



ABB motors and generators life-cycle services

Maximize performance, uptime
and efficiency

Services to match your needs

We take the time to understand your applications and their service priorities. Some need fast repairs to keep an application up and running. Other applications benefit from preventive maintenance to minimize downtime. And others benefit from focusing on maximum efficiency through optimization.

Whatever your applications' needs, we offer a full range of services to keep your equipment running at top performance.

Our network of service centers and certified partners spans the world and our Global Technical Support Centers are closely integrated with our manufacturing facilities. This enables us to deliver local support no matter where you are, and ensures that we always provide the optimum, most cost-effective solution.



Installation & commissioning

Highly-trained and reliable installation and commissioning experts at your service.



Service agreements

Bundling of relevant services into one contract to suit your needs.



ABB Ability™ digital services

Gain the unique ABB Ability digital advantage through data collection and analytics with advanced services.



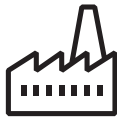
Training

Comprehensive and professional training either at ABB premises or your own.



Replacements

Fast and efficient replacement services to minimize production downtime.



Maintenance

Systematic and organized maintenance and support over the life cycle of your assets.



Technical support & repairs

Quick and accurate response during emergencies and efficient support during planned production breaks.



Spares & consumables

Authentic, high-quality ABB spares and consumables with quick delivery.



Extensions, upgrades & retrofits

Up-to-date systems and devices with the best possible performance level.

Global service network 24/7

—
“I need operational excellence, rapid response, improved performance and life-cycle management.”

Installation and commissioning

Getting it right from the start

Installation and commissioning are the first steps to ensure that your motors and generators deliver their best possible performance.



With ABB installation and commissioning services, you are making an investment in the long-term trouble-free operation of your equipment.

ABB's installation and commissioning services are carried out by certified engineers. Their know-how and experience, backed by the expertise of our design team, makes installation and commissioning fast and smooth, laying the foundations for high reliability and efficiency.

Key benefits

- Optimized cost of ownership
- Increased reliability, efficiency and safety
- Experienced and qualified personnel
- Serviced in accordance with local and international standards



Replacements

When a motor or generator needs replacing, do it the easy way – contact your local ABB representative.



Replacing existing equipment with a new ABB product is a sound investment: the new unit's superior efficiency and performance can ensure a short payback time. Whether you select a new product from our wide range of standard items or choose a tailor-made unit, we can optimize it to replace your existing equipment. In most cases, we can adapt the mechanical and electrical designs to make the replacement fully interchangeable with the original. We also provide replacements for third-party products. For the plant operator this helps to minimize the downtime, required site work and risks. An added benefit of a tailor-made, fully interchangeable replacement is that you may be able to keep your existing machine as a spare.

We are here to help you evaluate the potential to increase production, reliability and availability as well as decrease energy and maintenance costs with a replacement product from ABB.

Key benefits

- Expert support in selecting replacement units
- Choose between standard products and tailor-made units
- Replacement programs for third-party products
- Option to select based on energy calculations
- Access to latest technology
- Reduced life-cycle costs
- Increased reliability, availability and safety



Preventive maintenance

Unplanned outages always seem to occur at the worst possible time. Our preventive maintenance program cuts the risk of unscheduled downtime.



ABB's preventive maintenance programs define maintenance work and the required spare parts for different stages. The programs ensure the best possible availability and performance of the equipment.

Preventive maintenance keeps costs down and lifetime performance optimal. It is an investment in the avoidance of failures – the program can eliminate disruptions to your production and help you secure your long-term competitiveness.

Preventive maintenance allows you to plan maintenance around production and plant schedules, thus minimizing unplanned downtime.

Maintenance kits

ABB maintenance kits help to cut maintenance times. The kits contain the components that are changed during specific maintenance procedures. They contain genuine spare parts and typically represent the most economical way of buying the required parts.

Key benefits

- Maintenance is planned around production and plant schedules
- Minimized unplanned downtime
- Reduced or eliminated loss of production
- Lower overall cost of maintenance
- Warranty protection

ABB Air Gap Inspector

ABB offers in-situ visual inspections of the stator and rotor of large synchronous motors and generators without the need to remove the rotor.

