Asset health solutions

for safe, smart and sustainable electrification

ABB

ⓘ ABB Ability™ offering

Why embrace ABB Ability™ for electrical system:

Condition-based and predictive maintenance is one of the best approaches for maintaining electrical systems. It enables operators and maintenance teams to continuously supervise the equipment's condition, ensuring maximum uptime as unexpected failures are minimized. By analyzing the data acquired, it is possible to take the right mitigation action and to optimize the maintenance and operating strategy.

The key value includes:

ABB asset health solutions help the customer know more and do more.

ABB Ability combines deep domain expertise with unmatched experience in connectivity to enable customers to know more and do more – together.
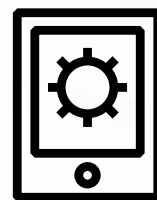
ABB Ability offering is designed to work across industries. These digitally enabled Industry 4.0 compatible solutions are fine-tuned based on years of sector and customer insights, creating new possibilities in intelligent devices.
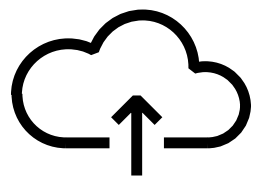
Backup and assessment without sensors
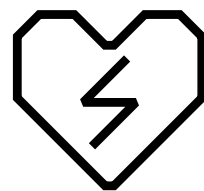
Condition monitoring

Industry 4.0 based asset health systems

Predictive analytics

ABB Ability™ Backup Management for electrical systems – Data Care

Convenient and easy data-sharing and backup

ABB's advanced, Web-based data-sharing and backup service – Data Care – allows convenient sharing of technical information on protection and control relays, throughout their entire life cycle. Relay configuration files, disturbance recordings, technical solutions, line diagrams and various related documents are easily accessible online, securely stored in a structured storage space.

Traveling to sites and substations to get up-to-date relay data can therefore often be avoided. This makes day-to-day operation of the relay smooth and cost-efficient. The disturbance recordings can be conveniently shared with ABB's protection relay experts for in-depth analyses to determine the cause of a fault.

ABB Ability™ life cycle assessment for electrical systems – MySiteCondition

In the life cycle of an electrical equipment one need to take appropriate business decisions related to allocation of operation budget. MySiteCondition allows ABB personnel to do an assessment of your electrical system even without a shutdown or additional sensors. The collected data is analyzed and factored by an engineered algorithm to evaluate the risk and consequences of failure.

The assessment can be conducted on ABB and third party equipment covering low and medium voltage electrical systems.

MySiteCondition is the ABB methodologies to adopt advanced maintenance methodologies by assessing:

– Importance of the equipment
– Actual site condition
– Critical points in the network
– Available historical data
– Operator and asset safety
– Product life cycle status

Condition Monitoring

Condition-based maintenance service is the best approach for electrification system to guarantee high uptime, reduce total cost of ownership, provide immediate response, focused maintenance and reduced life cycle costs.

ABB Ability™ Condition Monitoring for switchgear – SWICOM

SWICOM is a monitoring and diagnostic device
which provides mechanical, electrical health status of a fleet lineup of medium voltage assets. SWICOM can communicate with the relay via IEC 61850 for breaker diagnostics and one can also install additional sensors to get further asset information like temperature, partial discharge (PD) or even breaker diagnostic in case IEC 61850 relay is not available. SWICOM can be retrofitted in existing installation with a complete sensor package.

SWICOM can monitor ABB and third party circuit breakers and switchgears

– Breaker diagnostics focus on mechanical operation without using external sensors by making use of existing relays
– Temperature monitoring can be done using wireless and battery-free sensors which can be installed flexibly in different compartments as required. Wireless helps retrofits on brownfield or installation in the new switchgears in the factories possible.
– Partial discharge indicators raises red flags using the capacitive coupling or Ultra High frequency (UHF) technology.

SWICOM integrates with different systems according to customer requirements

– ABB Ability cloud through ABB Ability Edge Industrial gateway
– ABB Ability Data Analytics for electrical systems for predictive analysis
– SCADA using IEC 61850 communication
– On-premise solution using smartphone/tablet App

ABB Ability™ Condition Monitoring for electrical systems – CMES

Low voltage switchgear and motor control center in an industry plant are expected to operate continuously. To understand the condition and maintenance needs in a switchgear, the data provided by smart devices such as circuit breaker, motor controller and also temperature sensors and others are connected to the on-premise condition monitoring. The connectivity is from the devices through Modbus TCP or Modbus RTU (to enable connectivity to legacy devices) to the Edge device with the CMES solution. Incomer ACBs also use IEC 61850 directly to connect to power management systems while motor controllers communicate directly to process control via Modbus TCP or alternatively through a digital gateway supporting Profibus and Profinet.

The collected data are stored and continuously analyzed in the CMES. The detection of a deviation from a threshold or other results of the analysis is informed through a user-friendly web browser enabled dashboard. Data history, alarm and events with time stamp and other information can easily be accessed. The CMES supports creation of reports for quick summary view of switchgear condition and energy consumption. Those can also be exported.

