Life-cycle support

ABB's innovative service solutions for medium-voltage products

MARCO EGMAN, THOMAS ZURFLÜH – Innovative services being offered to customers today are changing the ways companies communicate, collaborate, and interact. And the way these smarter services are being delivered and used is also redefining customer support. Services increasingly focus on how customers are doing and what supports the customer's business process. Service at ABB is all about building relationships to support customers throughout the life cycle. With this approach the company is taking the lead in offering innovative service solutions for its customers operating or working with medium-voltage assets. ABB service means close interaction between its service engineers and its customers as well as newly developed service solutions that seek to change the service approach to MV equipment. The primary areas with innovative approaches include asset support, switchgear and operator safety, and circuit breaker and protection relay upgrades and retrofits.

1 ABB's PowerCare matrix

PowerCare	Entry level	Level 1	Level 2	Level 3
Skills development services	Product training list	Product training	Application training	Coaching services
Emergency maintenance services	Single point of contact	Technical support with agreed response time	Callout support with agreed response time	Essential spare parts assessment and replenishing
Diagnosis and condition assessment services	Preliminary survey and documentation of installed base	Asset condition and risk assessment	Asset monitoring	Remote asset monitoring
Self-maintenance services	Installed base life-cycle status report	Manuals and instructions online	Online support for self-maintenance	File storage
Delivered maintenance services	Technical assessment on yearly basis report	Protection and control engineering services	Switching apparatus engineering services	Full switchgear engineering services

ABB has a huge repository of knowledge, spanning not just its own branded products but also those of the numerous legacy companies acquired over time. With this wide range of competencies complementing its customers' own services and solutions, integration into the customer's asset operation process is possible at a variety of levels, all the while staying focused on the application of the products. The customer is then able to concentrate on its core strengths such as manufacturing goods or providing a service – for instance, running a manufacturing process – to its own customers. ABB service supports the customer so it can achieve its own operational goals.

Operator challenges

For MV asset operators, having skilled and trained staff who can safely operate old and new assets is increasingly difficult. The growing complexity of installed-base, historically grown assets in different levels of the life cycle, along with different levels of know-how on old, mid-age and new assets, plus the need to have access to documentation and information about all the assets, all increase the challenges.

In addition, demands on operators are growing because there are more changing load flows in power grids, harder budget limits for investments, a convergence of primary and secondary technologies, and more software that needs to be managed. Operators have to adapt their maintenance and modernization plans as equipment is pushed more and more to its limit and as new technologies emerge.

Web-based tool

Asset support services need to be fast, always available, easy-to-use and accessible through smart devices, eg, mobile phones and tablets. ABB has designed a powerful Web-based portal to meet these criteria, one that allows operators and equipment to become key assets of the MV network. With ABB's PowerCare the complete portfolio of ABB service offerings is immediately accessible. A full range of services grouped in five areas – skills development, emergency, diagnosis and condition assessment, self-maintenance, and delivered maintenance services – are set up within the PowerCare framework. The level of service is defined along four levels, with support content increasing with each level → 1.

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Classic services such as training and assistance have been refined to meet today's requirements. However, the PowerCare portal also provides an expansive range of new advanced solutions. For example, the asset and risk assessment module gathers offline data using a tablet's app that enables nonintrusive site assessments. The module also provides reports and recommendations about the installed base and associated risks.

ABB's MyRemoteCare online remote monitoring solution enables the condition-based maintenance concept. ABB service engineers perform condition-based management by exchanging information with site operators on a virtual whiteboard, an instant messaging tool where questions, answers and comments are exchanged like sticky notes on a whiteboard. This allows both sides to look at the real-time condition of the equipment.

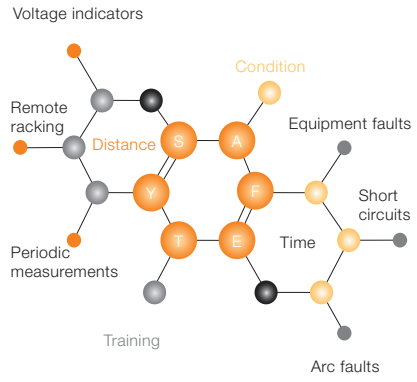
ABB's Clionet® Data Care is a service solution specifically designed to provide a secure place to store, update and recover protection and control equipment configuration and setting files.