Hardware and methodology

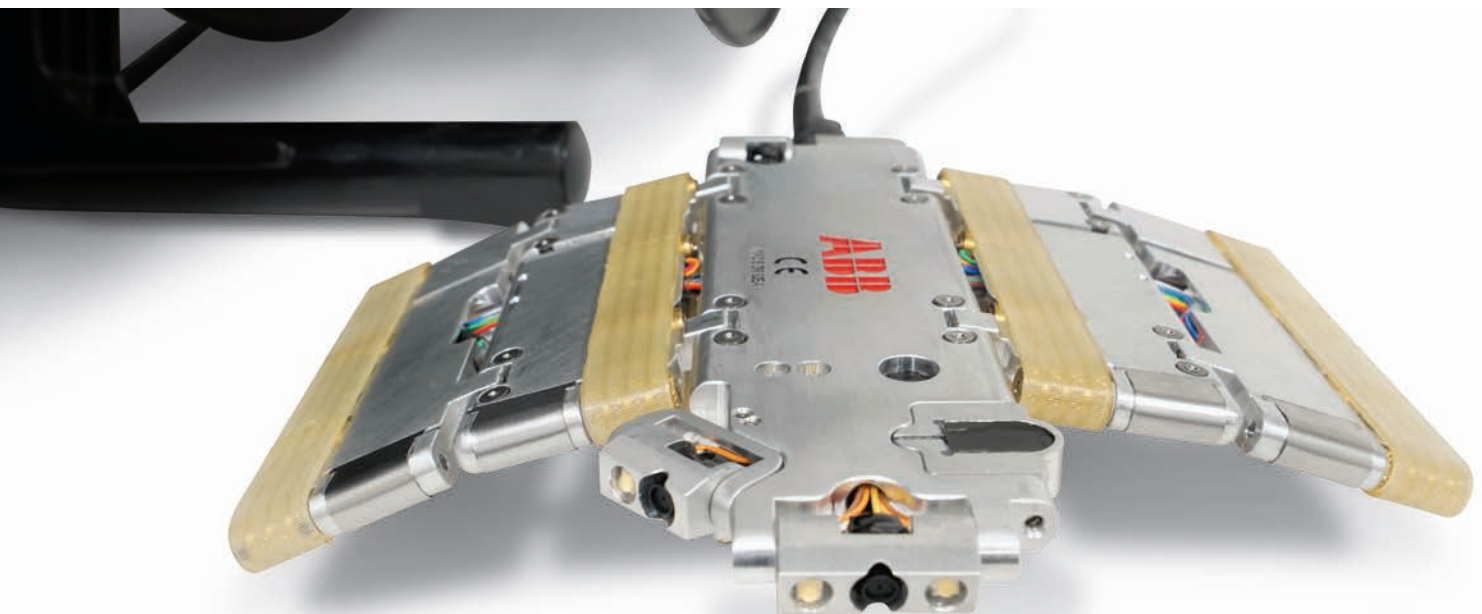
The in-situ robotic visual inspection equipment comprises:

- ABB Air Gap Inspector, robotic crawler including track modules
- Tether for connecting crawler to control system
- Control system to operate crawler
- Display to show live, visual inspection of air gap

The slim robotic crawler is equipped with five cameras and moves in the air gap between the rotor and stator, covering the entire length of the core. Moving across the stator core laminations using magnetic tracks, it provides a 360-degree high definition video that is displayed live and recorded for possible later use, offering valuable insight into the condition of the stator and rotor. It can be used in all motors and generators with air gaps of 10 mm and upwards.

Key features and benefits

- Visual inspection of the air gap without removal of the rotor.
- Avoiding the need to remove the rotor means significant savings in time and costs as well as reduced risk.
- Extent and quality of inspections are greatly enhanced compared to conventional methods.
- 100% uniform, high resolution coverage of the whole length of the stator core.
- All data are recorded for later, in-depth assessment and expert evaluation when necessary.
- Allows for consistent repeatability of inspections.
- Can also capture still images.



