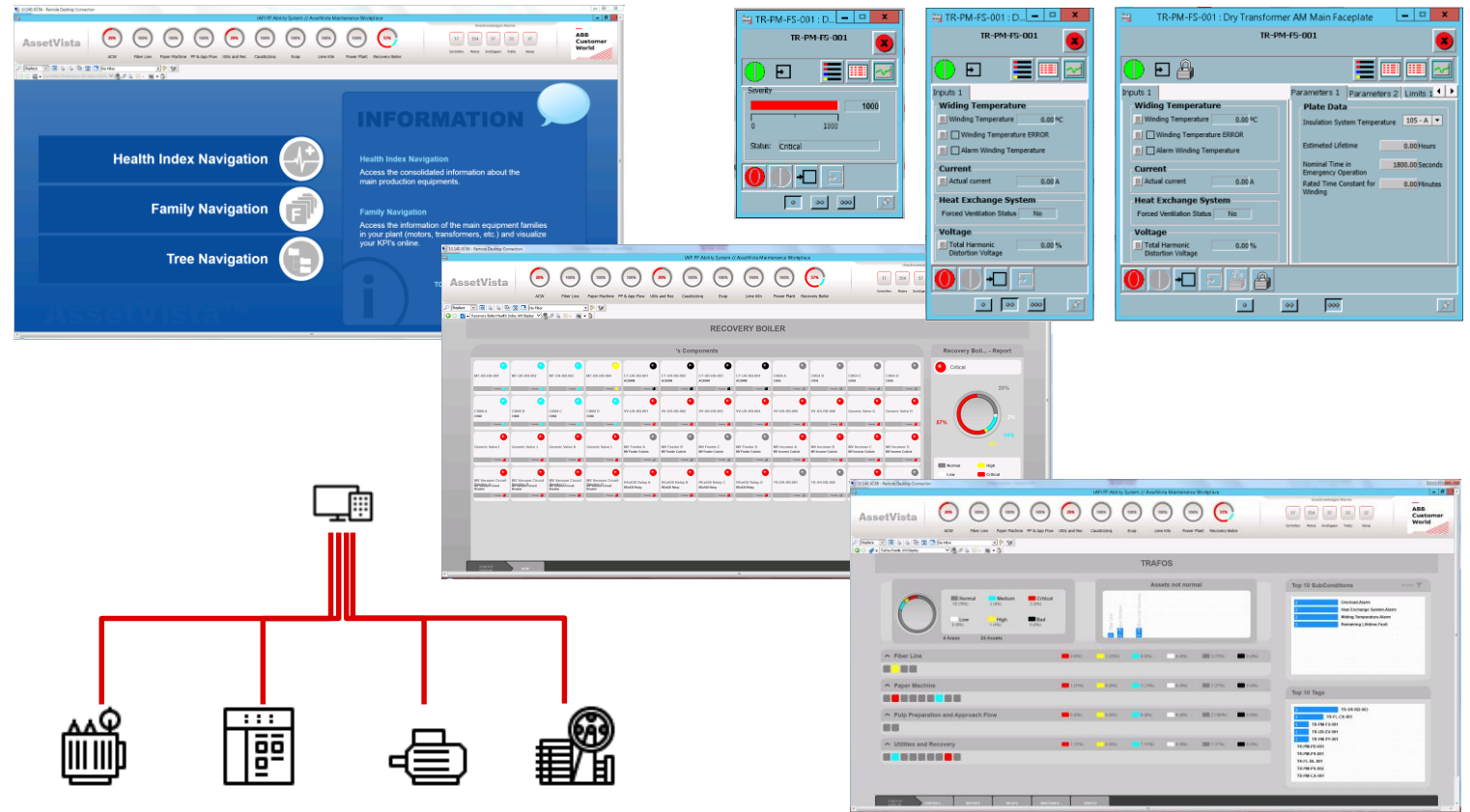
Maintenance data in user-friendly **dashboards** for a faster and accurate decision-making process

Identify potential failures either **periodically** or **in real-time** before they affect the productivity

Periodic reports support your maintenance team with **direct** and detailed **asset information**

Easy-to-use **root cause analysis** allows a **quick fail detection** and reduces production losses

Asset management solution address **to all type of assets**



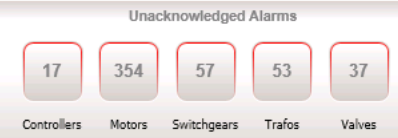
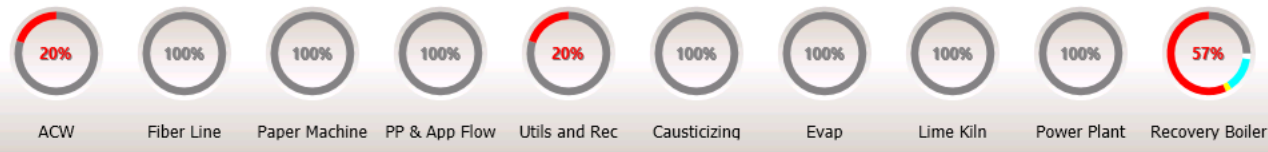
Maintenance Workplace

The screenshot displays the AssetVista Maintenance Workplace interface. At the top, there is a navigation bar with the AssetVista logo, several circular gauges for different equipment types (CC, Production, 1110, 1200, 1300, 1400, 1500, 1600, Utilities, Electrical Device), and a section for 'Unacknowledged Alarms' with counts for Belts (4), Brakes (16), CSI Vibration (3), Drives (13), Level Meters (2), LV Panels (10), Motors (10), and MV Panels (5). The ABB Customer Logo is also present.

The main content area features three navigation options on the left, each with an icon and a description:

- Health Index Navigation** (Heart icon): Access the consolidated information about the main production equipments.
- Family Navigation** (Folder icon): Access the information of the main equipment families in your plant (motors, transformers, etc.) and visualize your KPI's online. This option is highlighted with a red box.
- Tree Navigation** (Tree icon): TO START NAVEGATE CHOOSE ONE OF THE BUTTONS IN THE LEFT

The interface also includes a search bar with 'Preserve' and 'No Filter' options, and a taskbar at the bottom showing the user '800xaservice' and the time '10:54'.



Replace [v] [back] [forward] [refresh] [print] [help] [search] [filter] [No Filter]

Trafos: Family AM Display

TRAFOS

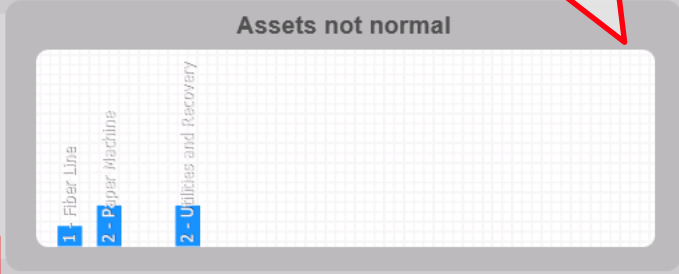
Severity level distribution



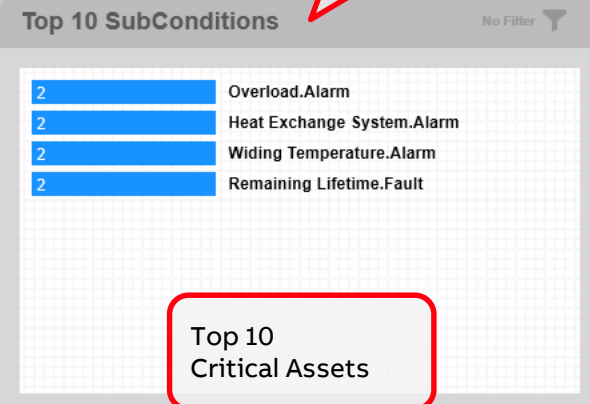
Condition classification to support decision and maintenance planning

- Normal: 19 (79%)
- Medium: 2 (8%)
- Critical: 2 (8%)
- Low: 0 (0%)
- High: 1 (4%)
- Bad: 0 (0%)