Keeping safe

ABB's portfolio for safety includes a range of solutions targeting operators and equipment protection in all daily activities → 2. Fault prevention is the most important action asset managers can target to ensure full safety and availability. ABB provides clear solutions for mapping the source of all failures and associated risks.

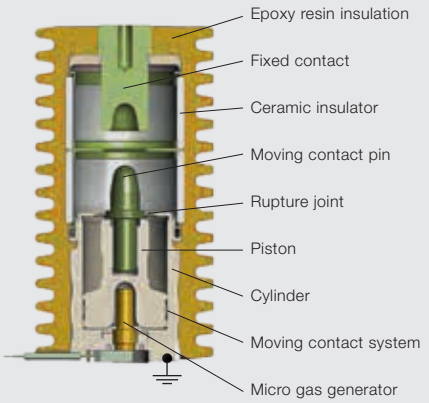
Title picture
Mobile devices are being used efficiently for customer support.

2 ABB's safety formula

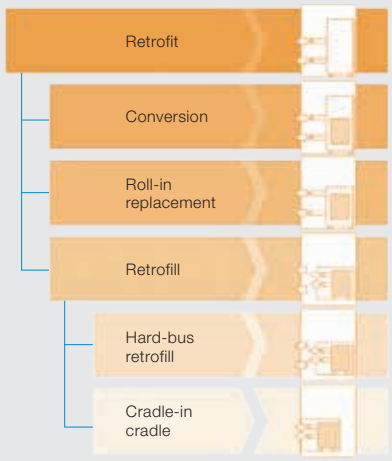


Safety measures to prevent electrical hazards

3 ABB's ultrafast earthing switch (UFES™) is the most powerful arc-fault-quenching system available.



4 Circuit-breaker retrofit solutions



An arc fault presents a significant risk as operators and equipment can be exposed to 20,000 °C plasma. ABB has developed an arc fault risk mapping software, which ABB service experts use to guide decisions concerning possible protection and mitigation solutions. The software also allows for analysis of the probability of the ignition of an arc fault and the possible consequences, and also facilitates the outlining and assessment of the arc fault risk picture. The software thus supports appropriate investment decision making.

An analysis of the fault's probability and the relevant impact defines the anticipated level of risk. The most appropriate solution can be determined through an assessment. Depending on the risk level, solutions range from preventive maintenance to replacement and can include an REA arc protection system, the most advanced arc fault protection system on the market, or an ultrafast earthing switch (UFES™), the most powerful arc-fault-quenching system available → 3.

The other essential building blocks of the ABB formula for safety are highly trained personnel, remote circuit breaker racking systems and passive voltage indicators.

Retrofits

Equipment upgrades require the replacement of the circuit breakers and the protection relays once or more during the lifetime of the switchgear.

The challenge is to select the most appropriate circuit-breaker retrofit – from conversion to roll-in and retrofill – to meet specific customer requirements → 4. Assessing the existing equipment to check both the current condition and the future requirements is necessary to make the right choice. ABB asset and risk assessment tools apply the latest technologies to make this possible. Using 3-D scanning systems to make a full model of the installed equipment, regardless of age and brand, and transferring the relevant information to 3-D design tools is an excellent example of how ABB performs this kind of activity. The result is a quick and comprehensive site assessment completed under safe conditions.

In addition, a new generation of ABB engineering software is now available to support the implementation of new retrofit solutions. The software converts the gathered equipment data into a comprehensive feasibility study, which can then be made into manufacturing documentation. A process that in the past could take weeks of work now only needs a few hours.

OneFit represents the latest in ABB competence in the retrofit business. It is the most advanced retrofill solution available today, embedding all aspects in a unique design. The hard-bus retrofill model uses the most refined plug-in technology in order to ensure a quick and intrinsically safe installation. It fulfills all the requirements of the ABB formula for safety, allowing remote circuit breaker racking and it is ready made for integration with the MyRemoteCare monitoring and diagnostic system.

MV products are in continuous operation to ensure a stable, reliable and safe flow of electricity to power an enormous range of processes. With the service solutions provided by ABB the successful design and implementation of MV applications is guaranteed, regardless of whether the application is powering a manufacturing process in a factory, switching a substation in a distribution grid, or protecting an electric marine power propulsion system.

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