



DISTRIBUTION SOLUTIONS

ABB Ability™ Asset Manager

Simplicity and flexibility in asset performance management

Document ID 9AKK108468A3980

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Why Asset Management?



Asset Health Assessment



ABB Ability™ Asset Manager



ABB Ability™ Supported devices and solutions



ABB Ability™ Edge Industrial Gateway and Cloud connectivity guide



Cyber security



ABB Ability Marketplace™



Why Asset Management?



Make better, data-driven decisions

Real-time operational data from equipment, delivering predictive analytics and maintenance advice that help customer make timely decisions



Maximize Up-time

Reduce the risk of unplanned outages, which directly affect revenue generation



Reduce total cost of ownership

Optimize maintenance schedule and increase work force efficiency

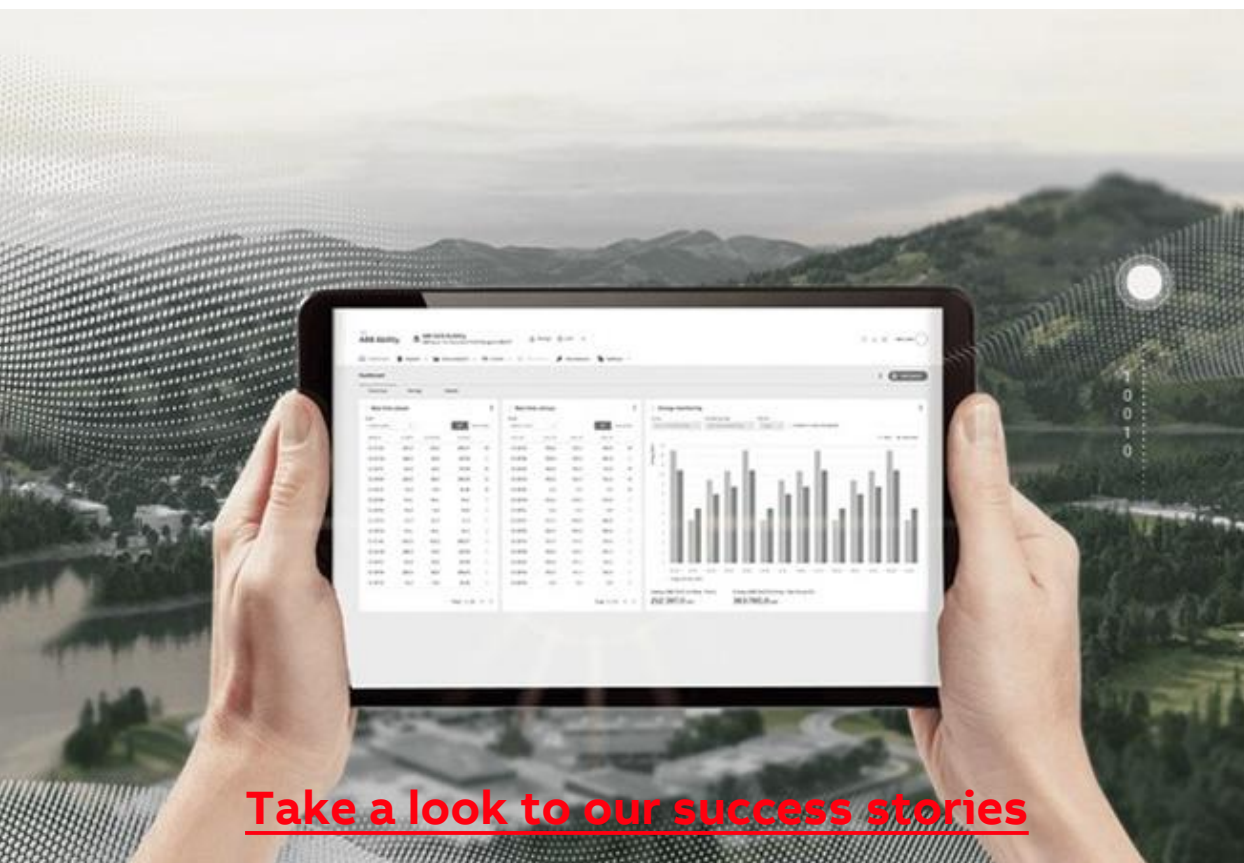


Increase safety and sustainability

Engage field service engineers only when needed, optimizing resources and extending asset life while maintaining safety

ABB Ability™ Asset Manager

Business value of better performances



[Take a look to our success stories](#)

Up to

40%

Savings on
maintenance cost (*)

Up to

100%

Avoid unplanned
labor

Up to

30%

Increase of the
time interval of
maintenance (*)

(*) Source: "[ABB Data center case study, document 9AKK107991A1983 REV A](#)"

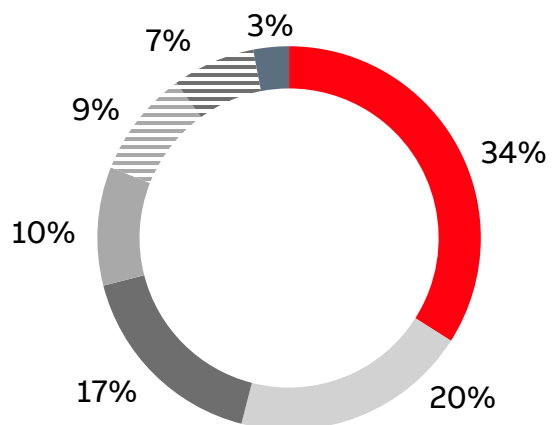


Asset Health Assessment

ABB Ability™ Asset Manager

Identifying evolving faults

Failure Modes



- ① 34% Loose connection/joints
- ⑥ 20% Environment conditions (humidity, dust, etc.)
- ④ 17% Incorrect work (human mistakes)
- ② ③ 10% Faulty insulation (dielectric problems)
- ④ ⑤ 9% Faulty equipment (mechanical)
- ≡ 7% Other
- 3% Overload

Solution



① Main circuit temperature monitoring

- Continuous temp. monitoring of key hot spots
- Factory integrated design, production, testing



② Insulation gas density monitoring

- Gas pressure, temperature compensation, alarm contact
- Factory integrated design, production, testing



③ Partial discharge monitoring

- UHF or capacitive coupling methods
- Sensors are isolated from primary circuit



④ Video monitoring

- Visible monitoring of chassis, ES, 3PS movement
- Observation window, digital camera integrated in panel



⑤ Mechanical characteristics monitoring

- Nonintrusive Hall sensor for coil/charging motor current
- Motion sensor for CB contact travel



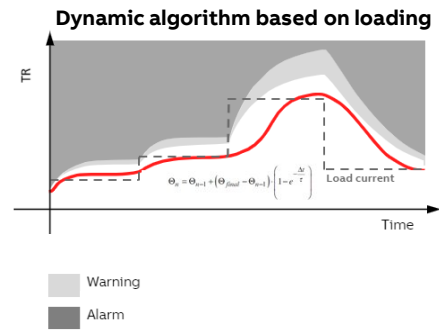
⑥ Ambient temperature & humidity monitoring

- Ambient temperature of site
- Ambient humidity of site

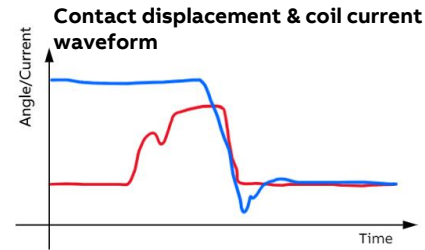
ABB Ability™ Asset Manager

Asset health analysis

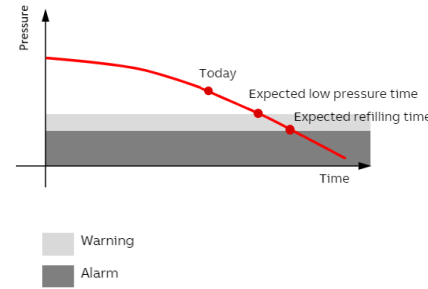
Thermal



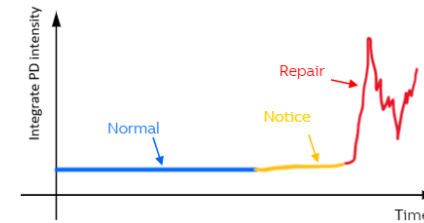
Mechanical



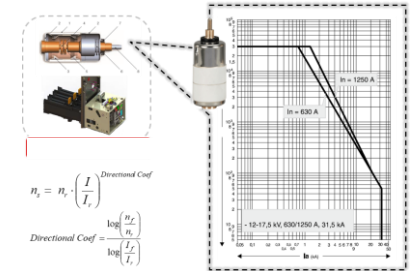
Dielectric – gas insulation



Dielectric – air/solid insulation



CB residual life



Adaptive temperature analysis

- Connection degradation analysis
- Connection temperature
- Current flow
- Ambient temperature
- 3 phase temperature balance

Self-learning analytics of CB model specific mechanism

- CB mechanical performance analysis
- Contact travel
- Open/close coil current
- Spring charging motor current

Predictive gas insulation analysis

- Gas refilling date prediction
- Temperature compensated gas density
- Adaptive analytics for slow and fast leakage detection

Partial discharge analysis

- Insulation degradation analysis
- PD presence indication
- PD strength (Db)
- PD intensity after noise removal
- PD pulse rate (Hz)
- Amount of PD events above noise level over time
- Phase or panel fault indication

VI remaining life prediction

- VI contact degradation analysis
- Load/short circuit breaking current
- VI breaking characteristic diagram
- Characteristic curve
- Model based VI remaining life prediction algorithm

From condition monitoring to predictive maintenance



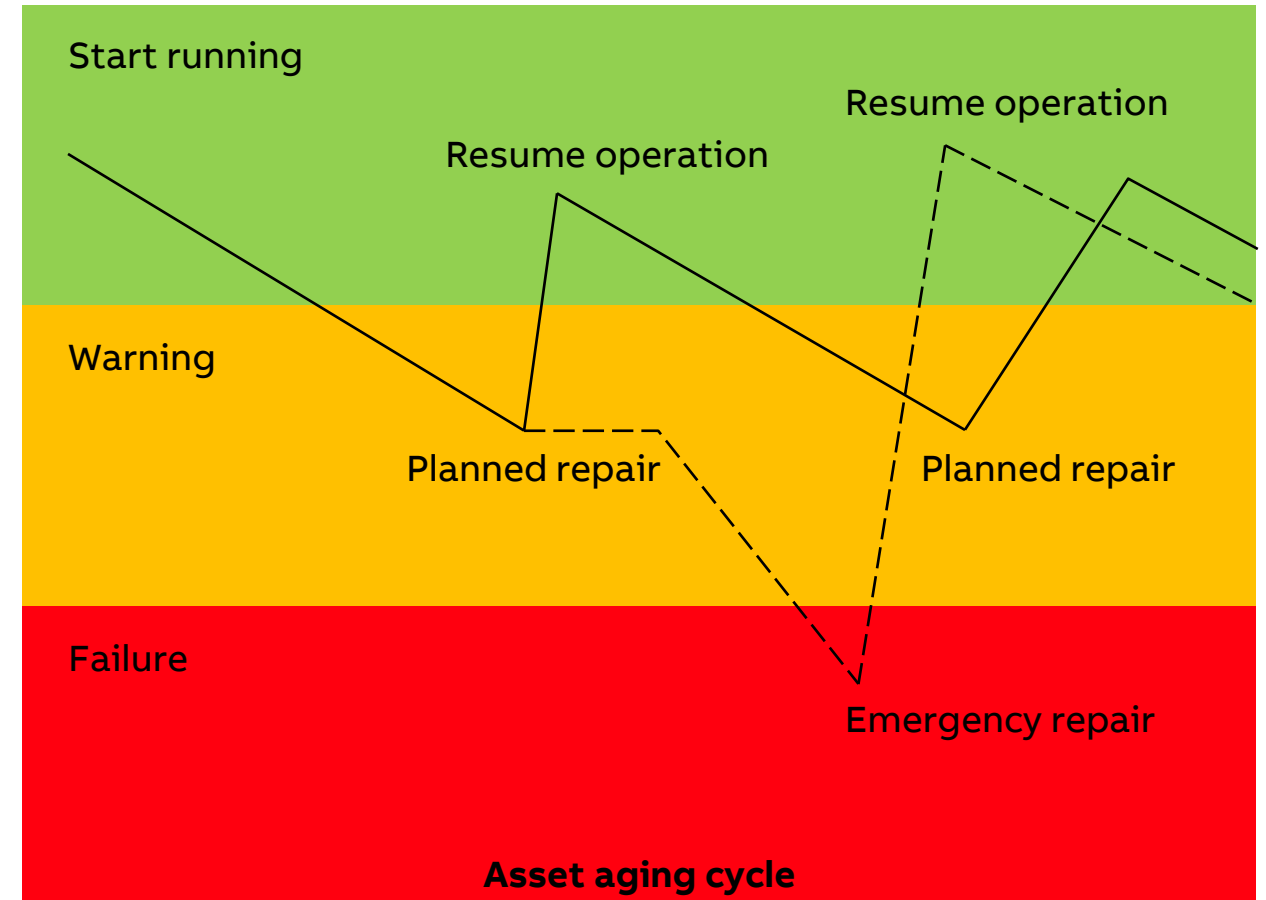
Based on key indicator monitoring and aging phenomena for predicting asset health