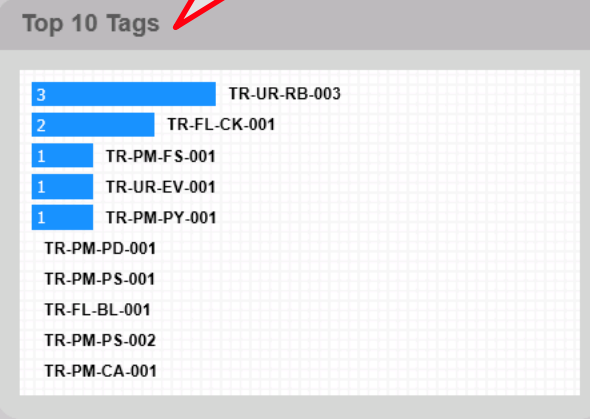
Identify assets not normal



Top 10 SubConditions



Top 10 Critical Assets



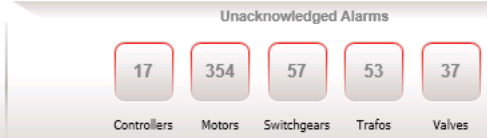
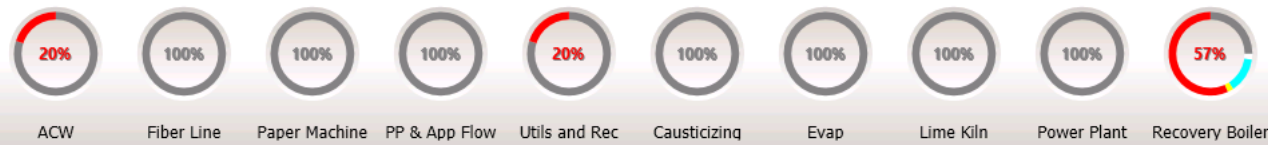
Group assets:

- Per plant area
- Per criticality
- Your own structure

Area	Normal	Medium	Critical	Low	High	Bad
Fiber Line	3 (75%)	0 (0%)	1 (25%)	0 (0%)	0 (0%)	0 (0%)
Paper Machine	7 (77%)	1 (11%)	1 (11%)	0 (0%)	0 (0%)	0 (0%)
Pulp Preparation and Approach Flow	2 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Utilities and Recovery	7 (77%)	1 (11%)	1 (11%)	0 (0%)	0 (0%)	0 (0%)

Maintenance oriented navigation bar:

- ECI
- Mechanical



Component condition based on monitored failure modes

The condition of parent equipment is:

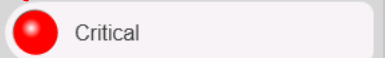
- Combination of its components conditions
- Conditions from specific algorithms

RECOVERY BOILER

's Components



Recovery Boil... - Report

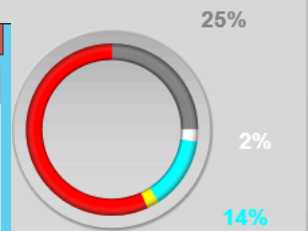


Weighted severity level based on criticality to support decision-making process

MT-UR-RB-004 : AssetVista Asset Reporter

MT-UR-RB-004- Asset Condition View

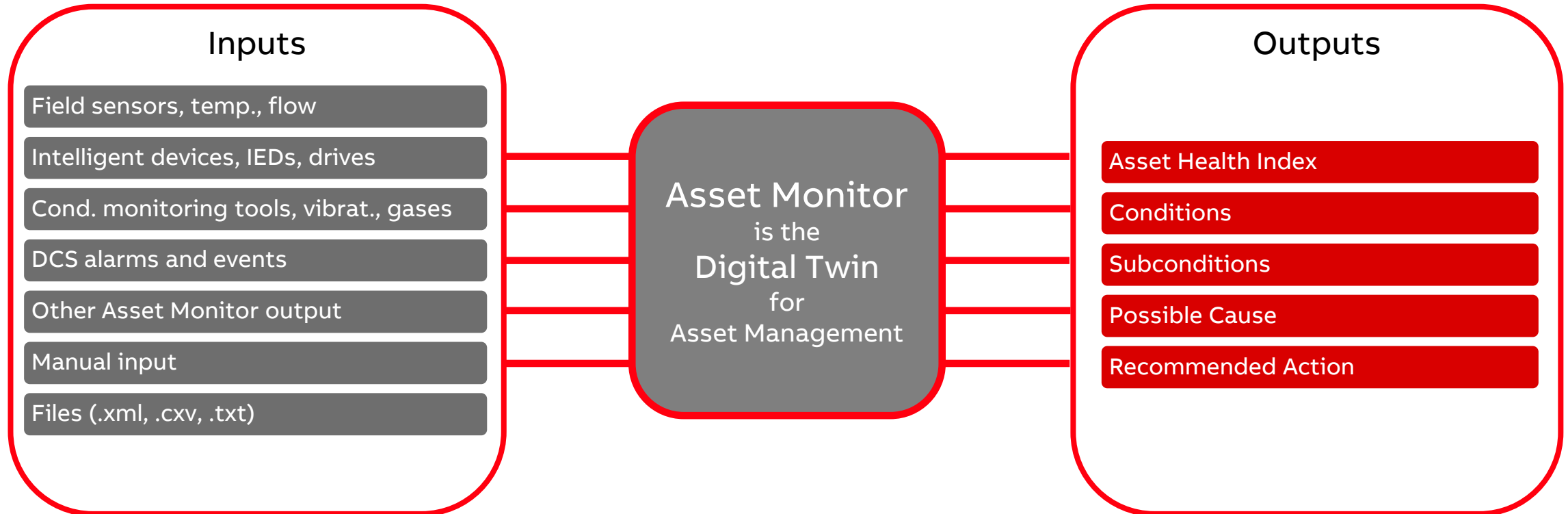
Severity	AM Name	Condition	Sub Condition	Description	Timestamp	Quality Status	Fault Report
750	AC Motor Asset Monitor	Overload Considering Winding Temperature	Alarm	1 Winding temperature measurements for all phases are working out of the range	8/3/2017 9:59:07 AM	good	
750	AC Motor Asset Monitor	Overload	Normal		8/3/2017 9:59:07 AM	good	
750	AC Motor Asset Monitor	Overheating Without Overload	Alarm	1 Winding temperature measurements for all phases are working out of the range	8/3/2017 9:59:07 AM	good	
750	AC Motor Asset Monitor	Overheating Without Overload Due To Overvoltage	Alarm	1 Winding temperature measurements for all phases are working out of the range	8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Motor Power Derating Caused By Voltage Unbalance	Normal		8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Motor Current Unbalance	Normal		8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Motor Current Vectorial Unbalance	Normal		8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Starts Per 1 Hour	Normal		8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Starts Per Day	Normal		8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Hot Start	Normal		8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Bearing Overheating - DE (Drive End)	Normal		8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Bearing Overheating - NDE (Non Drive End)	Normal		8/3/2017 9:59:07 AM	good	
500	AC Motor Asset Monitor	Bearing Lubrication Control	Alarm	Tempo para relubrificaçao 11 e 60 dias	8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Bearing Vibration - DE (Drive End)	Normal		8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Bearing Vibration - NDE (Non Drive End)	Normal		8/3/2017 9:59:07 AM	good	
	AC Motor Asset Monitor	Insulation Status Of Coils	Normal		8/3/2017 9:59:07 AM	good	



Easy root cause analysis allows reduction of MTTR (Mean Time To Repair)