Predictive maintenance and condition monitoring

ABB Ability digital services

ABB Ability services for motors, generators and mechanical power transmission products offer a unique digital advantage by combining connectivity and data analytics with industrial expertise. The data collected from your equipment can be analyzed, providing deeper insight into the health of your assets for effective life-cycle management and maintenance planning.

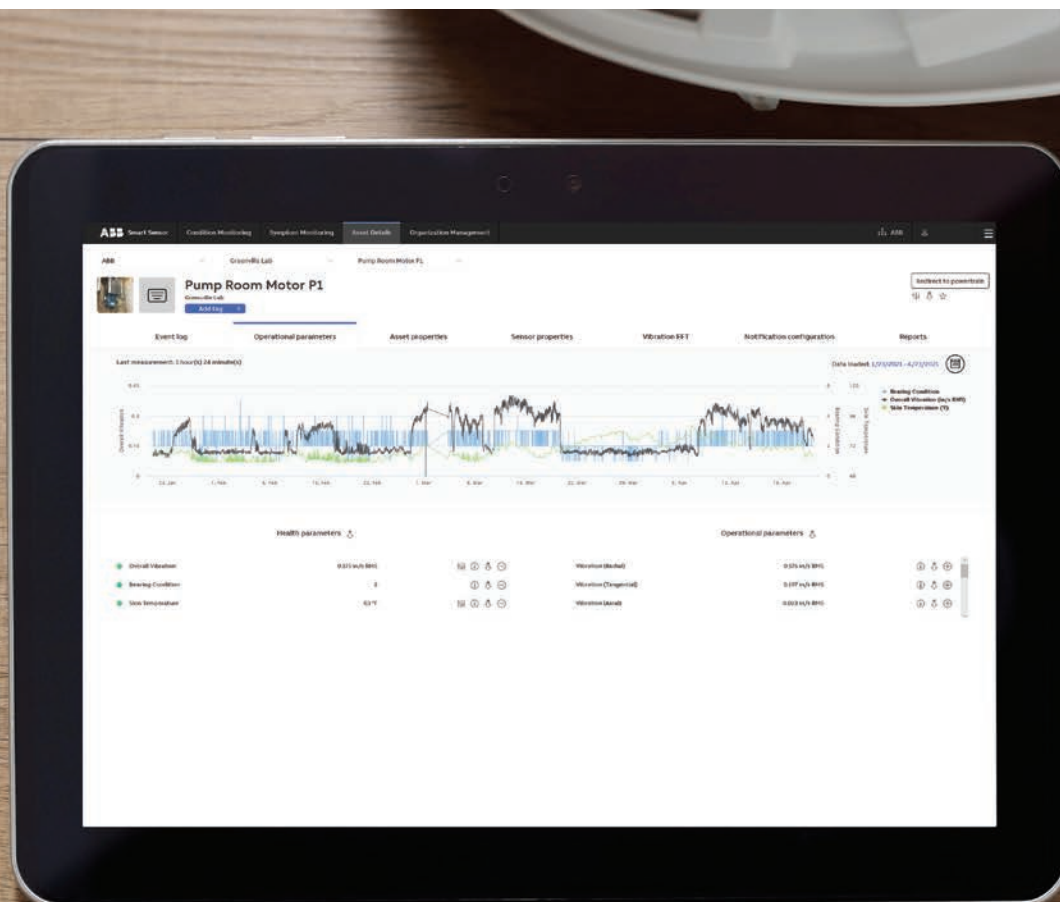


ABB Ability Smart Sensor for motors

Hazardous and non-hazardous areas



The ABB Ability Smart Sensor for hazardous areas monitors the health and performance of rotating machines operating in explosive atmospheres. ATEX, IECEx, and NEC certified, it detects potential machine disturbances before they impact on reliability, productivity and safety.

Overview

The ABB Ability Smart Sensor extends the reach of condition-based maintenance for rotating machines, such as motors and pumps. The remote condition monitoring solution tracks the health and performance of equipment operating in potentially explosive environments such as chemical plants, mines and mills.

Equipment installed in hazardous or remote locations may be difficult to inspect regularly and, therefore, operated until failure. Using the ABB Ability Smart Sensor, equipment can be remotely monitored, anticipating any problems and scheduling preventive maintenance.