Based on the status prediction to enable proactive operation and maintenance management



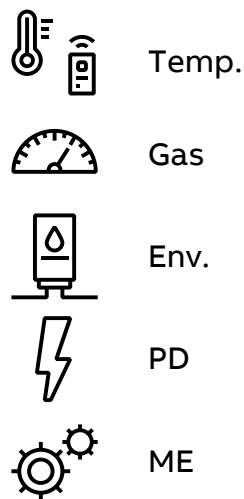
Proactive operation and maintenance supports planning repair in advance, reducing risks for failure and losses significantly



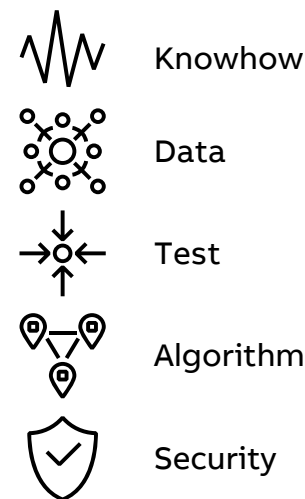
Emergency repair — — —
Planned repair — — —

Comprehensive Asset Management offering

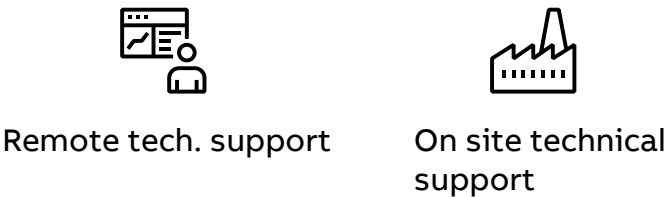
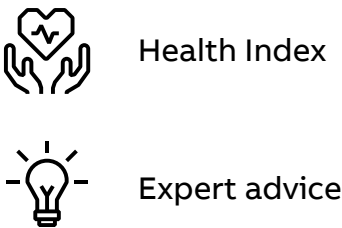
Hardware



Software as service



Service Contracts



Sensors & IoT

Focus on thermal, electrical, mechanical and environmental aging phenomena

Knowhow & algorithm

Aging phenomena + big data + knowhow = advanced algorithm

Health index and advice

Expert maintenance advice, based on health status analysis

Remote Support

ABB product expert remote support

On site

Support on site by skilled and certified technicians

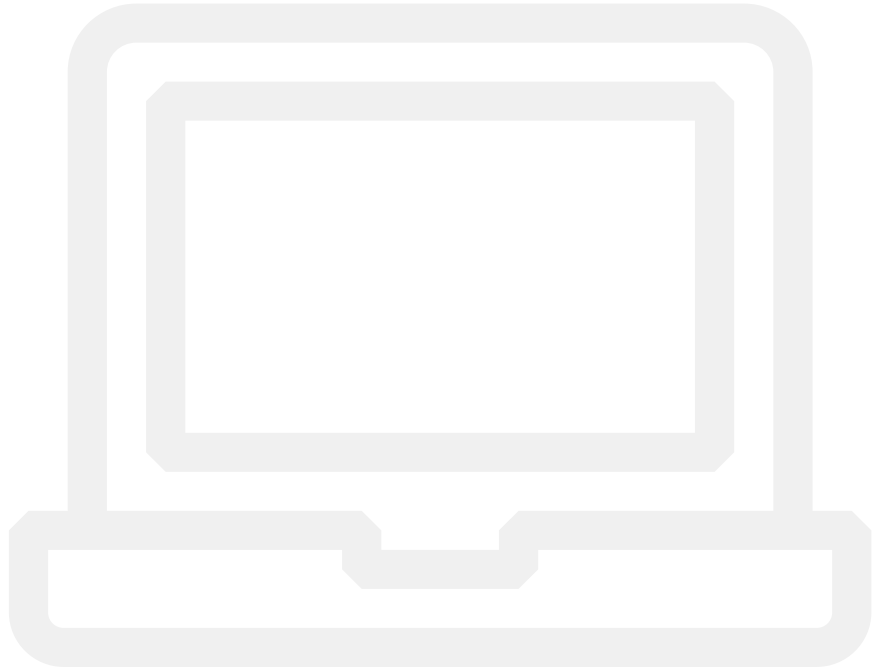


ABB Ability™ Asset Manager

ABB Ability™ Asset Manager

What is the ABB Ability™ Asset Manager ?



It is an **asset management tool** for monitoring the condition and performance of the electrical system from low voltage to medium voltage.



It **provides maintenance advice**, based on sophisticated data analysis



It is a **cloud-based platform** and plug & play solution, to gather data from smart assets, monitoring devices and sensors.



It is a **cost-efficient solution** with add-ons and premium services



It features a **flexible user interface**, providing users with pre-configured or customized dashboards and views.