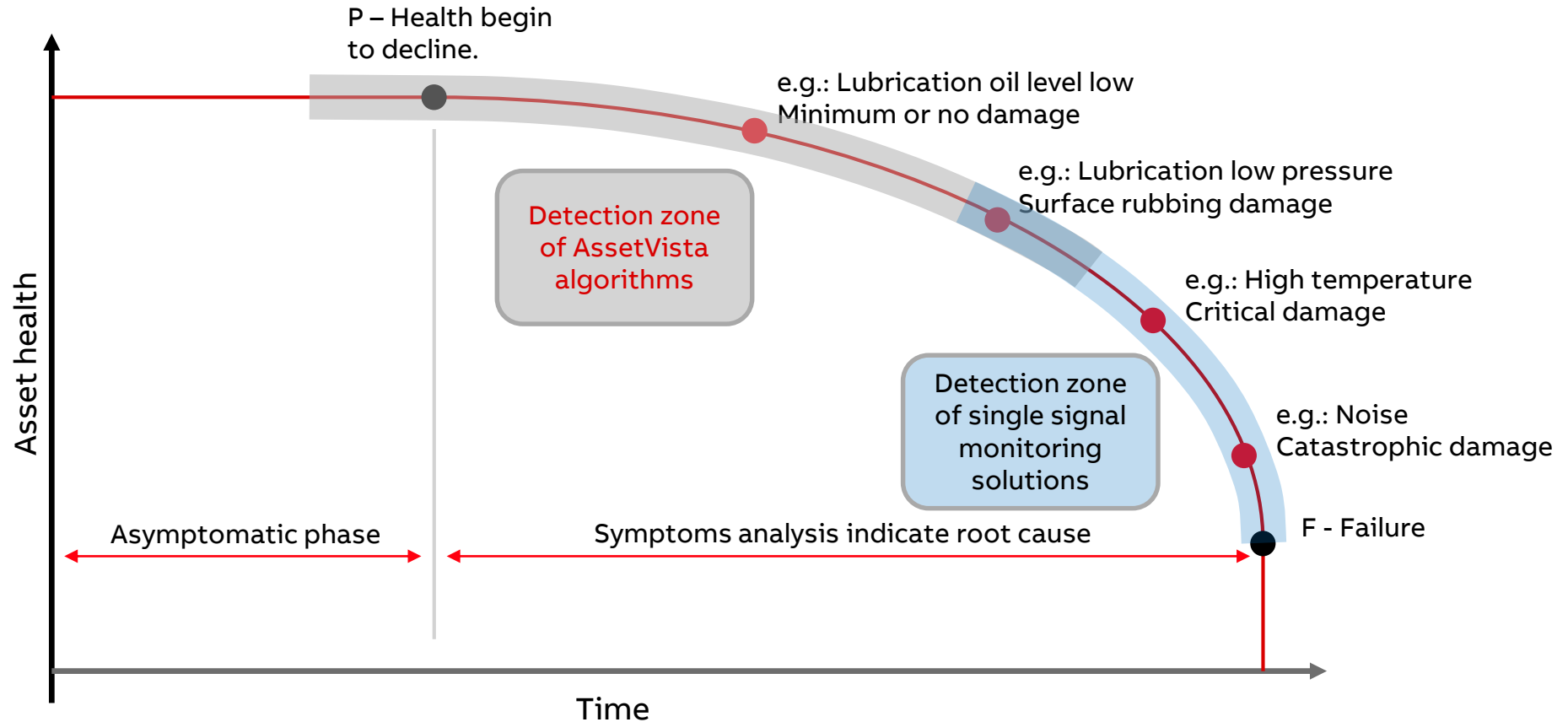
The Digital Twin to monitor the health of physical assets

Asset Monitors enables the Asset Management perspective



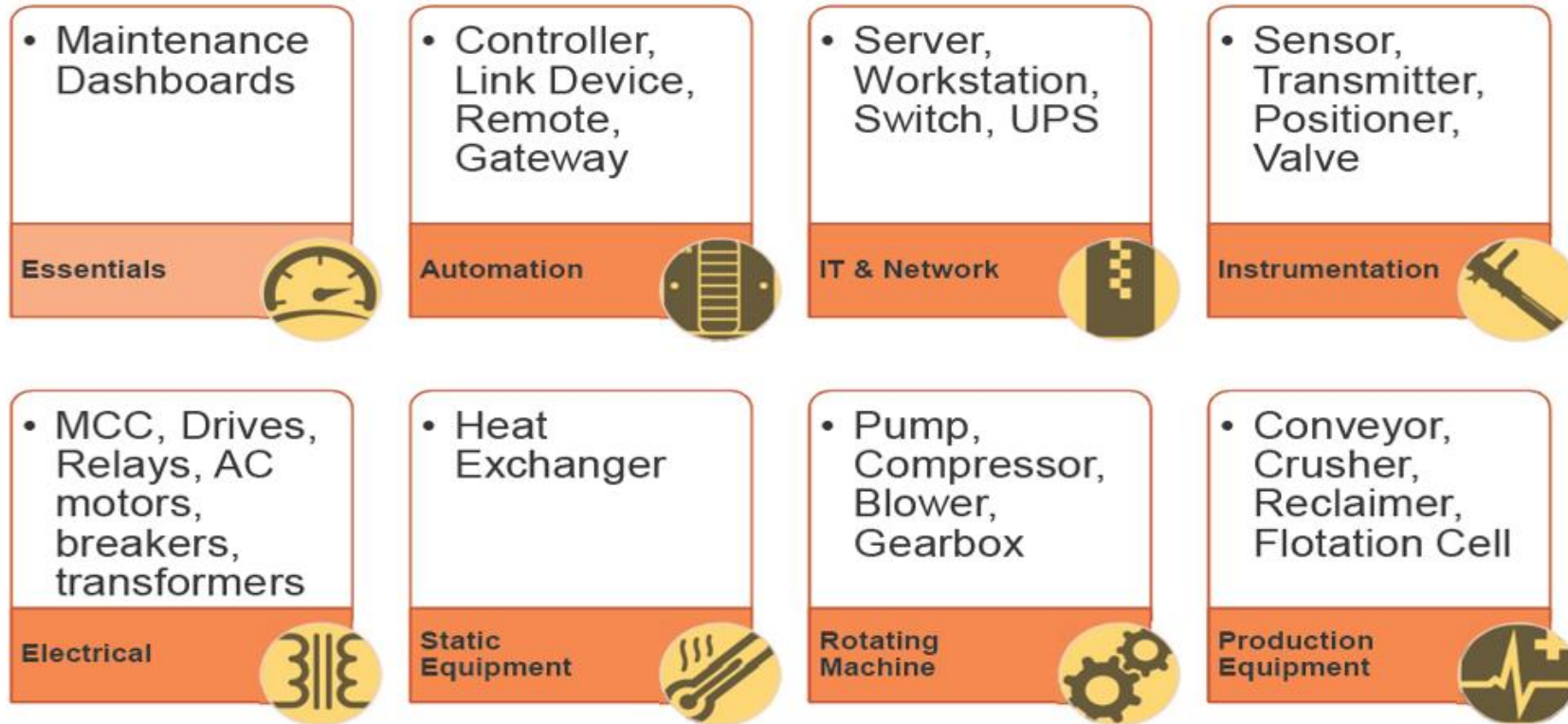
AssetVista Digital Twins in P-F Curve

Due its asset-centric, multi-parameters monitoring algorithms, AV detects symptoms earlier.



AssetVista Library Suite

Monitoring Packages



Condition Monitoring Objects Libraries for each type of assets

Asset Monitors Library

Electrical Equipment

Electrical

Equipment Type	Model	Ver.
<u>Motor - AC</u>	<u>Generic</u>	<u>V.2.1.8</u>
<u>Motor - DC</u>	<u>Generic</u>	<u>V.2.1.6</u>
Variable Speed Drive	ABB ACS2000	V.2.1.6
Variable Speed Drive	ABB ACS800	V.2.1.6
Variable Speed Drive	ABB ACS880	V.2.1.5
Transformer - Dry	Generic	V.2.1.6
Meter - Power and Energy	ION7x50	V.2.0.0
Circuit Breaker - LV	Generic	V.2.0.0
Column - Feeder - LV	Generic	V.2.0.0
Column - Incomer - LV	Generic	V.2.0.0

Electrical

Equipment Type	Model	Ver.
Relay	MControl / MStart	V.2.1.7
Contactor - MV	Generic	V.2.0.0
Cubicle - Feeder - MV	Generic	V.2.0.0
Cubicle - Incomer - MV	Generic	V.2.0.0
Circuit Breaker - MV - Vacuum	Generic	V.2.0.0
<u>Transformer - Oil Immersed</u>	<u>Generic</u>	<u>V.2.1.0</u>
Variable Speed Drive	Powerflex 7000	V.2.0.0
Relay	ABB - REx615	V.2.0.0
Relay	ABB - REx630	V.2.0.0

Asset Monitors Library

Mechanical and Process Specific Assets

Mechanical

Equipment Type	Model	Ver.
Brake - Electromagnetic	Generic	V.2.1.6
Gearbox	Generic	V.2.0.0
Brake - Hydraulic	Generic	V.2.1.5
Hydraulic Unit	Generic	V.2.1.1
Lubrication Unit	Generic	V.2.0.0
Oil Tank	Generic	V.2.0.0

Process (mining and pulp and paper)

Equipment Type	Model	Ver.
<u>Bridge Type Scraper Reclaimer</u>	<u>Specific model</u>	<u>V.2.0.0</u>
Crusher - Cone	Specific model	V.2.1.6
<u>Vibrating Screen</u>	<u>Specific model</u>	<u>V.2.1.2</u>
<u>Vibrating Screen - Double</u>	<u>Specific model</u>	<u>V.2.1.2</u>
Woodchips Digester	Specific model	V.2.1.2
Woodchips Feeder	Specific model	V.2.1.2