The Smart Sensor can be used with ABB and third-party machines. It is simply attached to the equipment's housing or frame. No wiring or machining is required. The quick installation and activation allows monitoring and data collection to begin immediately.

Benefits

- Condition-based maintenance for lower servicing costs – maintenance can be planned according to actual needs rather than generic schedules
- Process optimization for lower operating costs
- Extended equipment lifetime
- Increased personnel safety by enabling remote maintenance inspections
- ATEX, IECEx and NEC certified – compliant with strictest requirements for equipment operating in potentially explosive atmospheres
- Quick installation and activation for instant monitoring
- Easily retrofitted to ABB or third-party equipment

ABB Ability MACHsense-R

Data acquisition unit for condition monitoring of high voltage motors



The ABB Ability MACHsense-R data acquisition unit is a premium solution to convert high voltage motors into smart, connected devices. It enables customers to monitor the health of their equipment, optimize efficiency and improve reliability and safety using distributed sensors and advanced algorithms for data analysis.

Intended use

- Continuous or intermittent duty
- Fixed speed or variable speed
- For shaft heights of 355 mm and higher

Sensor configurations

The ABB Ability™ MACHsense-R data acquisition unit can be configured with different sensor setups depending on the application.

- Vibration accelerometers
- Magnetic field sensors
- Winding temperature measurements (if internal RTDs are available)

Parameters

- Bearing condition parameters
- Overall vibration (velocity RMS)
- Operating parameters (frequency, running speed, slip)
- Vibration spectrum
- Magnetic field spectrum
- Static eccentricity
- Dynamic eccentricity
- Broken rotor bar

ABB Ability Predictive Maintenance

This service optimizes the maintenance of selected high voltage motors and generators by taking a condition-based approach. It combines customer input with advanced analytical techniques to create the optimal condition monitoring and maintenance program. It combines ABB's condition monitoring, in-situ visual inspection and life expectancy analysis program to create a detailed long-term maintenance plan.

ABB Ability Life Cycle Assessment

The assessment provides a comprehensive overview of the life cycle and operating conditions of all the motors and generators throughout a facility. Maintenance for an entire motor and generator fleet can be planned, optimizing the service schedule and budget, and increasing production uptime.

ABB Ability Condition Monitoring for shaftlines

This on-site condition monitoring service addresses the reliability of the complete shaftline, including motor, gearbox and driven load. It identifies electrical and mechanical issues related to the rotor, bearings, gearbox and other components.

ABB Ability LEAP

Data acquisition unit for condition monitoring of high voltage motors

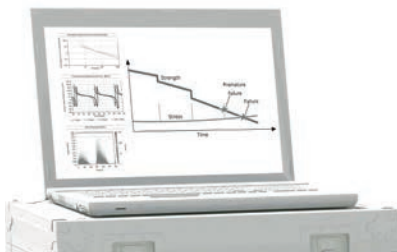


ABB Ability LEAP detects potential problems in the stator winding insulation well before they become critical and cause extended downtime. Access to information on the actual condition and expected lifetime of the insulation allows optimal planning of short and long term maintenance actions.



Mapping of the installed base

Review your installed base with a local ABB technician and decide which motors and generators to analyze.



On-site measurements

A local ABB technician brings all the equipment needed for the tests and performs the measurements during a normal maintenance break. The data is uploaded to a portal.



Data analysis

An ABB expert analyzes the data using an advanced empirical model that is based on the results of more than 25,000 tests.



ABB expert report

You receive an expert report on the condition and expected lifetime of the motors and generators. The report also includes ABB's short and long term operation and maintenance recommendations.



Making the right decisions

Accurate and up-to-date information on the status of the motors and generators enables you to make informed decisions about the maintenance and management of your equipment.



Planning maintenance activities

Prioritize and optimize the maintenance plan and secure high reliability for your motors and generators.



Optional service activities

Additional service solutions available from ABB provide condition information on other major items of equipment, paving the way for more comprehensive preventive maintenance planning.