Asset management



Monitoring & diagnostics



Data analysis



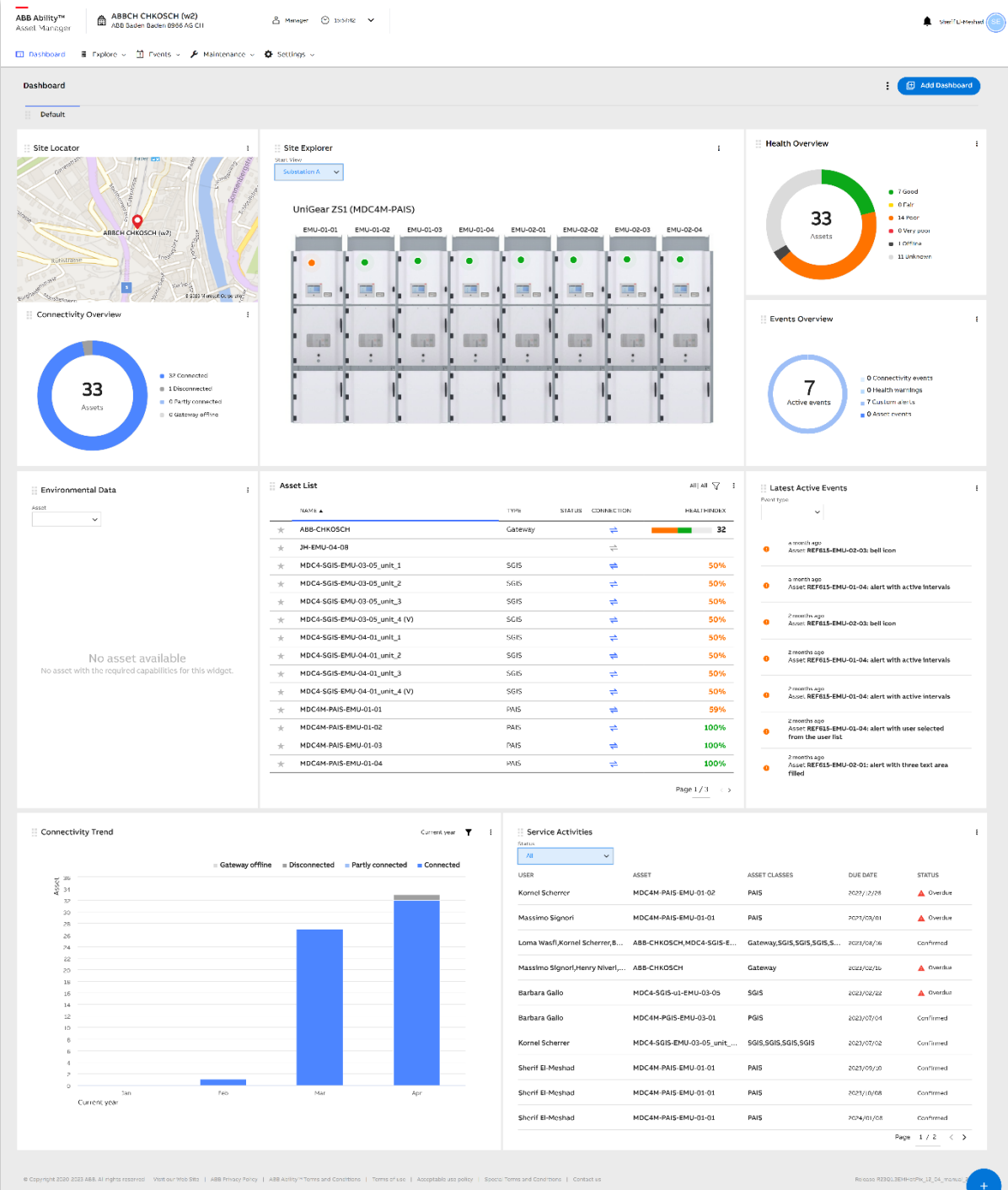
Events & notifications



Maintenance advice and planning



Reporting



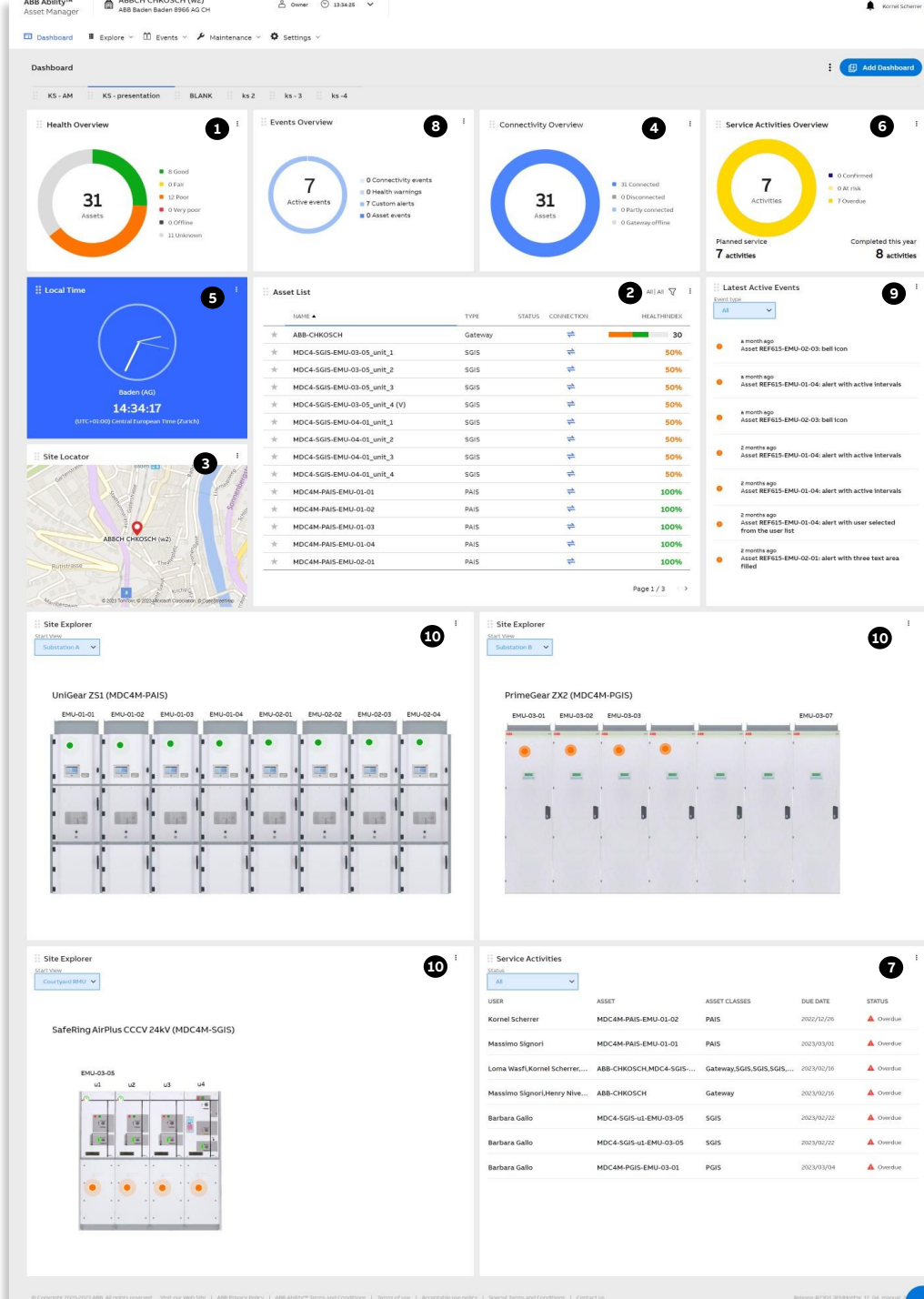
Dashboard

User can create her/his own dashboards, with several widgets, showing KPIs and trends data

Up to: **15 different dashboards** with up to **25 widgets** for each of them¹

Example of asset health dashboard with:

1. Asset health overview
2. Asset List
3. Graphical site exploration
4. Monitoring device connectivity overview
5. Local time
6. Service activities overview
7. Service activities
8. Events overview
9. Latest Events overview
10. Site explorer



Explore

User can browse the assets by:

- 1. Hierarchical view
- 2. Flat list, and search by different criteria
- 3. Visually, with pictures, diagrams, etc.
- 4. Connectivity list, based on system connection (gateway, data concentrators, etc.)

1

ABB Ability™ Asset Manager

ABBCH CHKOSCH (w2)
ABB Baden Baden 8966 AG CH

Manager 10:43:26

Dashboard

Explore

Events

Maintenance

Settings

Explore: Hierarchical view

Site

ABBCH CHKOSCH (w2)
ABB Baden 8966 AG CH

ABB-CHKOSCH
C32002872321W000

REF615-EMU-01-01
KSREF615EMU0101

REF615-EMU-01-02
KSREF615EMU0102

REF615-EMU-01-03
KSREF615EMU0103

REF615-EMU-01-04
KSREF615EMU0104

REF615-EMU-02-01
KSREF615EMU0201

REF615-EMU-02-02

3

Dashboard

Explore

Events

Maintenance

Settings

Explore: Views

Courtyard RMU

Substation A

Substation B

4

Dashboard

Explore

Events

Maintenance

Settings

Explore: Connectivity

+ - NAME CONNECTION PROTOCOL

>

ABB-CHKOSCH

Connected

2

Explore: All equipment

NAME	CONNECTION	CLASS	MANUFACTURER	SERIAL NUMBER	HEALTH INDEX (%)
ABB-CHKOSCH	Connected	Equipment	ABB	C32002872321W000	You cannot enable monitoring on this asset because it's not supported.
JH-EMU-04-08	Connected	Equipment		JH-EMU-04-08	You cannot enable monitoring on this asset because it's not supported.
MDC4-SGIS-EMU-...	Connected	Equipment	ABB	K5-MDC4-SGIS-u1-EMU-03-05	Good 100
MDC4-SGIS-EMU-...	Connected	Equipment	ABB	K5-MDC4-SGIS-u2-EMU-03-05	Good 100
MDC4-SGIS-EMU-...	Connected	Equipment	ABB	K5-MDC4-SGIS-u3-EMU-03-05	Good 100
MDC4-SGIS-EMU-...	Connected	Equipment	ABB	K5-MDC4-SGIS-u4-EMU-03-05	Good 100
MDC4-SGIS-EMU-...	Connected	Equipment	ABB	MDC4-SGIS-EMU-04-01_unit_1	Good 100
MDC4-SGIS-EMU-...	Connected	Equipment	ABB	MDC4-SGIS-EMU-04-01_unit_2	Good 100



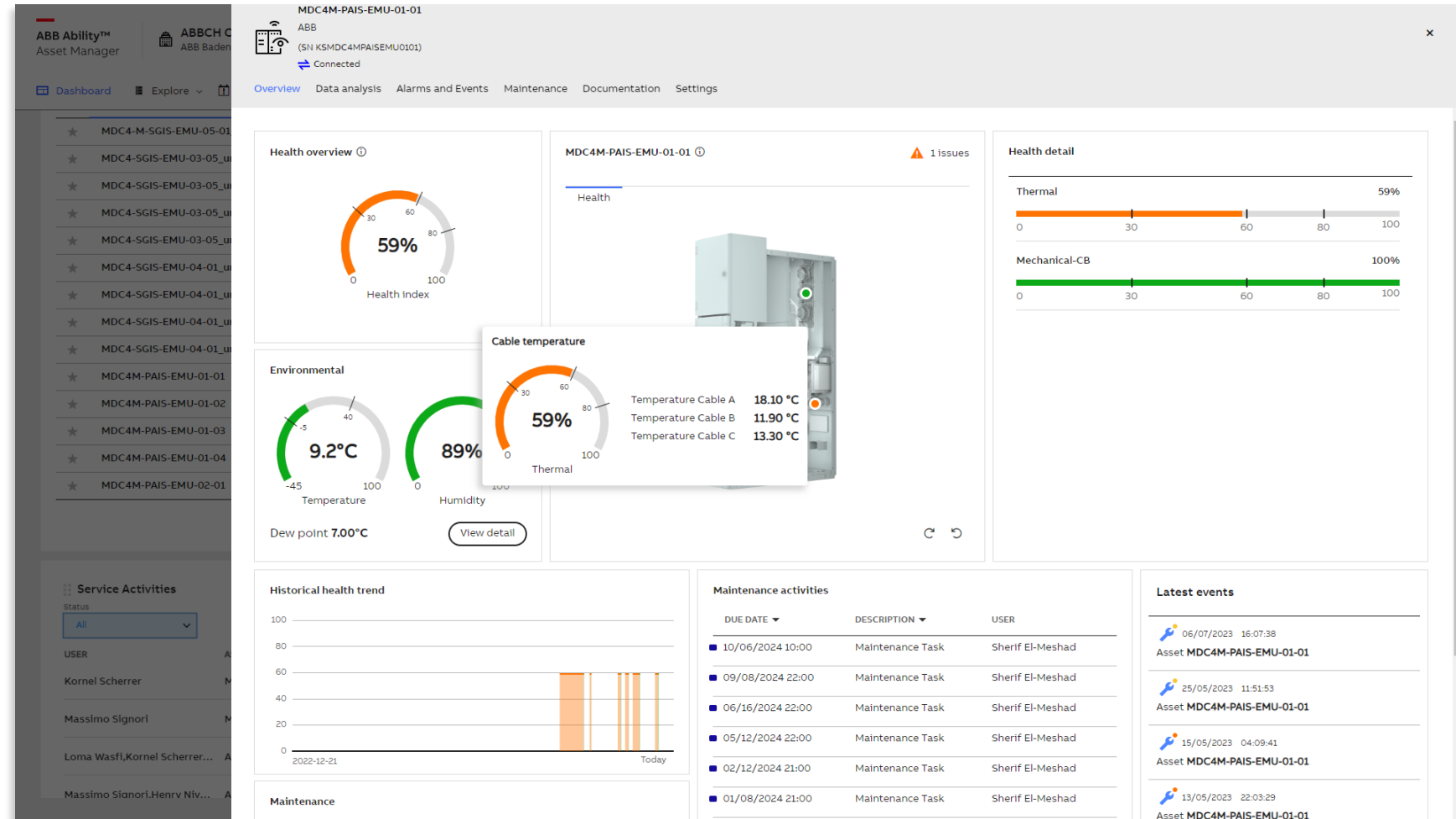
Asset - Overview

The Asset Overview provides critical health indicators at a glance

Is reached from dashboard widgets, hierarchical view, asset lists

Users can easily identify areas that require attention.

The orange dot in the picture as well as the health details to the right, indicate an issue with abnormal temperature at the Cable A connection.



Asset - Data analysis

In Data Analysis tab the user can easily navigate to pre-defined charts for supporting failure cause analysis.

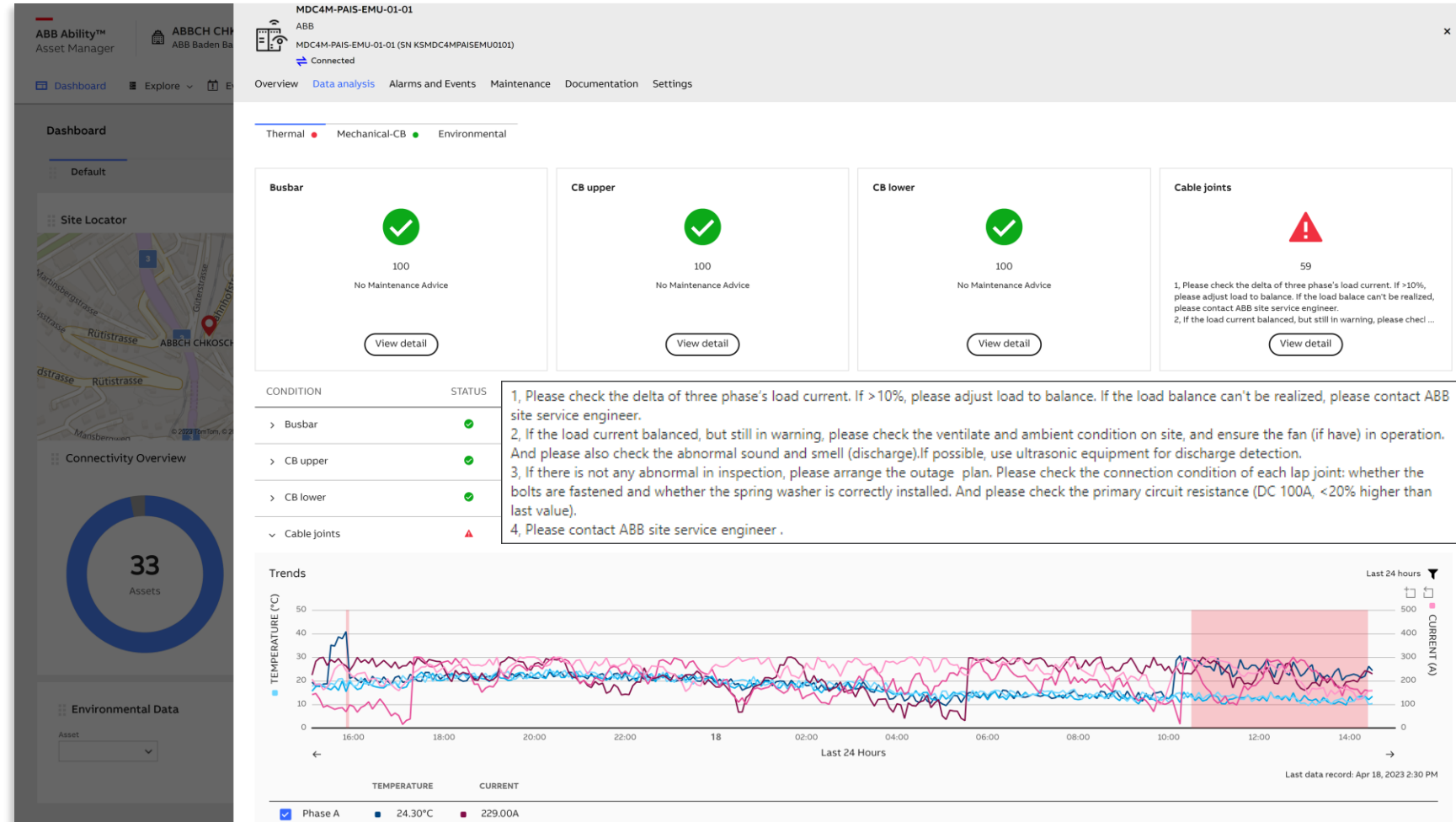
Typical pre-defined charts for:

- Thermal analysis (e.g., joints temperatures)
- Mechanical analysis (e.g., breaker operations)
- Electrical analysis (e.g., current, voltage, etc.)