Asset Monitors Library

Automation, Instrumentation and Vibration systems

Automation & Instrumentation

Equipment Type	Model	Ver.
Controller	ABB - AC800M	V.2.0.0
Communication Interface	ABB - CI854	V.2.0.0
Communication Interface	ABB - CI 868	V.2.0.0
Communication Module	ABB - MLink	V.2.1.5
Valve	Generic	V.2.1.2
Ultrasonic Level Sensor	Hawk - Sultan 2	V.2.0.0

Vibration

Equipment Type	Model	Ver.
Pulley (drive) - Vibration	Generic - CSI	V.2.0.0
Vibration Collector	Emerson CSI	V.2.0.0
Motor - Vibration	Generic - CSI	V.2.0.0
Gearbox - Orthogonal Axis - Vib.	Generic - CSI	V.2.0.0
Gearbox - Parallel Axis - Vib.	Generic - CSI	V.2.0.0
Gearbox - Planetary Axis - Vib.	Generic - CSI	V.2.0.0
Pulley - Vibration	Generic - CSI	V.2.0.0
Vibrating Screen - Vibration	Generic - CSI	V.2.0.0
Vibration Interface 12 & 24ch	Emerson CSI - 12ch	V.2.0.0

Component Navigation Mode (Production Zone Split)

The screenshot displays the AssetVista software interface for a Minerals Industry. The main window title is "Asset - Demo // Minerals Industry AssetVista Workplace". The interface includes a top navigation bar with the AssetVista logo, a status bar showing "100%", and a dashboard with various gauges and indicators. A central panel titled "AC MOTORS" shows a "Production Zone Split" for "Area 1100".

Production Zone Split Data:

Condition	Count	Percentage
Normal	0	0%
Medium	1	50%
Critical	1	50%
Low	0	0%
High	0	0%
Bad	0	0%

Assets not normal: 2 - Area 1100

Top 10 SubConditions:

- 2 - Vibração do mancal LOA (Lado Oposto Acoplado)
- 2 - badLastKnownValue
- 1 - Temperatura do enrolamento e sobrecarga.Falha
- 1 - Temperatura do enrolamento e sobrecarga.Fora de Especificação
- 1 - Controle de lubrificação dos mancais.Fora de Especificação
- 1 - Sobreaquecimento do mancal LOA (Lado Oposto Acoplado)
- 1 - Sobreaquecimento do mancal LA (Lado Acoplado).Fora

Top 10 Tags:

- 6 - MT_01
- 3 - MT_02

The interface also features a "STARTUP DISPLAY" button at the bottom left and a taskbar at the bottom with the Windows logo, application icons, and system tray information including the time "16:12".

Faceplate (asset-centric detailed info and data) and Asset Reporter (conditions and severity details)

Assess events, alarms and trends

Set different limits according to the criticality level

Easy to set equipment parameters

Real time field data.

Three visualization modes

The screenshot displays the AssetVista software interface. The top section shows various gauges and indicators for different equipment types. The main area is divided into two panels: the 'Motor AM Main Faceplate' on the left and the 'Asset Reporter' on the right. The faceplate shows real-time data for an AC Motor 01, including current, voltage, and speed. The Asset Reporter shows a table of conditions with columns for AM Name, Condition, Sub Condition, Description, Timestamp, Quality Status, and Fault Report. A red box highlights the Asset Reporter table, and red callouts point to various features of the software.

AM Name	Condition	Sub Condition	Description	Timestamp	Quality Status	Fault Report
AC Motor Asset Monitor	Temperatura do enrolamento e sobrecarga	Fora de Especificação	1 Sobre aquecimento sem sobrecorrente	06-05-2018 00:21:03	good	Available
AC Motor Asset Monitor	Perda de potência causada por desbalanço de tensão	Normal		06-05-2018 00:21:03	good	
AC Motor Asset Monitor	Desbalanço de corrente	Fora de Especificação	1 Desequilíbrio de corrente moderado	07-05-2018 15:50:18	good	Available
AC Motor Asset Monitor	Desbalanço vetorial de corrente	Normal	Condition disabled by user	06-05-2018 00:21:03	good	
AC Motor Asset Monitor	Partidas em 1 hora	Normal		06-05-2018 00:21:03	good	
AC Motor Asset Monitor	Partidas por dia	Normal		06-05-2018 00:21:03	good	
AC Motor Asset Monitor	Partidas a quente	Normal		06-05-2018 00:21:03	good	
AC Motor Asset Monitor	Sobreaquecimento do mancal LA (Lado Acoplado)	Fora de Especificação	1 Mancal LA superaquecido sem vibração	06-05-2018 00:21:03	good	Available
AC Motor Asset Monitor	Sobreaquecimento do mancal LOA (Lado Oposto Acoplado)	Fora de Especificação	1 Mancal LOA superaquecido por vibração	06-05-2018 00:21:03	good	Available
AC Motor Asset Monitor	Controle de lubrificação dos mancais	Fora de Especificação	1 Tempo de relubrificação expirado	06-05-2018 00:21:03	good	Available
AC Motor Asset Monitor	Vibração do mancal LA (Lado Acoplado)	Normal		06-05-2018 00:21:03	good	
AC Motor Asset Monitor	Vibração do mancal LOA (Lado Oposto Acoplado)	Fora de Especificação	1 Mancal LOA (Lado Oposto Acoplado) em falha	06-05-2018 00:21:03	good	Available
AC Motor Asset Monitor	Isolamento do enrolamento	Normal		06-05-2018 00:21:03	good	

Faceplate (asset-centric detailed info and data) and Asset Reporter (conditions and severity details)

The screenshot displays the AssetVista software interface, which is a remote desktop connection to a demo environment. The main window is titled "Asset - Demo // Minerals Industry AssetVista Workplace". The interface is divided into several sections:

- Top Bar:** Features the "AssetVista" logo, a series of circular gauges for various assets (CC, Production, 1110, 1200, 1300, 1400, 1500, 1600, Utilities, Electrical Device), and a section for "Unacknowledged Alarms" with counts for Belts (4), Brakes (20), CSI Vibration (3), Drives (19), Level Meters (2), LV Panels (10), Motors (12), and MV Panels (5). The ABB Customer Logo is also present.
- Navigation:** A search bar with "Preserve" and "No Filter" options, and a dropdown menu showing "TR-1500CC-01:Health Index AM Display".
- MT_01 : AC Motor AM Main Faceplate:** This window provides detailed information for the motor. It includes tabs for "Inputs 3", "Inputs 4", "Inputs 5", and "Inputs 6". The "Insulation Status Of Windings" section shows a date range from "01-Jan-0001 12:00:00" to "01-Jan-0001 12:00:00" and a table of winding parameters:

Parameter	Value
Coil Conductor Material	Aluminum
Winding Temperature	0.00 °C
NI of Motor	
Winding Insulation at 30 seconds	0.00 Mohm
Winding Insulation at 1 minute	Mohm
Winding Insulation at 10 minutes	0.00 Mohm

The "Bearing Lubrication" section includes fields for Lubricant Type (Grease), Contamination, Humidity (< 80%), Vibration (peak) (< 0.5 mm/s), Shaft position (Horizontal), Bearing type (Balls), Rated Speed (1800.00 rpm), Rated grease temp. (65.00 °C), Internal diameter DE (15.00 mm), and Internal diameter NDE (15.00 mm).
- MT_01 : AssetVista Asset Reporter:** This window displays condition details for the motor. The title is "MT_01:AC Motor Asset Monitor 'Temperatura do enrolamento e sobrecarga' Condition Details". It includes tabs for "Condition Details", "Output Records", and "Asset Monitor Status". The condition details are as follows:

Field	Value
Condition:	Temperatura do enrolamento e sobrecarga
Condition: SubCondition:	⚠ [good] Temperatura do enrolamento e sobrecarga: Fora de Especificação
TimeStamp:	Sunday, May 6, 2018 00:21:03
Severity:	500
Description:	1 Sobre aquecimento sem sobrecorrente
Possible Cause:	1.1 Baixa troca de calor
Suggested Action:	1.1.1 Limpar o sistema de troca de calor 1.1.2 Verificar o ventilador auxiliar
Corrective Action Taken:	

The bottom of the interface shows a navigation bar with "STARTUP DISPLAY", "CC", "PRODUCTION", and "1500" buttons. The Windows taskbar at the bottom indicates the user is logged in as "800xaservice" and the time is 15:53 on a system named "POR".