Report

The report provides the customer with information on:

- Contamination of the stator winding (increases stresses and reduces the lifetime)
- Aging of the insulation system, aging of resin, de-lamination
- Status of the stress grading system
- Status of the corona protection system in the stator slot area
- PD activity in other parts of the stator (e.g. winding overhang)
- Remaining lifetime based on information provided by the customer in combination with the measurements conducted
- Recommendations for maintenance or other action like rewinding/replacement
- Recommended time for next inspection based on operating information provided



ABB Reliability Service for motors

Peace of mind for plant productivity

ABB Reliability Service takes the guess work out of keeping your equipment running while improving reliability and safety, and avoiding the cost associated with unplanned downtime

Benefits:

- Equipment monitored and analyzed by ABB experts in electrical products
- Ensures uptime of motors
- Any hardware/activation issues handled by ABB directly

The Reliability Services advantage

ABB offers a unique digital advantage by combining connectivity and data analytics with our expertise to make your operations efficient, predictable and safe. The chart below shows the advantage to using ABB Ability Smart Sensor for motors and ABB Reliability Services.

Service offering	Smart Sensors for motors (only hardware)	Smart Sensors + Reliability Service
Smart Sensors	✓	✓
Mounting hardware	✓	✓
Smart phone app	✓	✓
Cloud data access	✓	✓
Gateway	✓	✓
Subscription	✓	✓
Calibration alert/alarm		✓
Monthly fleet reports		✓
Quarterly customer review		✓
Free sensor to replace failed units		✓
Subscription extension		✓
Priority technical phone support		✓



Service agreements

A fully tailored service agreement ensures the highest availability and reliability of your assets while increasing the predictability of your maintenance budget. Our experts will collaborate with you to design the ideal agreement.



An ABB service agreement can be designed specifically for your business, to help optimize the performance of your investments and maximize your competitiveness. The service modules can be freely combined to include the options that best suit your needs.

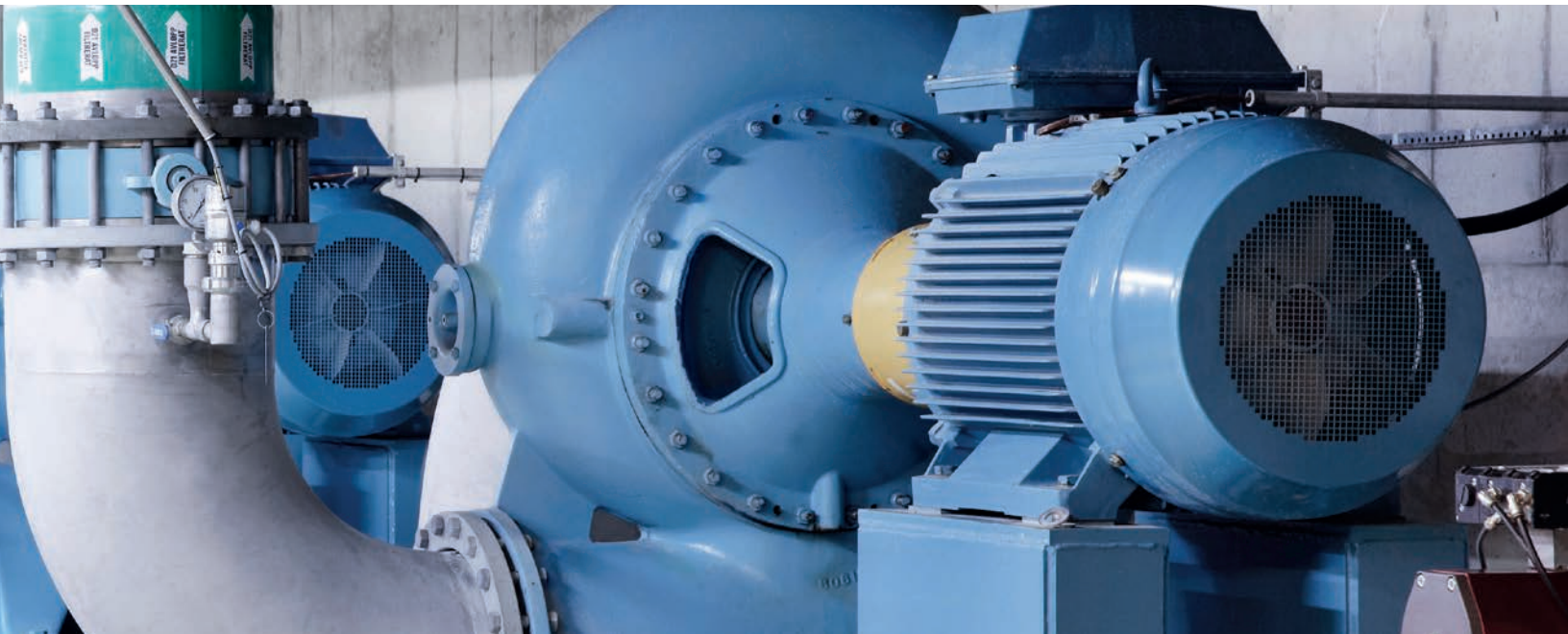
With an ABB service agreement, we bundle individual services into one contract. The service contract can cover a single service, support for the life cycle of a product or you can hand over the entire maintenance responsibilities to our experts.