The warning to the right indicates an issue with the Cable joins.

The temperature trend confirms that Phase-A temperature is abnormal.

A corresponding maintenance advice is provided.



Asset - Partial discharge analysis

Asset Manager provides valuable insights into the dielectric condition of the switchgear.

Depending on the PD measurement equipment employed, trends support user analysis with:

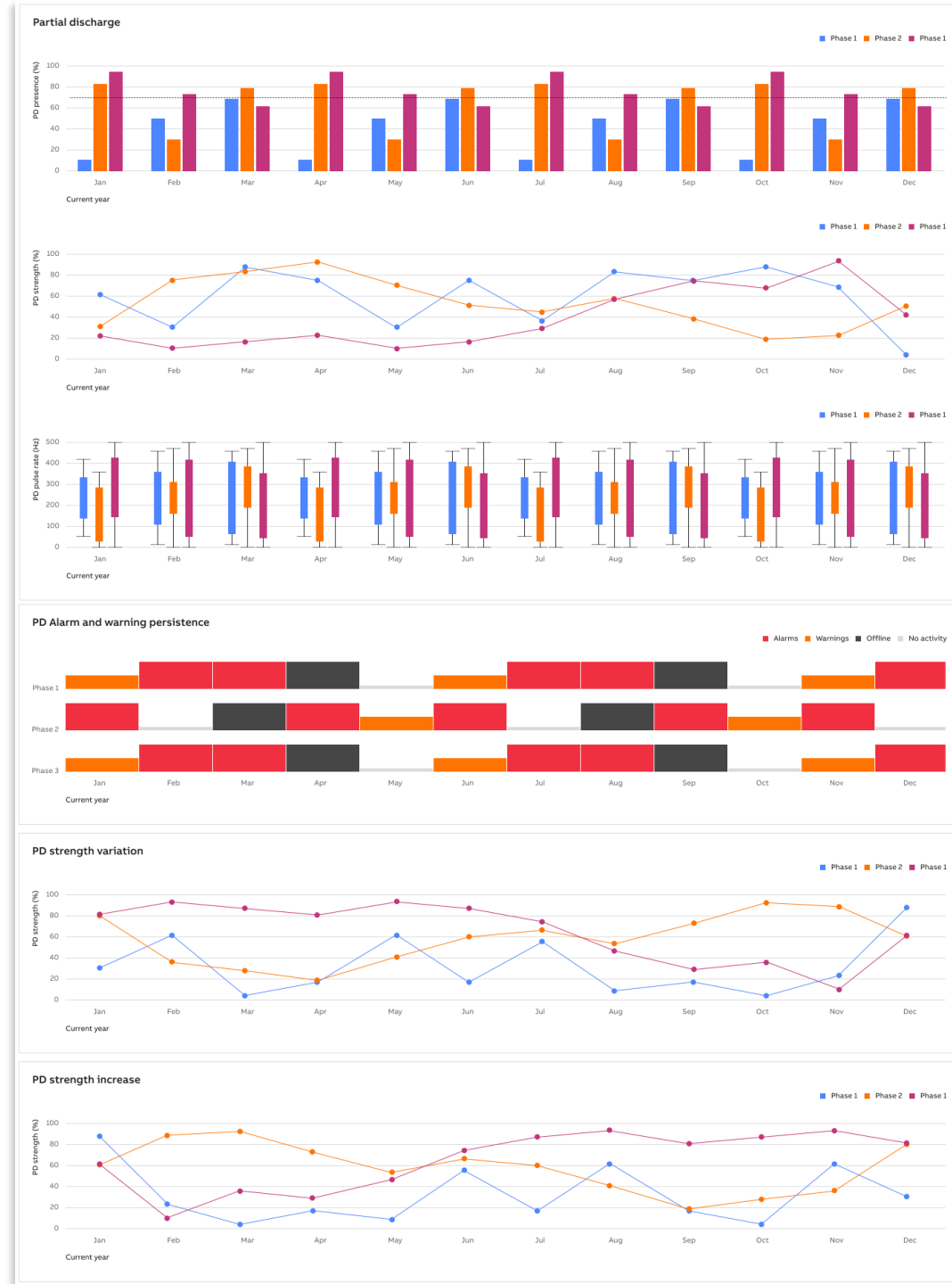
- Partial discharge presence trend
- PD pulse rate trend
- PD strength variation and increase trends

Data in the picture is just representative and might be not real

July 12, 2023

Slide 18

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Low voltage ABB & GE air circuit breakers predictive maintenance

Add-on predict



Mechanical data: operation number, contact wear...



Electrical parameters: current flowing in steady state and protection trip (overload., short circuit, earth faults...)

Prerequisites :



- Acquire a **Predict add-on license** for each monitored breaker
- Set the **environmental conditions:** Temperature, humidity, dust level, vibration, ...
- Add the **installation date** and the supply voltage value
- Use **Ekip Connect** for recording maintenance activities by a certified technician

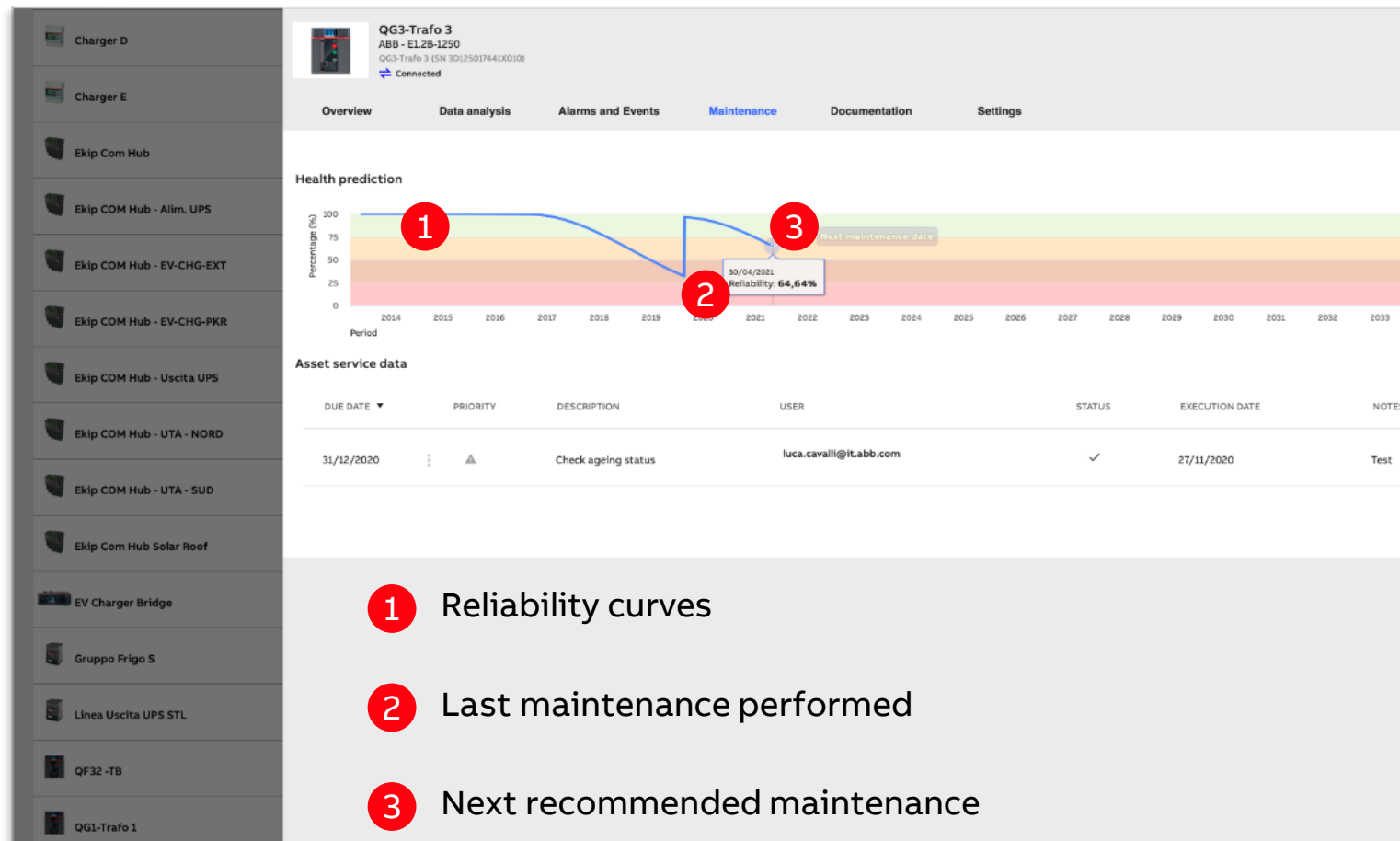


ABB Ability™
Asset Manager

ABBCH CH
ABB Baden Ba

MDC4M-PAIS-EMU-01-01 (SN KS

Connected

Dashboard

Explore

Overview

Data analysis

Alarms

Service Data

Default

Health Overview

34

Assets

Latest Active Events

Event type: All

2 months ago

Asset REF615-EMU-02-03: bell icon

2 months ago

Asset REF615-EMU-01-04: alert with bell icon

2 months ago

Asset REF615-EMU-02-03: bell icon

2 months ago

Asset REF615-EMU-01-04: alert with bell icon

3 months ago

Asset REF615-EMU-01-04: alert with bell icon

3 months ago

Asset REF615-EMU-01-04: alert with bell icon

New Maintenance

Maintenance

Activity

From

14/05/2023

10:00 AM

To

14/05/2023

02:00 PM

Description

Check Switchgear - Cable A reporting high temperature > 24 degrees.

67/255

High Priority

Maintainer

Select at least one maintainer for this new maintenance.

USER	ROLE
<div>SH</div> name-surname@abb.com	Manager

Assets

Select at least one asset to be maintained in this new maintenance.

ASSET	SERIAL NUMBER
MDC4M-PAIS-EMU-01-01	KSMDC4MPAISEMU0101

Save maintenance

Cancel



Once the problem has been identified, the Maintenance planner is used for creating and scheduling maintenance tasks.



The assigned users are automatically notified of new or upcoming activities.



ABB Ability™ Edge Industrial Gateway

ABB Ability™ Industrial Edge Gateway

Before your data reaches the cloud, it passes through **ABB Ability™ Industrial Edge Gateway**, a secure doorway and an extra layer of security.