Fault Report Submitter to ERP / CMMS System

The screenshot displays the AssetVista software interface, which is used for monitoring and reporting on industrial assets. The main window, titled "MT_01 : AssetVista Asset Reporter", shows a table of fault reports for a specific asset (MT_01). The table is filtered by "SAP EquipmentID". The first row of the table is highlighted with a red box, indicating a fault report with a severity of 500.

Severity	FR Status	Timestamp	FR State	AM Name	Condition	Sub Condition	Message
500	Pending	07-05-2018 15:58:14	Enter manually Most Severe Unacknowledged	User Report AC Motor Asset Monitor	Desbalanço de corrente	Fora de Especificação	1 Desequilíbrio de corrente moderado
500	Pending	06-05-2018 00:21:04	Current	AC Motor Asset Monitor	Temperatura do enrolamento e sobrecarga	Fora de Especificação	1 Sobre aquecimento sem sobrecorrente
500	Pending	06-05-2018 00:21:04	Current	AC Motor Asset Monitor	Sobreaquecimento do mancal LA (Lado Acoplado)	Fora de Especificação	1 Mancal LA superaquecido sem vibração
500	Pending	06-05-2018 00:21:04	Current	AC Motor Asset Monitor	Sobreaquecimento do mancal LOA (Lado Oposto Acoplado)	Fora de Especificação	1 Mancal LOA superaquecido por vibração
500	Pending	06-05-2018 00:21:04	Current	AC Motor Asset Monitor	Controle de lubrificação dos mancais	Fora de Especificação	1 Tempo de relubrificação expirado
500	Pending	06-05-2018 00:21:04	Current	AC Motor Asset Monitor	Vibração do mancal LOA (Lado Oposto Acoplado)	Fora de Especificação	1 Mancal LOA (Lado Oposto Acoplado) em falha

Fault Report Submitter Form (auto-filled and customized fields)

10.100.113.50 - Remote Desktop Connection

Asset - Demo // Minerals Industry AssetVista Workplace

MT_01 : AssetVista Asset Reporter

MT_01:AssetVista Asset Reporter

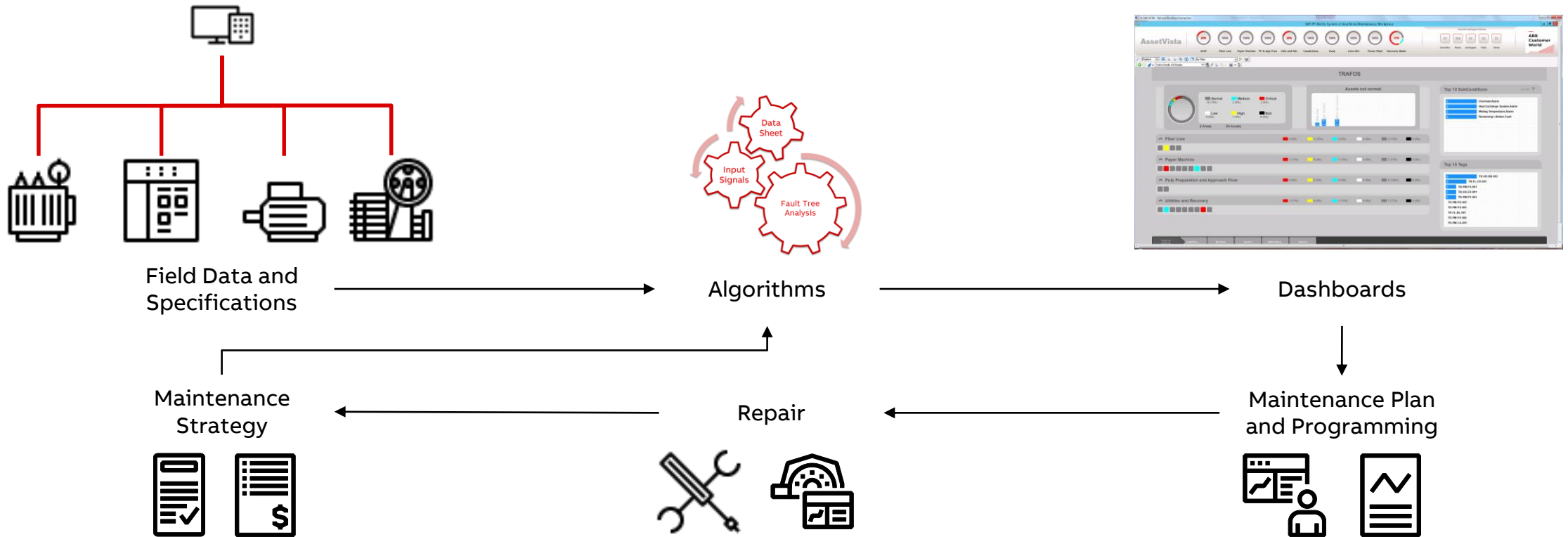
MT_01 - Submit Fault Report

ACD State:	Most Severe Unacknowledged
Condition:	Desbalanço de corrente
Time:	Monday, May 7, 2018 15:58:14
CMMS System Type:	SAP-PM Module
SAP Equipment Number:	12002742
Asset Monitor Aspect:	AC Motor Asset Monitor
Asset Monitor LogicDescription:	Alternating current motor asset monitor
Maintenance Planning Plant:	3000
Location and account assignment for equipment:	Default Account
Date of start of equipment malfunction:	20180507
Time of start of equipment malfunction:	160017
Date of end of equipment malfunction:	
Time of end of equipment malfunction:	
Duration of breakdown:	0
Breakdown unit:	
Functional location affected:	
Equipment affected:	
Effect on operations:	No Effect
Notification description:	1 Desequilibrio de corrente moderado
Responsible person:	Alternating current motor asset monitor
Date for technical inspection:	
Notification type:	Z2
Priority type:	
Priority:	500
Date of notification:	20180507
Name of person reporting:	Asset Vista
UserName:	

POR 16:02

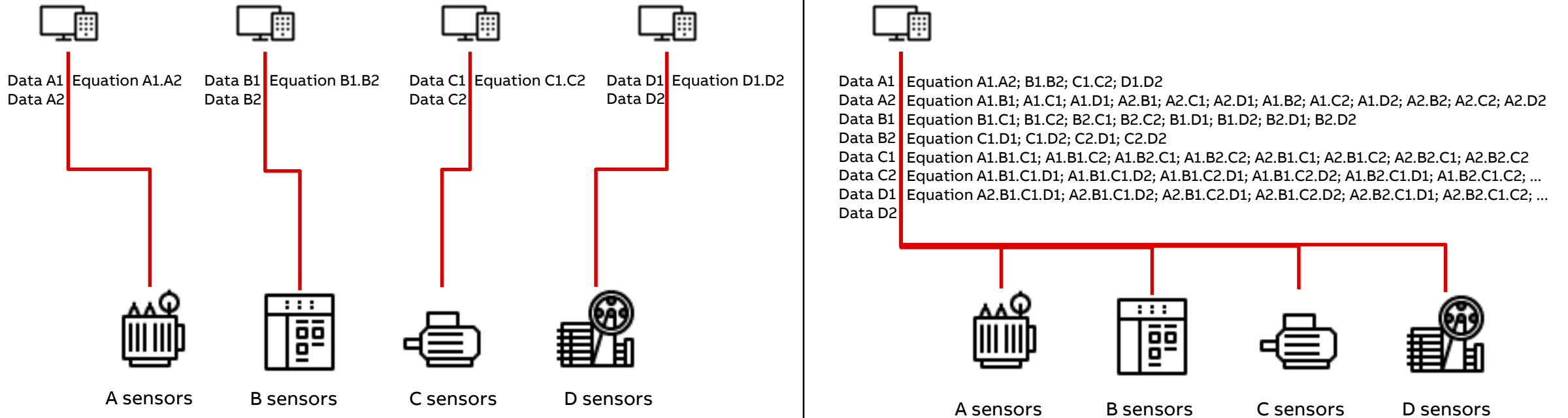
Improves maintenance routine and strategy