Functionality

Monitoring of all electrical components with communication such as:

- Low voltage circuit breakers
- Motor controller
- Power meter
- Variable speed drive (VSD)
- Softstarter
- Third party equipment
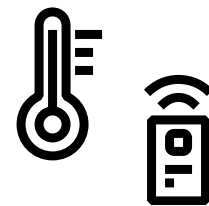
Temperature monitoring:

- Circuit breaker incoming cable
- Busbar shipping splits
- Power module contacts (withdrawable and plug-in)
- Other electrical joints (fixed)

CMES monitors and analyzes

Industry 4.0 based asset health system

In today's environment, customers face many challenges, including aging assets, stagnant budgets, new operating risks resulting from distributed energy resources and a workforce in transition. Utilities and industries need to take advantage of advances in predictive and prescriptive analytics in order to meet the expectations of high reliability in spite of these challenges.

ABB Ability™ Asset Manager

As a condition monitoring dashboard for low and medium voltage assets, ABB Ability Asset Manager supports implementation of industry 4.0 cloud base solutions. It enables maintenance and operation teams to continuously supervise asset's' condition, alarms, events and performance trends through a user-friendly dashboard without any control capabilities. Customer can also combine ABB Ability Asset Manager to be part of the PowerCare customer support agreements.

Predictive analytics

ABB Ability™ Data analytics for electrical systems

Data analytics collects your data via assessment and sensor interfaces, and uses asset models to make prediction. The information is visible via ABB Ability Asset Manager dashboard.
ABB's data analytics is a generic prediction model for medium voltage assets including third party products which conducts fleet analysis.
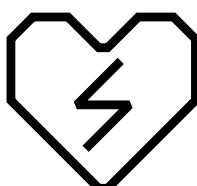
Connectivity and integration with ABB Ability products:

The Industry 4.0, cloud-based solution is suitable for greenfields and brownfields calculating:

Probability of failure (POF). It calculates the probability of failure in the next three years.

Remaining useful life (RUL). It will calculate the remaining life of the asset related to the POF.

Combined health index. This included health generated through sensor data and health generated through offline observation data.
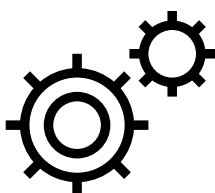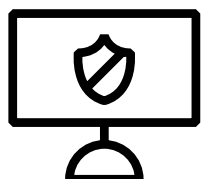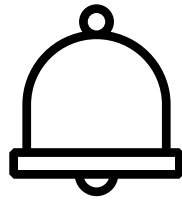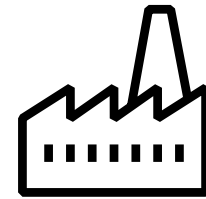
ABB Ability Asset Manager

MySiteCare

SWICOM

CMES

ABB cyber security takes care of the data which is transferred using a one-way telecommunication channel only.
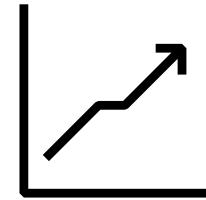
Different low and medium voltage sensors and monitoring systems can be connected to ABB Ability Asset Manager to enable e.g.:
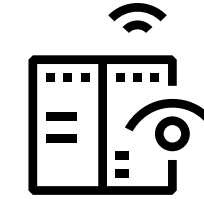
Real time warning and alarms

Multiple plant supervision possible, even globally
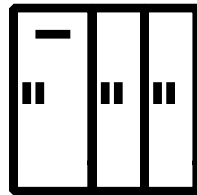
Automated reporting

Works using GSM 2G/3G network

ABB technician can supervise depending on customer's requirement

The low and medium voltage assets which can be connected to ABB Ability Asset Manager include:

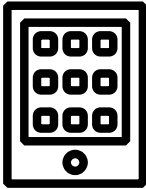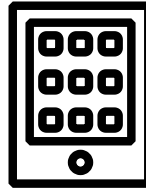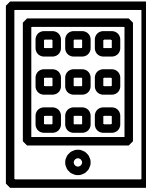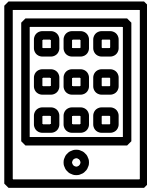**ABB/third party circuit breaker/switchgear**

ABB monitoring and diagnostic products and sensors, e.g. SWICOM, MySiteCare, CMES

Retrofitting the complete package on all switchgear with all the sensors possible

Industry 4.0 enables prediction to improve safety and lowers operational and capitals costs.

	Asset Manager	SWICOM	CMES	Data Analytics
Low voltage	X	(X)	X	
Medium voltage	X	X	X	X
Fleet diagnostic	X	X	X	X
Manual data without sensor				X
Temperature sensors	X	X	X	X
Partial discharge sensors	X	X		
Breaker diagnostic	X		X	
Integration with SCADA		X	X	
Cloud-based	X			X
Third party installed based	X	X		X
ABB installed base	X	X	X	X
Brownfield	X	X	X	X
Greenfield	X	X	X	X

(X) Key functionality for the application

MNS Digital Video

ABB Ability™ digitalizes electrification systems by providing safe, smart and sustainable solutions. They are compatible both for greenfield and brownfield installations.

Want to learn more about ABB's digital technology offerings?

Please click on one of the links below:

Contact us

Call your nearest ABB contact center

Complete our web enquiry form

Useful links

Learn more about ABB Ability™

More about ABB's Electrification business

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