Manages how your data is collected and shared



Safeguards operational technology from external access



Prevents devices from connecting to the cloud directly



Streamlines protection to give you peace of mind



ABB Ability™ Edge Industrial Gateway

Features



Easy installation and commissioning

- The gateway can be DIN-rail mounted
- Commissioning is done by ABB Provisioning Tool (requires internet connectivity)
- Firmware update can be done by ABB Provisioning Tool



Versatile

- From low to medium voltage, and vice versa
- From monitoring of a single switchgear panel to the supervision of multiple substations and sites



Connectivity

- Provides enhanced connectivity for Wi-Fi or 3G/4G mobile network services



Flexible

- Can manage up to the 15 RTU devices and 45 TCP devices *)

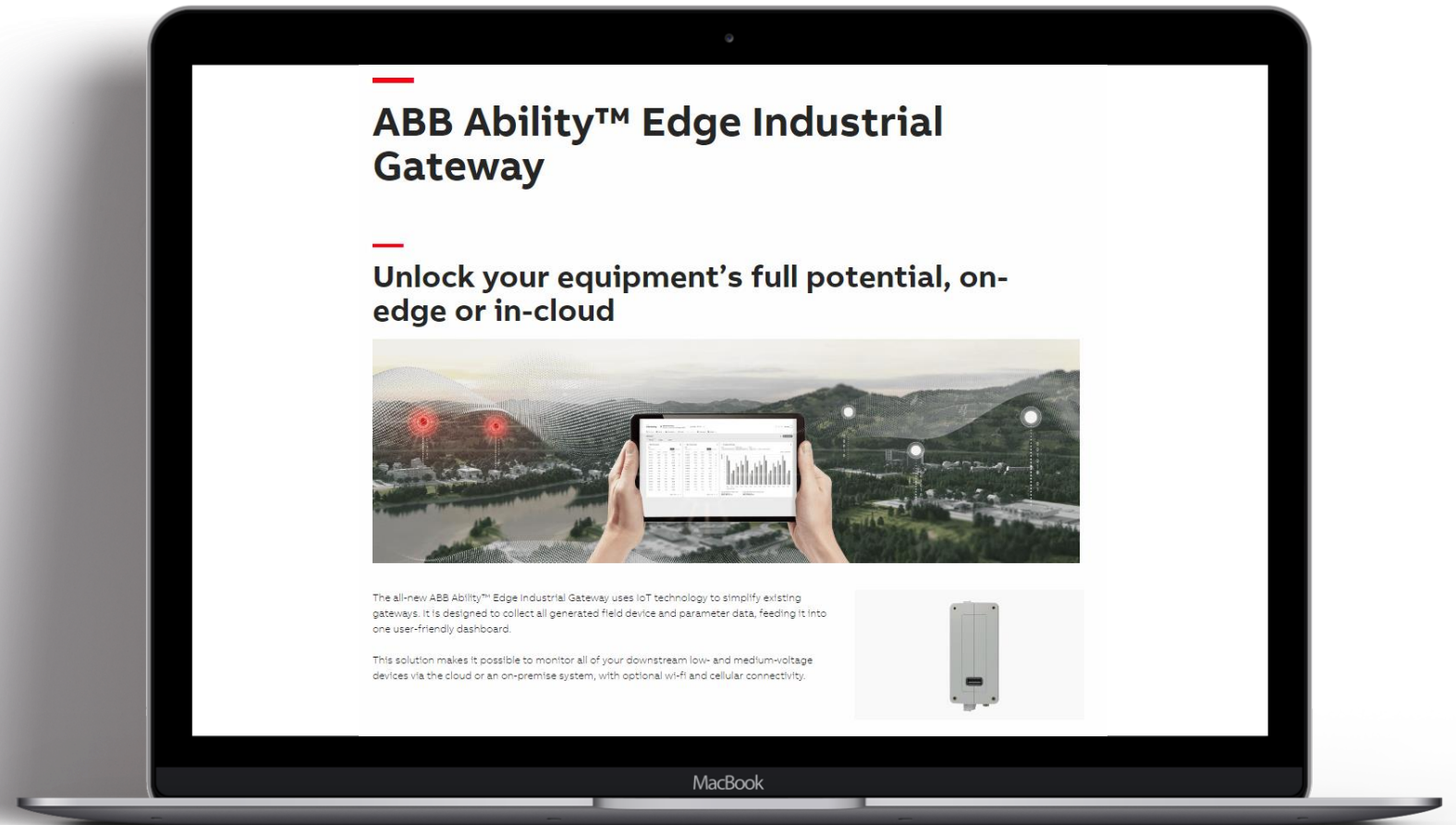


*) List of supported devices: [Link](#)

ABB Ability™ Edge Industrial Gateway

Web page

Access the webpage for
more contents, manual
and How to... videos





Supported M&D solutions

ABB Ability™ Asset Manager

Solution architecture

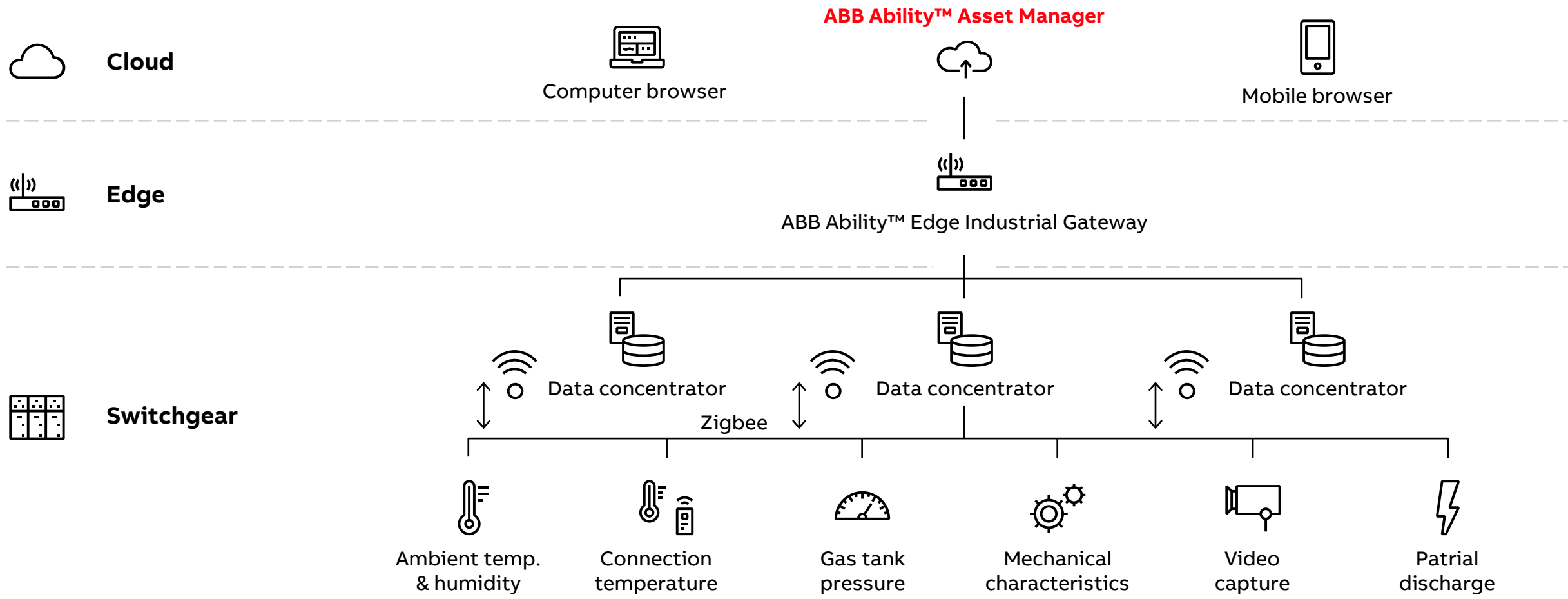


ABB Ability™ Asset Manager

Solutions overview

SOLUTION COMPATIBILITY HERE

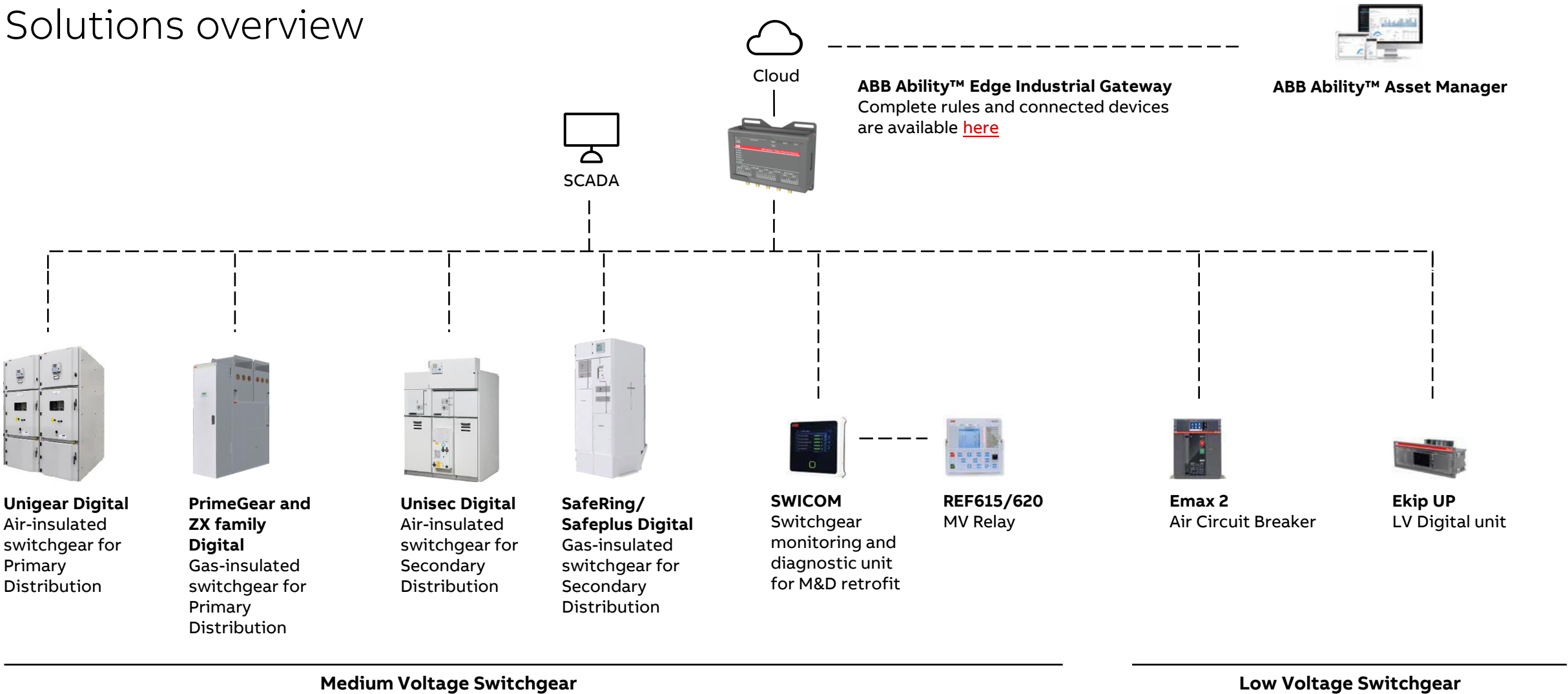
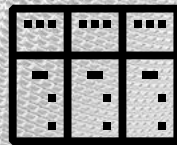