Continuous improvement cycle



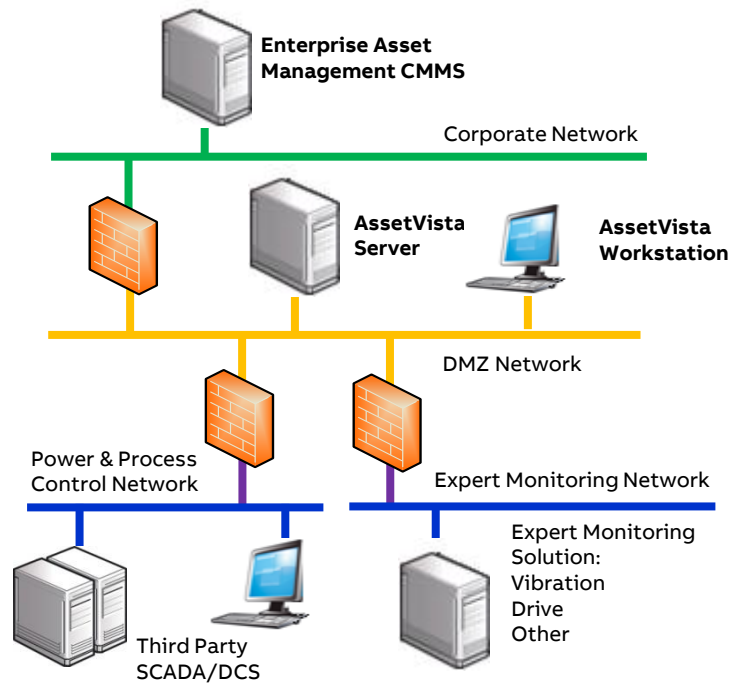
Multiple data sources combined in one single place

More variables, more equations and more results

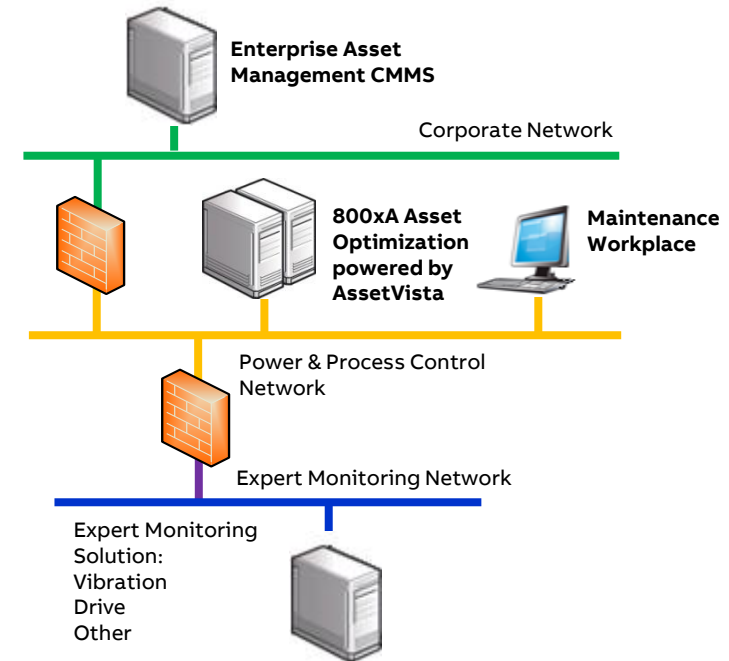


Connect to any kind of OPC interface

ABB or non-ABB installed base



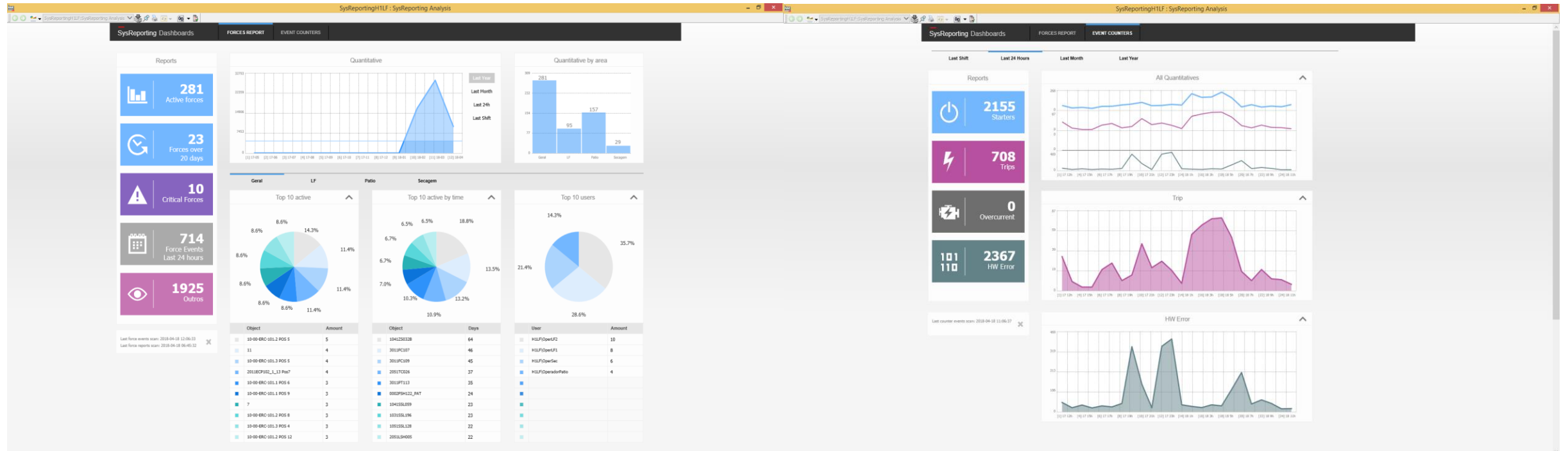
AssetVista connected to a Third-Part Control System



AssetVista connected to an 800xA System

ABB Ability AssetVista

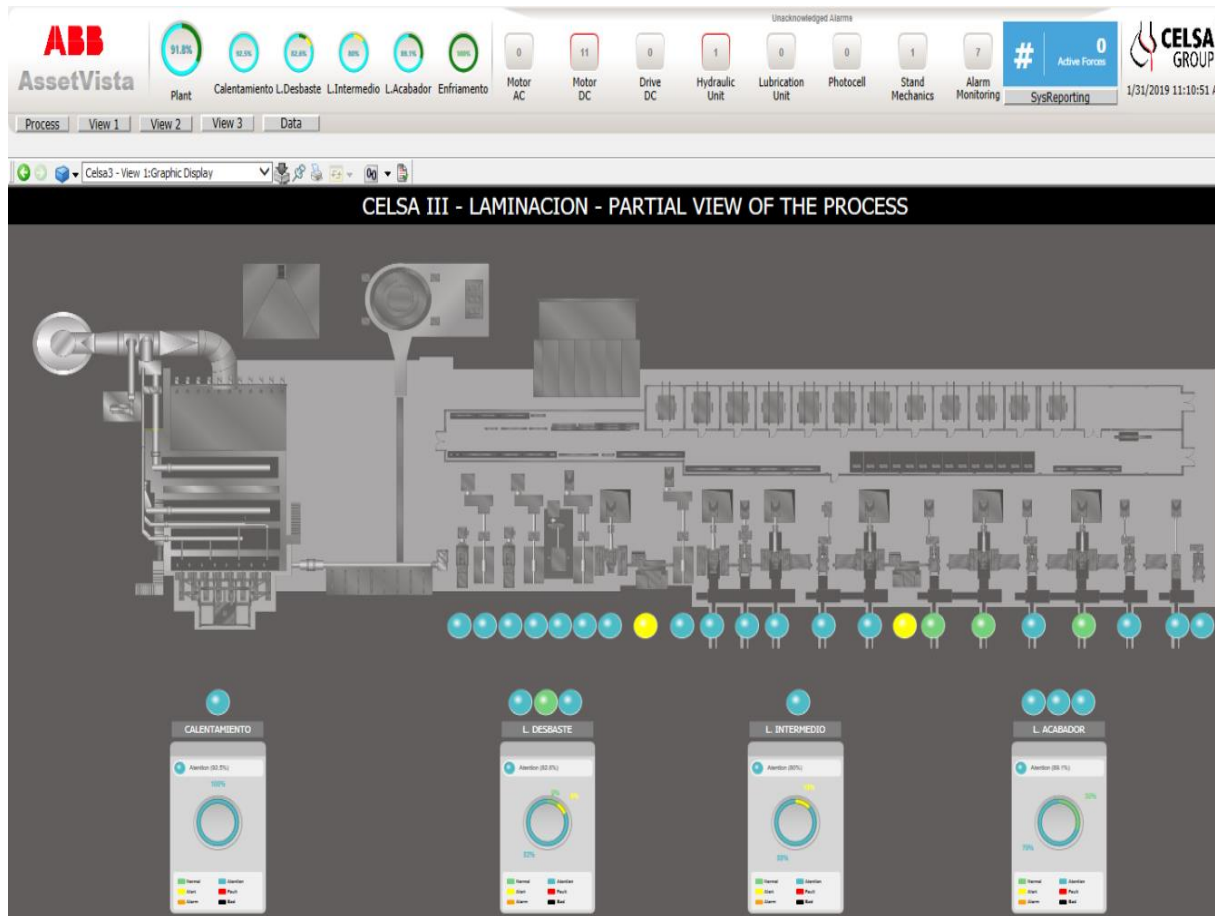
SysReporting Add-in



Customer Success Case

Metals Long Products: Celsa III Rolling Bar Mill

CELSA 3 Condition Monitoring: Ability AssetVista for Rolling Bar Mill



Customer:

Celsa III Rolling Bar Mill

Initiative:

On premise digital solution to monitor Critical Mill assets like, 22 rolling mill stand Drives & Motors , 4 Hydraulics Units and 3 Lubrication Units and other predictive alarms signals from customer.

Customer needs:

Open and flexible asset management system able to monitor any asset of the plant.

Fast and Visible Digital solution for driving cultural change inside organization.

Benefits:

- Easy Identification of potential failures on main Mill assets.
- Real time condition monitoring.
- Proactive & predictive maintenance tool
- Increase uptime, Reduction of MTTR

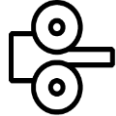


CELSA 3: Assets to be Monitored

REHEATING + ROUGHING AREA

REHEATING SECTION:

HYDR. UNIT : 3 x  AC Motor + 1 x  Hydr. monitor

ROUGHING SECTION:




8 x STAND MILL:  +  DC Motor +  DC Drive

HYDR. UNIT : 4 x  AC Motor + 1 x  Hydr. monitor

LUB. UNIT : 3 x  AC Motor + 1 x  Lub. monitor

INTERMEDIATE + FINNISHING ROLLING AREA

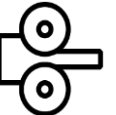

INTERMEDIATE SECTION:

7 x STAND MILL:  +  DC Motor +  DC Drive

HYDR. UNIT : 4 x  AC Motor + 1 x  Hydr. monitor

LUB. UNIT : 3 x  AC Motor + 1 x  Lub. monitor

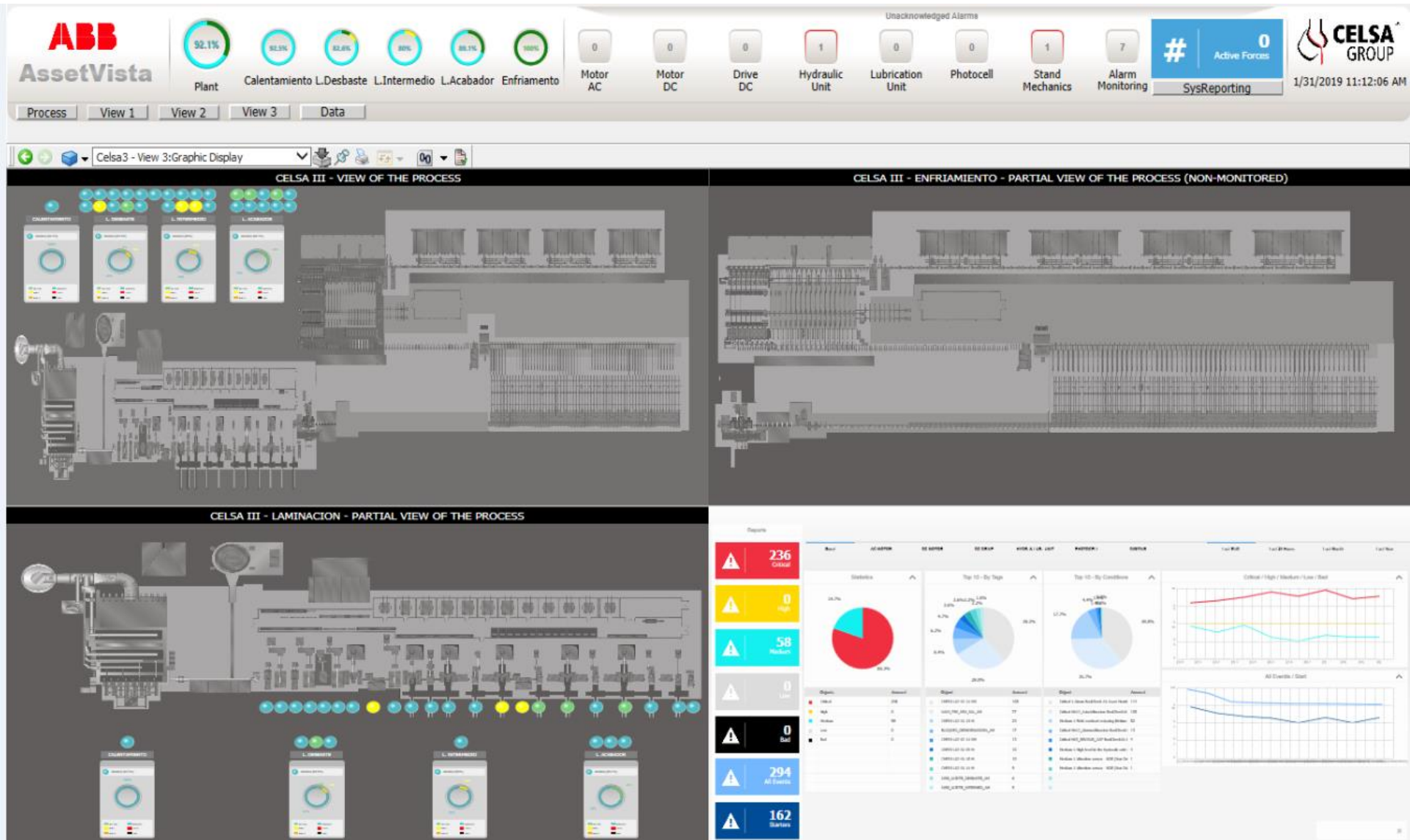
FINNISHING SECTION:


7 x STAND MILL:  +  DC Motor +  DC Drive


HYDR. UNIT : 4 x  AC Motor + 1 x  Hydr. monitor

LUB. UNIT : 3 x  AC Motor + 1 x  Lub. monitor


More Assets to be implemented on next steps at COOLING and BUNDLING AREAS









Plant




Calentamiento L.Desbaste




L.Intermedio




L.Acabador




Enfriamiento




Motor AC




Motor DC




Drive DC




Hydraulic Unit




Lubrication Unit




Photocell




Stand Mechanics



Alarm Monitoring



SysReporting




1/31/2019 11:16:18 AM

Process
View 1
View 2
View 3
Data

DC Motor:Family2 AM Display

DC MOTOR

Last update: 31/Jan/2019 12:14:08 PM



■ Normal	■ Medium	■ Critical
3 (13.64%)	18 (81.82%)	1 (4.55%)
■ Low	■ High	■ Bad
0 (0%)	0 (0%)	0 (0%)

Assets not normal

- 8 - Laminacion 01 - Desbaste
- 7 - Laminacion 02 - Intermedio
- 4 - Laminacion 03 - Acabador

Top 10 SubConditions

No Filter

- 18 Bearing Vibration - NDE (Non Drive End).Ala
- 18 Bearing Overheating - NDE (Non Drive End).
- 17 Bearing Overheating - DE (Drive End).Alarm
- 17 Bearing Vibration - DE (Drive End).Alarm
- 5 Field Winding.Out of specification
- 2 Field Winding Temperature.Maintenance required
- 1 Winding Insulation Control.Failure
- 1 Commutator.Maintenance required
- 1 Brushes Sparking.Out of specification
- 1 Commutator.Out of specification

<h4>Laminacion 01 - Desbaste</h4> <div style="display: flex; justify-content: space-between;"> 1 (12.5%) 7 (87.5%) 0 (0%) 0 (0%) 0 (0%) 0 (0%) </div>
<h4>Laminacion 02 - Intermedio</h4> <div style="display: flex; justify-content: space-between;"> 0 (0%) 7 (100%) 0 (0%) 0 (0%) 0 (0%) 0 (0%) </div>
<h4>Laminacion 03 - Acabador</h4> <div style="display: flex; justify-content: space-between;"> 0 (0%) 4 (57.14%) 0 (0%) 0 (0%) 3 (42.86%) 0 (0%) </div>

Top 10 Tags

- 7 CMP03-L02-01-03-M
- 6 CMP03-L02-01-17-M
- 5 CMP03-L02-01-13-M
- 5 CMP03-L02-01-15-M
- 5 CMP03-L02-02-11-M
- 5 CMP03-L02-01-11-M
- 5 CMP03-L02-01-09-M
- 4 CMP03-L02-02-01-M
- 4 CMP03-L02-02-03-M
- 4 CMP03-L02-02-07-M

STARTUP DISPLAY

CMP03-L02-01-05-M : DC Motor AM Main Faceplate

CMP03-L02-01-05-M
Motor DC Caseta H-1

Inputs 1 | Inputs 2 | Inputs 3 | Inputs 4 | Limits 1 | Limits 2 | Limits 3 | Limits 4

Field Winding

- Temperature: 400.00 °C
- Actual Current: 10.00 A
- Ventilation System Not Running
- Temperature Sensor Error

Armature Winding

- Actual Current: 86.00 A

Motor

- Speed: 41.00 %

Field Winding

- Minimum Operating: 0.00 °C
- Maximum Operating: 200.00 °C
- Average Ambient: 30.00 °C
- Rated Average Rise: Class B

Motor Speed

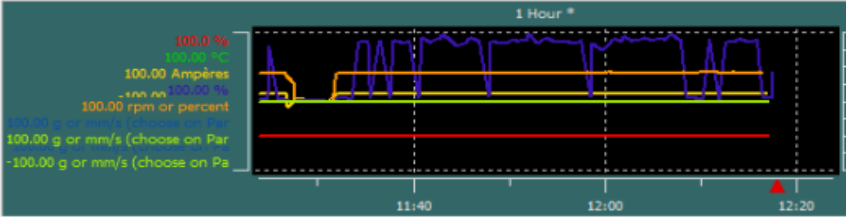
- rpm
- Percentage

Unacknowledged Alarms

Motor AC: 0 | Motor DC: 0 | Drive DC: 0 | Hydraulic Unit: 1 | Lubrication Unit: 0 | Photocell: 0 | Stand Mechanics: 1 | Alarm Monitoring: 7 | Active Forces: 0 | SysReporting

CMP03-L02-01-05-M : DC Motor AM Trend Display

1 Hour *



Visi	Sta	Tra	Object Name	Object Description	Aspect
1	✓	Red	CMP03-L02-01-05-M	Motor DC Caseta H-1	AssetMonitorProperties
2	✓	Green	CMP03-L02-01-05-M	Motor DC Caseta H-1	AssetMonitorProperties
3	✓	Yellow	CMP03-L02-01-05-M	Motor DC Caseta H-1	AssetMonitorProperties
4	✓	Blue	CMP03-L02-01-05-M	Motor DC Caseta H-1	AssetMonitorProperties
5	✓	Orange	CMP03-L02-01-05-M	Motor DC Caseta H-1	AssetMonitorProperties
6	✓	Green	CMP03-L02-01-05-M	Motor DC Caseta H-1	AssetMonitorProperties

Overheating - NDE (Non Drive End).Alarm
 Overheating - DE (Drive End).Alarm
 Overheating - DE (Drive End).Alarm
 Maintenance required
 Vibration - NDE (Non Drive End).Alarm
 Vibration - DE (Drive End).Alarm

Laminacion 02 - Intermedio

Laminacion 03 - Acabador

STARTUP DISPLAY

CMP03-L02-01-05-M : AssetVista Alarm List

AckS	Priori	ActiveTime	ObjectName	ObjectDescription	Condition
✗	3	2019-Jan-29 17:30:28	CMP03-L02-01-05-	Motor DC Caseta H-1	DC Motor Asset Monitor.Bearing Overheating - DE (1 Vibrator
✗	3	2019-Jan-29 17:30:28	CMP03-L02-01-05-	Motor DC Caseta H-1	DC Motor Asset Monitor.Bearing Overheating - NDE 1 Vibrator
✗	3	2019-Jan-29 17:30:28	CMP03-L02-01-05-	Motor DC Caseta H-1	DC Motor Asset Monitor.Bearing Vibration - NDE (N 1 Vibrator
✗	3	2019-Jan-29 17:30:28	CMP03-L02-01-05-	Motor DC Caseta H-1	DC Motor Asset Monitor.Bearing Vibration - DE (Dri 1 Vibrator



DC Motor Conditions Monitored by AssetVista

MECHANICAL CONDITIONS

MOTOR BEARINGS STATUS:



Vibrations
Temperatures
Diff. Temperature
Sensors error

GREASING STATUS:



Grease Type
Greasing cycle

ELECTRICAL CONDITIONS

MOTOR INSULATION STATUS:



Winding insulation Test and trend calculation

CONMUTATOR STATUS:



Diagnostic based on Visual inspection

OVERLOAD STATUS:



Motor Temperature
Motor Armature Current
Motor Field Current

OTHER CONDITIONS

ENCODER STATUS:



Encoder error
Time to replace

CARBON BRUSHES STATUS:



Time to replace: visual inspection and current calc.

FORCED VENTILATION STATUS:



Fan status
Motor Overload

Other Conditions to monitored could be added if needed

ABB AssetVista

Unacknowledged Alarms: 92.4% (Plant), 98.5% (Calentamiento), 81.7% (L. Desbaste), 80% (L. Intermedio), 92.2% (L. Acabador), 100% (Enfriamiento)

Motor AC: 0, Motor DC: 4, Drive DC: 0, Hydraulic Units: 0, Lubrication Units: 0, Photocell: 0, Stand Mechanics: 0, Alarm Monitoring: 3

Process: View 1, View 2, View 3, Data

19 Active Forces

SysReporting

1/30/2019 7:00:37 PM

AssetVista Maintenance Workplace:Start...

Health Index Navigation

Access the consolidated information about the main production equipments.

Family Navigation

Access the information of the main equipment families in your plant (motors, transformers, etc.) and visualize your KPI's online.

Tree Navigation

TO START NAVEGATE CHOOSE ONE OF THE BUTTONS IN THE LEFT

AssetVista™

Activate Windows
Go to Settings to activate Windows.

800xAInstaller

Ability AssetVista

Industrial Automation – writing the future of safe and smart operations

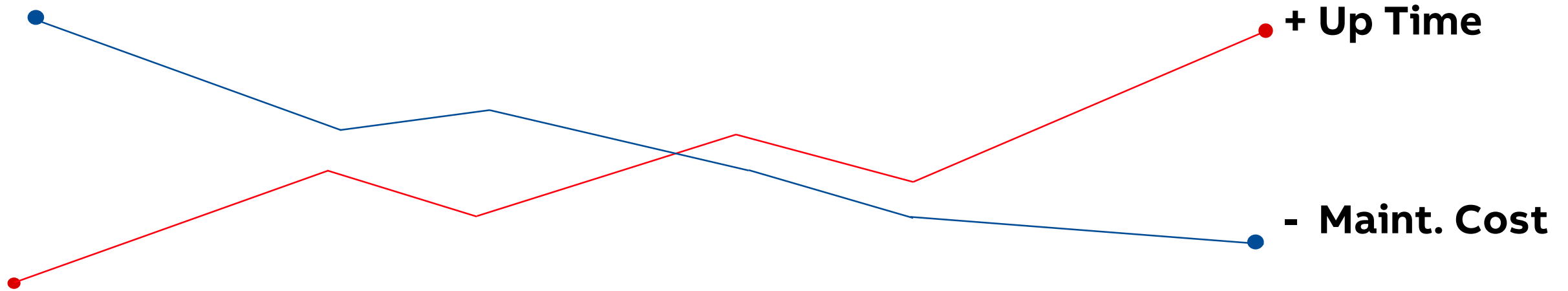


ABB Ability™ is how we harness the power of digital to drive progress with our customers every day.

Know more

Utilize your industrial data through sensors, devices and software to know more about your business in real-time.

Do more

Monitor, control and manage your devices, processes and operations on-site or remotely.

Do better

Simulate, predict and optimize through tools, insights and analysis.

Together

Work hand-in-hand with our experts and engineers anywhere around the globe for business transformation.

ABB