ABB Ability™ Asset Manager

MV Air Insulated Digital Switchgear



Make your Primary AIS smarter

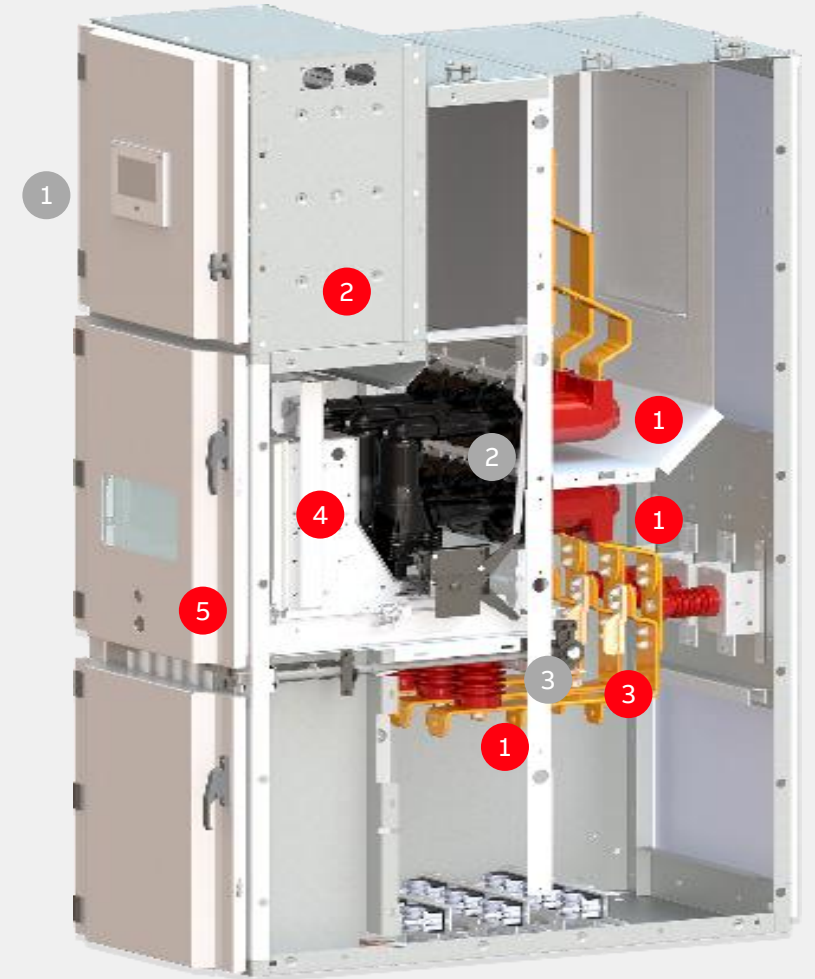
Digital Features with UniGear Digital 2.0

Monitoring & Diagnostics

- 1 Temperature monitoring
- 2 Environment monitoring (Temp & Humidity) in cable compartment and switch room
- 3 Partial discharge monitoring (PDCOM)
- 4 CB monitoring (VD4 w/Relion or VD4evo)
- 5 Panel mechanical interlocks
- 6 ABB Ability™ asset manager

Smart Automation & Control

- 1 Relion® protection relay with IEC 61850/Goose
- 2 Current measurement – Current Sensors
- 3 Voltage measurement – Voltage Sensors



Make your Secondary AIS smarter

Digital Features with Unisec

Monitoring & Diagnostics

- 1 Temperature monitoring
- 2 Environment (Temp & Humidity)
- 3 Partial discharge monitoring
- 4 Gas sensor for Gsec/HySec
- 5 CB mechanism monitoring
- 6 ABB Ability™ Asset Manager

Smart Automation & Control

- 1 Relion® protection relay with IEC 61850/Goose
- 2 Current measurement – Current Sensors
- 3 Voltage measurement – Voltage Sensors

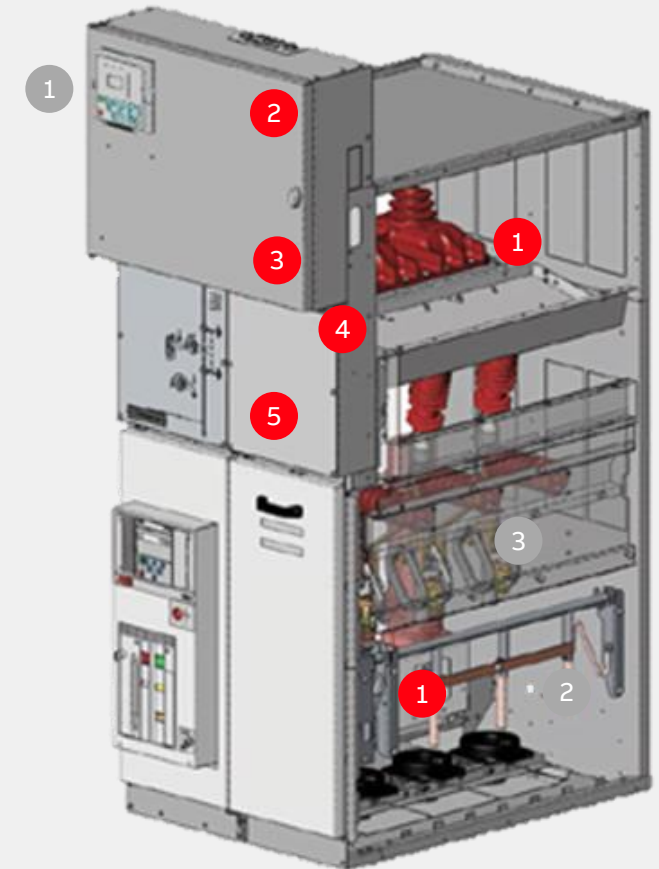
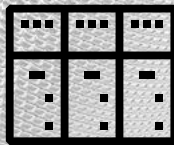


ABB Ability™ Asset Manager

MV Gas Insulated Digital Switchgear



Make your Primary GIS smarter

Digital Features with ZX Digital

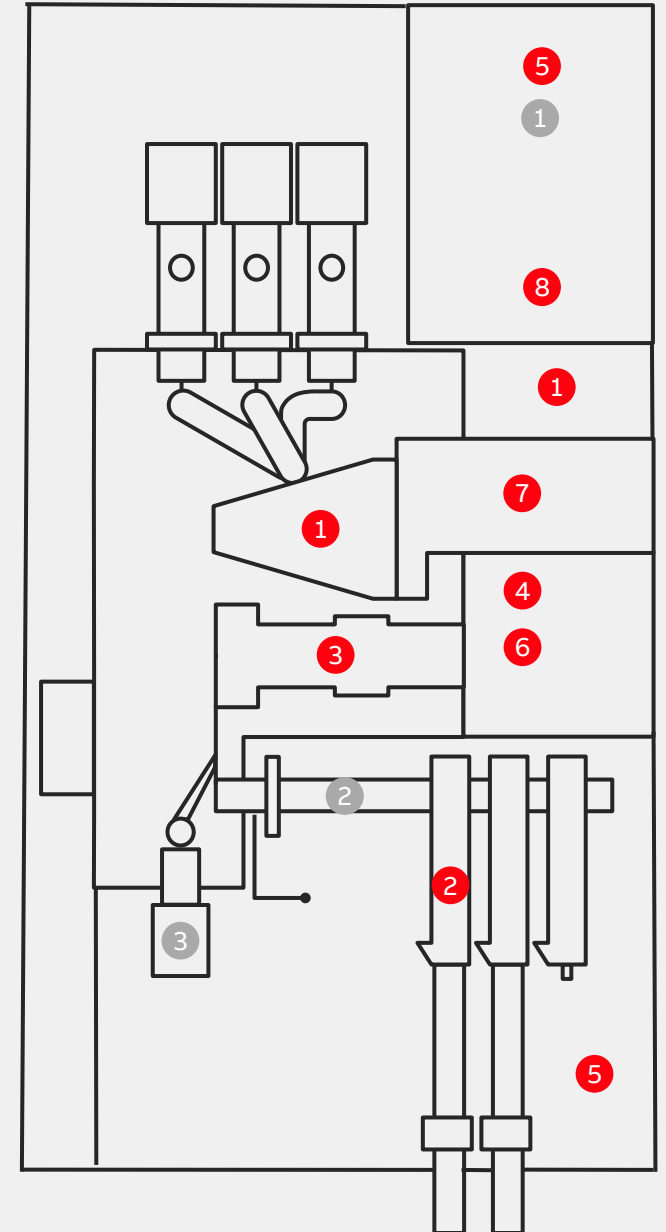
Monitoring & Diagnostics

Currently available:

- | | |
|--------------------------------------|--------------------------------------|
| 1 Remote gas density monitoring | 5 Environment (switchgear building) |
| 2 Cable connection Temperature | 6 CB mechanism (Adv.: Angle sensors) |
| 3 VI Electrical Life estimation | 7 3PS Monitoring (Electrical) |
| 4 CB mechanism (Basic: Hall sensors) | 8 PD monitoring |
| 5 Env. Temp & Humidity (LVC) | 9 ABB Ability™ Asset Manager |

Smart Automation & Control

- | |
|--|
| 1 Switchgear Controller and digital communication with IEC61850 and GOOSE/SMV |
| 2 Current measurement – Current Sensors |
| 3 Voltage measurement – Voltage Sensors (in socket) or Voltage Sensors (on cable plug) |



Make your Secondary GIS smarter

Digital Features with SafePlus/SafeRing

Monitoring & Diagnostics

- 1 Remote gas density monitoring
- 2 Cable connection temperature
- 3 Environment (temp & humidity)
- 4 Three position switch monitoring
- 5 Partial discharge monitoring
- 6 ABB Ability™ Asset Manager

Smart Automation & Control

- 1 Switchgear Controller and digital communication with IEC61850 and GOOSE/SMV
- 2 Current measurement – Current Sensors
- 3 Voltage measurement – Voltage Sensors (in socket) or Voltage Sensors (on cable plug)
- 4 Current and Voltage measurements – Combined Bushing Sensors (KEVCY)

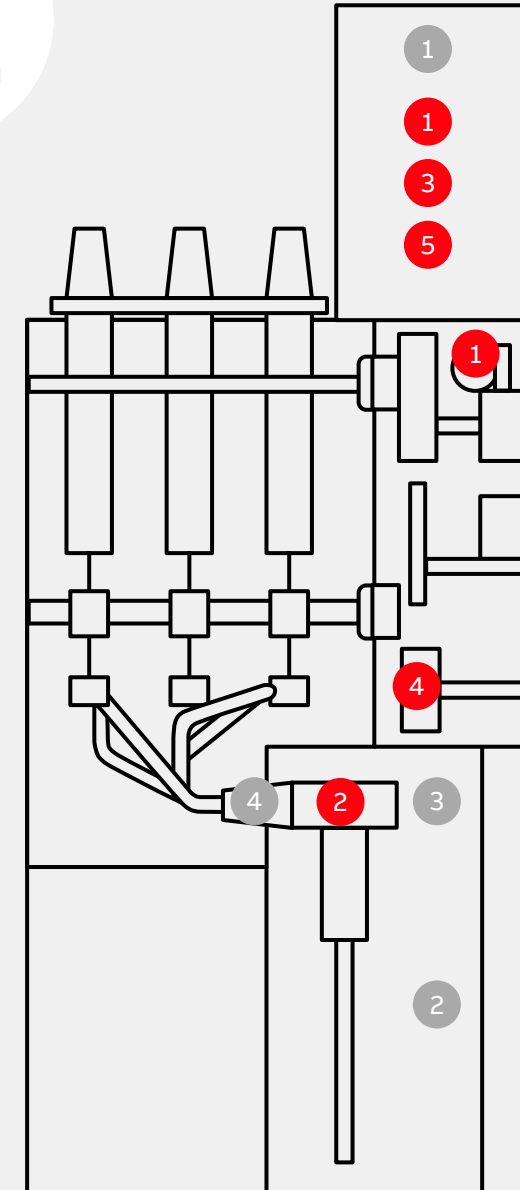
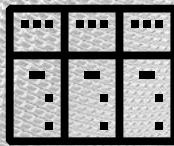


ABB Ability™ Asset Manager

LV Digital Switchgear



Make your LV switchgear smart

Digital Features

Several devices of a low voltage switchgear, like MNS and NeoGear, can be connected via Edge Industrial Gateway to ABB Ability™ Asset Manager:

- Emax 2
- Ekip UP

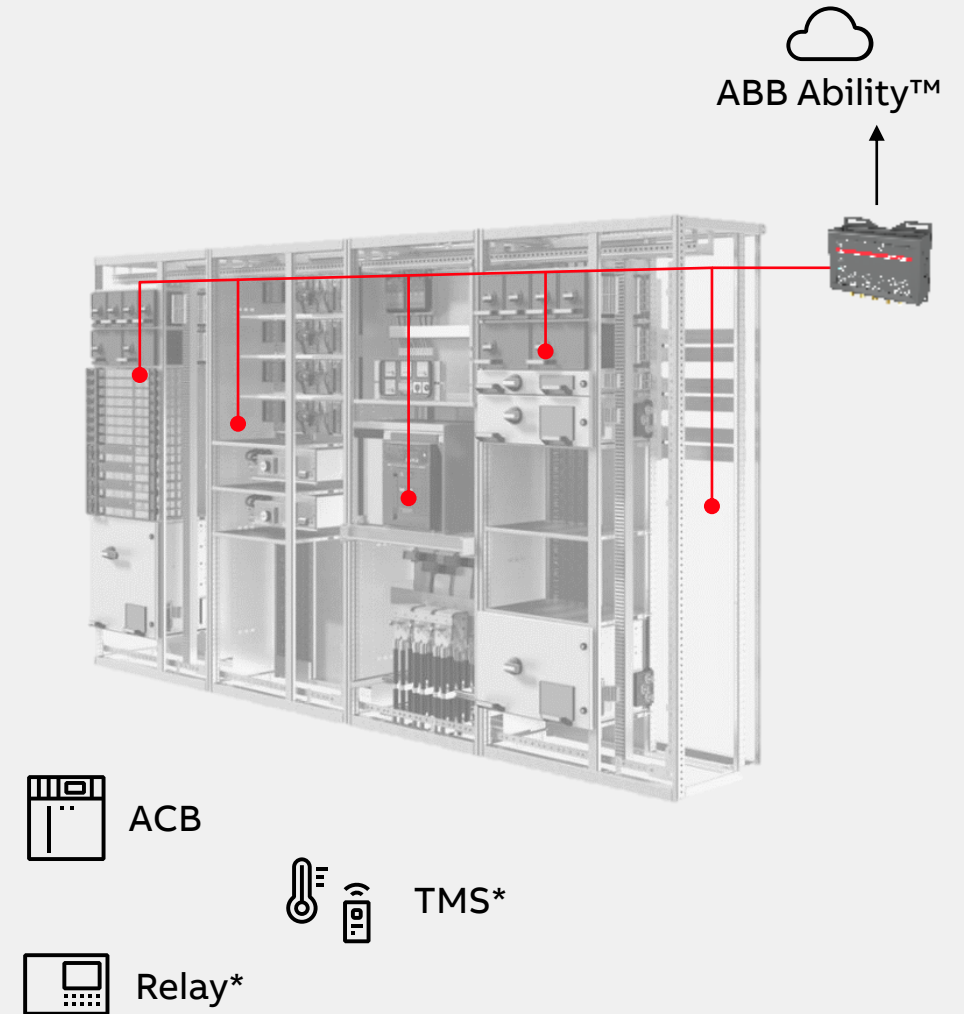


ABB Ability™ Asset Manager

SWICOM

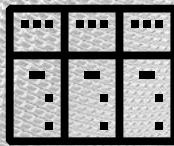


ABB Ability™ Switchgear Condition Monitoring

SWICOM

Optimized for monitoring and diagnostic retrofit installations

1. Breaker monitoring through Relion relays

- Utilizing existing substation automation network infrastructure

2. Partial Discharge detection

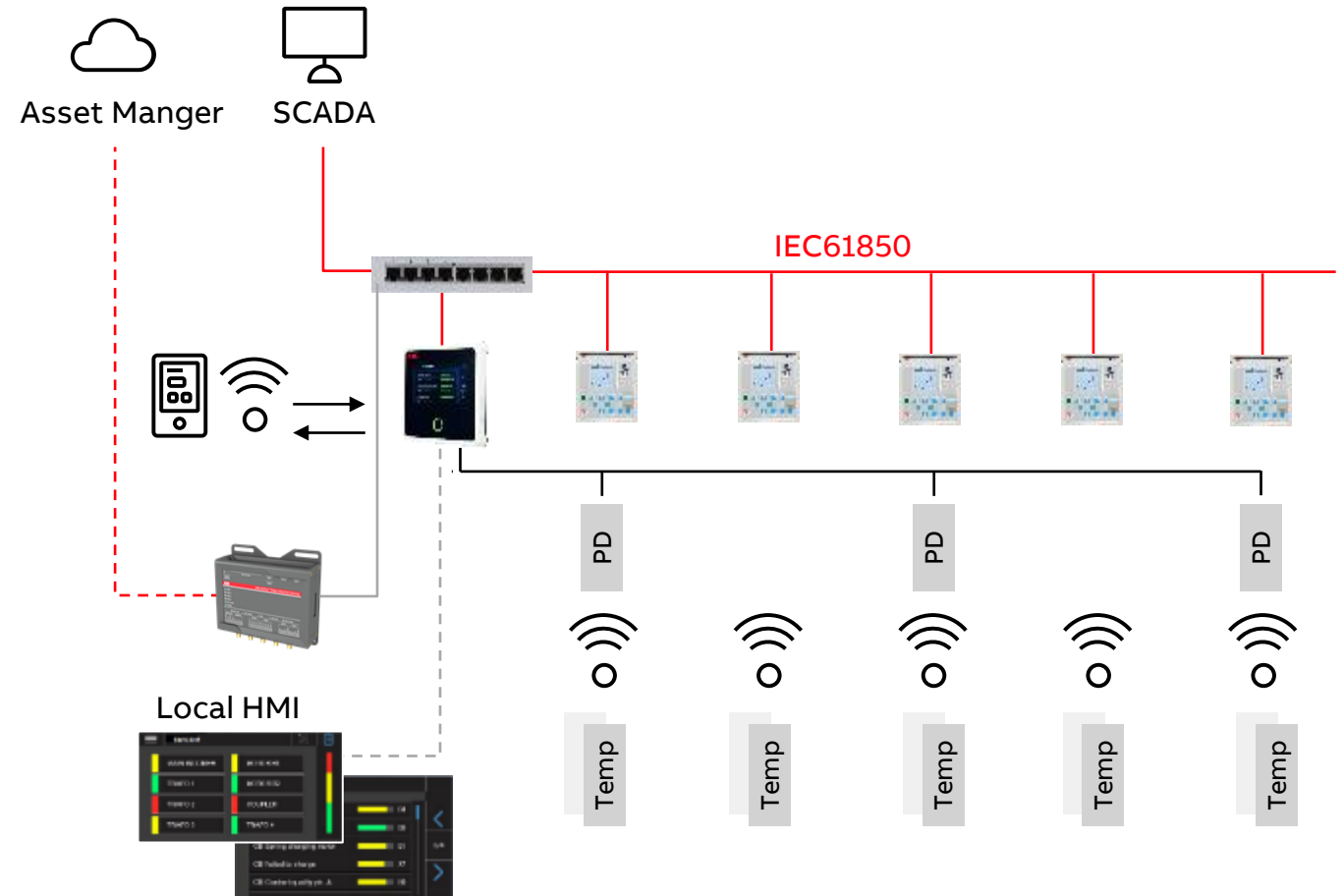
- Using ABB PDCOM sensor

3. Wireless Temperature monitoring

- Suitable for IEC and ANSI, AIS and GIS-(cables), ABB and non-ABB, green and brown field switchgear

4. Data visualization

- SCADA
- ABB Ability™ Asset Manager cloud
- Local HMI/Mobile APP



System configuration is indicative. Actual configuration will depend on configured feature set.

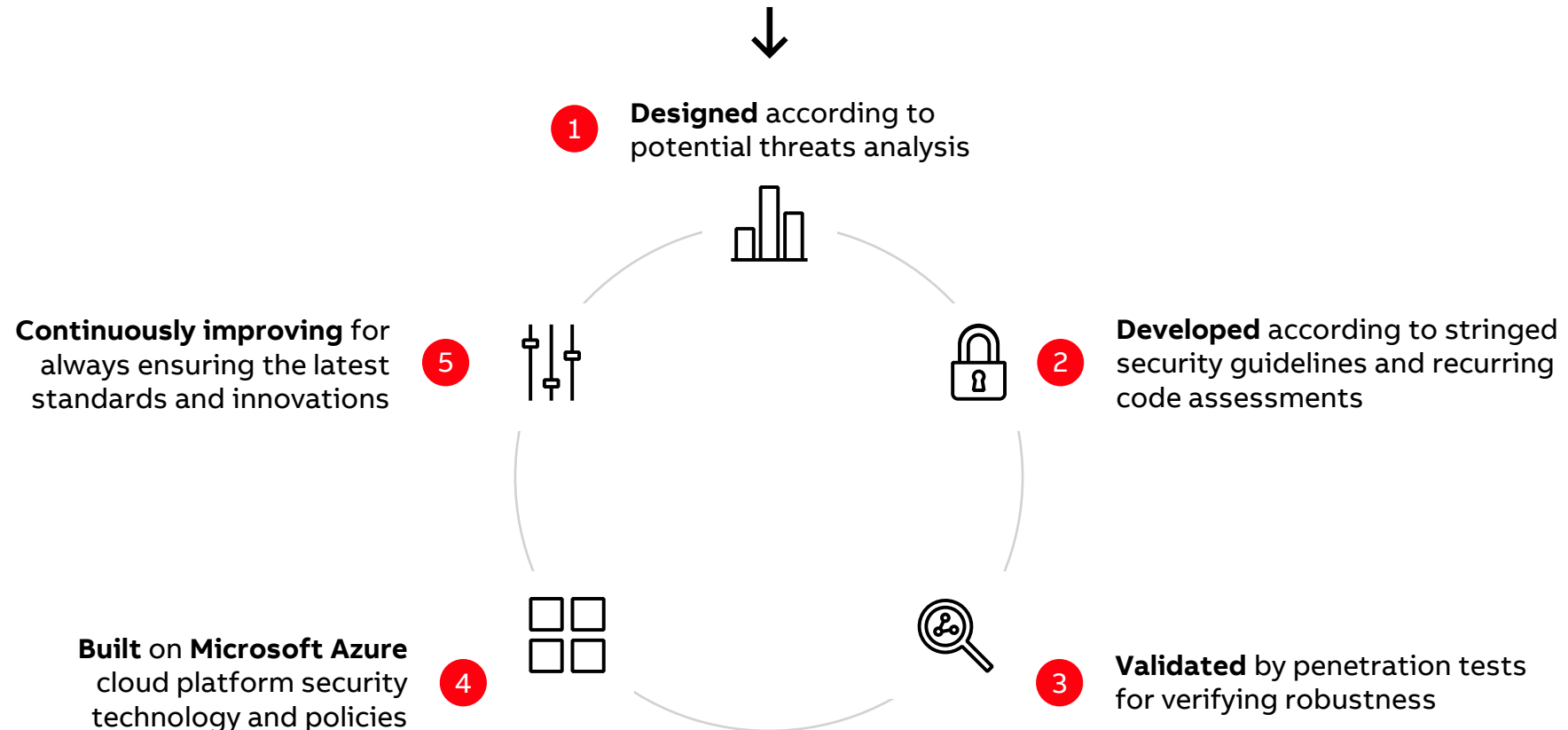


Cyber security

ABB Ability™ Asset Manager

Secures your data

ABB together with Microsoft, an expert partner in IT security, **ABB Ability™ Asset Manager** ensures state-of-the-art cybersecurity



Cybersecurity

ABB portal

CYBERSECURITY INFOGRAPHIC

CYBERSECURITY PAGE ([EXTERNAL](#))

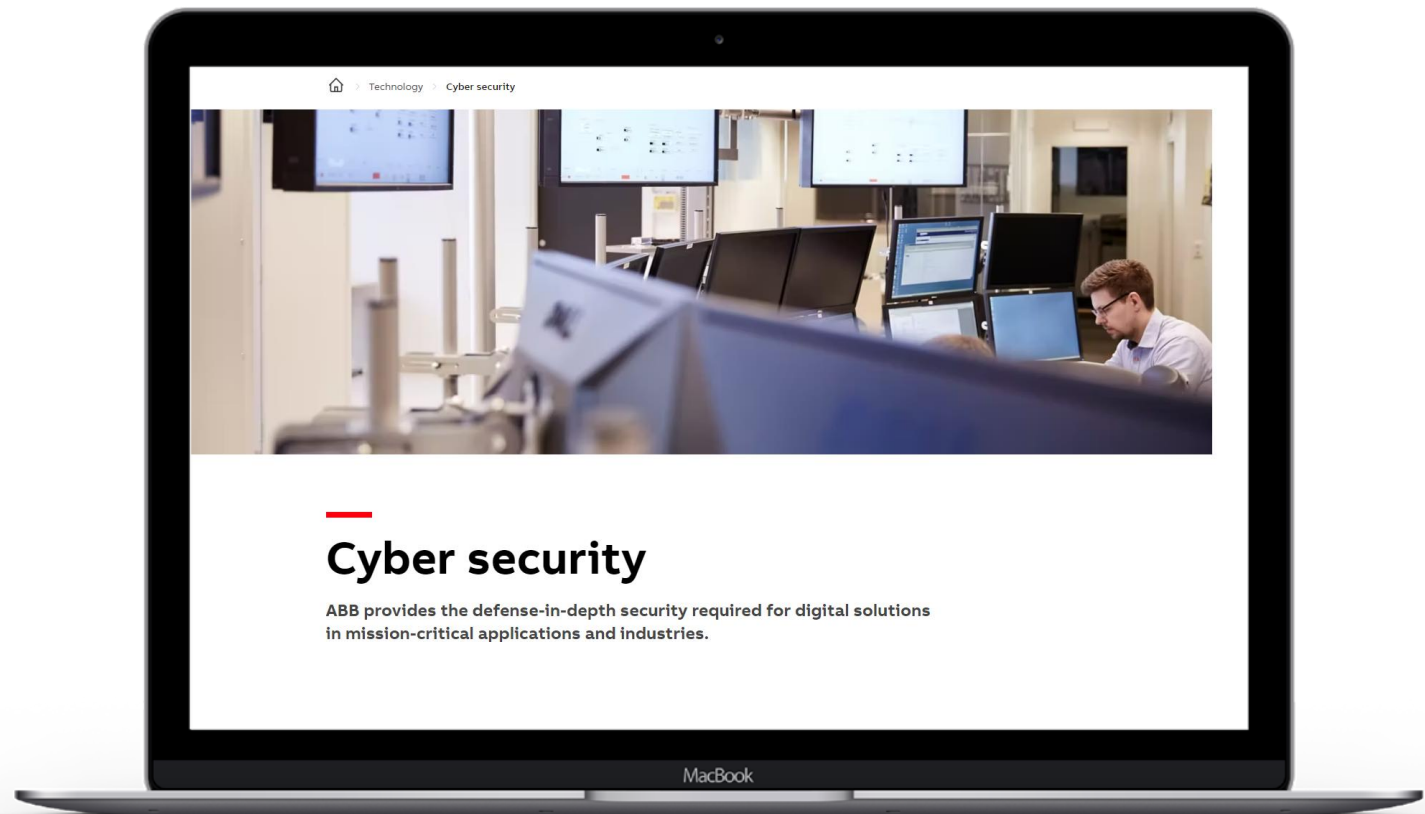


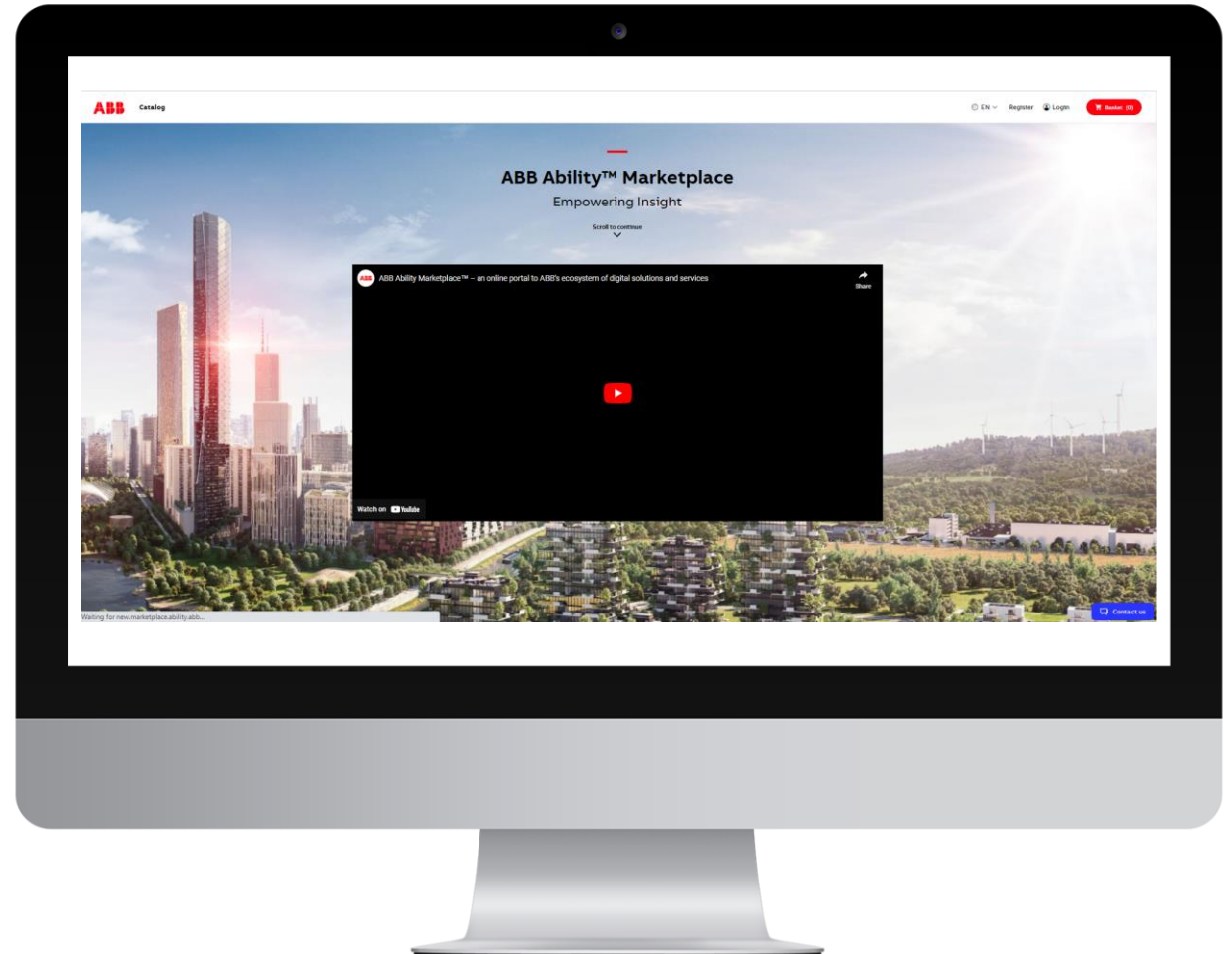


ABB Ability Marketplace™

ABB Ability™ Marketplace

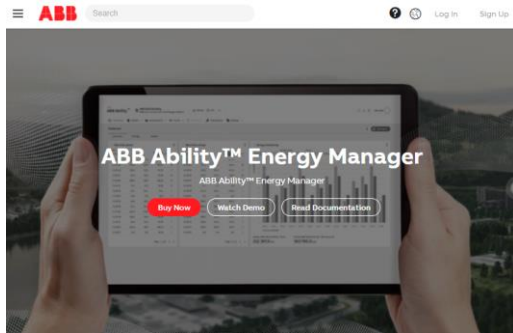
The ABB Ability Marketplace™ is a unified subscriber portal where customers can **discover, subscribe, manage**, and **scale** across ABB's ecosystem of SaaS services.

Membership grants you **access to the complete portfolio** of subscriptions and **perpetual software services** and connects you directly to our industry-specialized teams, who will help you identify the **best solutions and contracts for your company**.



Software product types

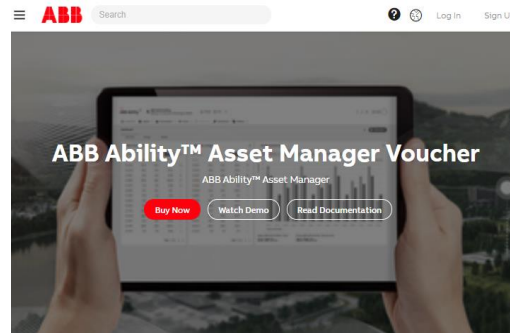
Subscriptions



Recurring subscriptions which are auto-renewed when purchasing from Marketplace. While purchasing an AM subscription, a Site ID will need to be entered. Subscription will be deployed automatically after the purchase.

Example: Asset Manager or Energy Manager subscription (AM or EM)

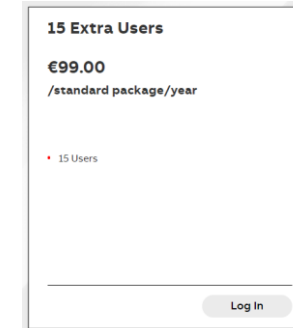
Vouchers



Vouchers are one off purchases and will activate the services for limited time only, usually 1 year. After the expiration, the plant needs to be reactivated either with a subscription or with another voucher. After purchasing a voucher, user will get an activation code by email. Code needs to be redeemed within a portal.

Example: Asset Manager or Energy Manager subscription (AM or EM)

Add-ons



Base subscriptions or vouchers can be enhanced with additional functionalities which are called add-ons. If add-ons are purchased along the subscriptions, they are recurring as a nature, if they are purchased along the vouchers, they are one-off purchases.

Example: Extra Users, LV CB Health

ABB Ability™ Marketplace

Overview

Basic Asset Manager Subscription/voucher

ABB Ability™ Asset Manager

€249.00

/year

• 5 Users 250 SMS Text Messages Multi-Dashboard Multi-Language

Contact Sales

Log In

Show Addons

Asset Manager Voucher

€249.00

/one time

• 5 Users 250 SMS Text Messages Multi-Dashboard Multi-Language One-time price is intended for 1-year access to the service

Contact Sales

Log In

Show Addons

Add-ons

1 Extra LV CB Health - Predictive maintenance

€49.00

/device/year

• 1 Device Predictive maintenance for: Emax 2 automatic air circuit breakers Tmax XT7 automatic molded case circuit breakers New Emax automatic air circuit breakers or switch disconnectors - Ekip UP Entellguard G automatic air circuit breakers or switch disconnectors - Ekip UP

Log In

25 Extra LV CB Health - Predictive maintenance

€999.00

/small package/year

• 25 Devices Predictive maintenance for: Emax 2 automatic air circuit breakers Tmax XT7 automatic molded case circuit breakers New Emax automatic air circuit breakers or switch disconnectors - Ekip UP Entellguard G automatic air circuit breakers or switch disconnectors - Ekip UP

Log In

15 Extra Users

€99.00

/standard package/year

• 15 Users

Log In

1000 Extra SMS

€99.00

/one time

• 1000 SMS Text Messages

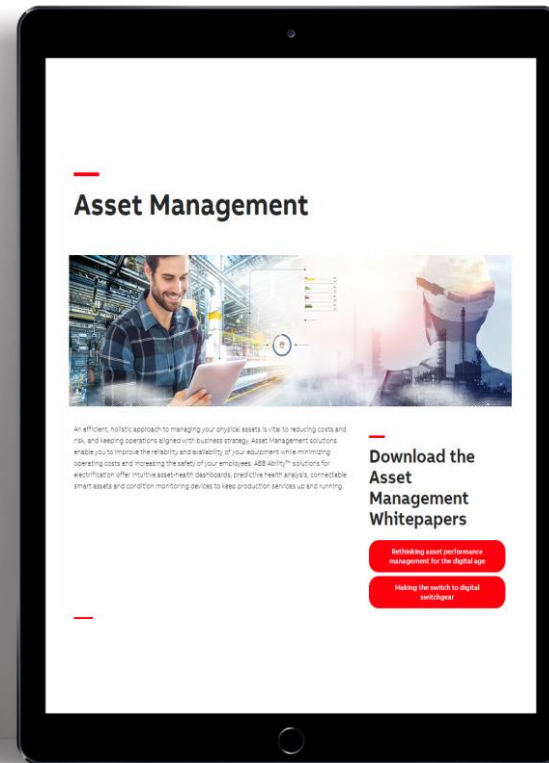
Log In



Documentation and contacts

ABB Ability™ Asset Manager

External page for customer



Get in touch

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