We will analyze your service requirements – carefully reviewing the condition of your assets and their criticality in your facility – and recommend the most appropriate service agreement.

Key benefits

- Customized agreement for an exact match with your needs and maintenance strategy
- Efficient and cost effective
- Single agreement for easy management

We help you stay cost-effective and give you peace of mind by avoiding unexpected repair costs.



Technical support and repairs

With one of the market's most extensive service networks globally, and certified service engineers standing by to carry out repairs on-site or in authorized workshops, ABB offers different repair options to match your needs.



On-site repairs for the fastest turnaround

Downtime can be expensive. We have trained service engineers ready to help when failures occur. Our global scale means that we can get a team to your site quickly to analyze the problem's root cause, determine the corrective actions and carry out repair work. On-site repairs avoid the need to ship the damaged equipment to a workshop, eliminating transportation risks and saving time. Select the guaranteed on-site response time that suits your needs, and you know that if something goes wrong our team will be there to help. Disruptions to production are minimized.

Workshops equipped for complex repairs, rebuilds and overhauls

Our workshops are staffed with professional service engineers, supported by the design experts in our manufacturing units and by our global service network.

Remote troubleshooting and technical telephone support services

Peace of mind is knowing that expert help is only a phone call away. These services put you in direct contact with a team of engineers who are experienced in both your equipment and applications. An ABB expert can access ABB Ability Condition Monitoring solutions to remotely analyze the current situation and determine what action should be taken. Technical support specialists can help your own personnel to solve problems quickly and effectively using their extensive experience.

Key benefits

- Personnel qualified to repair products from ABB and other vendors
- Global network of local service centers
- Problems are quickly identified, analyzed and rectified
- Direct service actions are carried out to prevent failure and minimize knock-on effects

We bring your equipment back on-line fast.





Keeping you running

From spare parts to upgrades and retrofits

Spares and consumables

Easy access to spare parts helps you to maintain equipment availability. ABB's logistics network makes sure you get the right part in the right place at the right time.



As the original equipment manufacturer, ABB is well positioned to supply genuine spare parts, spare part packages and maintenance kits for all ABB motors and generators.

Where technology has advanced, we may be able to supply a part that is even better than the original.

We can also help you to rationalize your on-site spare part stocks.

Key benefits

- All necessary parts from a single source
- Access to original parts
- Expert support in identifying parts based on equipment condition and criticality
- Increased availability and minimized downtime

ABB spare part packages	
Operational	For commissioning and initial years of operation
Recommended	Extended version of operational package to cover anticipated spare part needs over the life of the equipment
Capital	For critical applications where downtime must be minimized

Extensions, upgrades and retrofits

Do you want the latest technology? But you don't want to change your equipment? No problem!



Our commitment to delivering the latest technology extends from new motors and generators to upgrades of older product lines.

In many cases plant operators can upgrade their existing ABB equipment by retrofitting it with new technology. Contact us for advice on how to upgrade your ABB equipment.

Key benefits

- Increased production capacity
- Lower energy and maintenance costs
- Enhanced availability
- Improved reliability



Training

Our training courses are designed to give your people the specialized skills they need. We provide training to service engineers and maintenance technicians, in-class, on-line, or at your site.

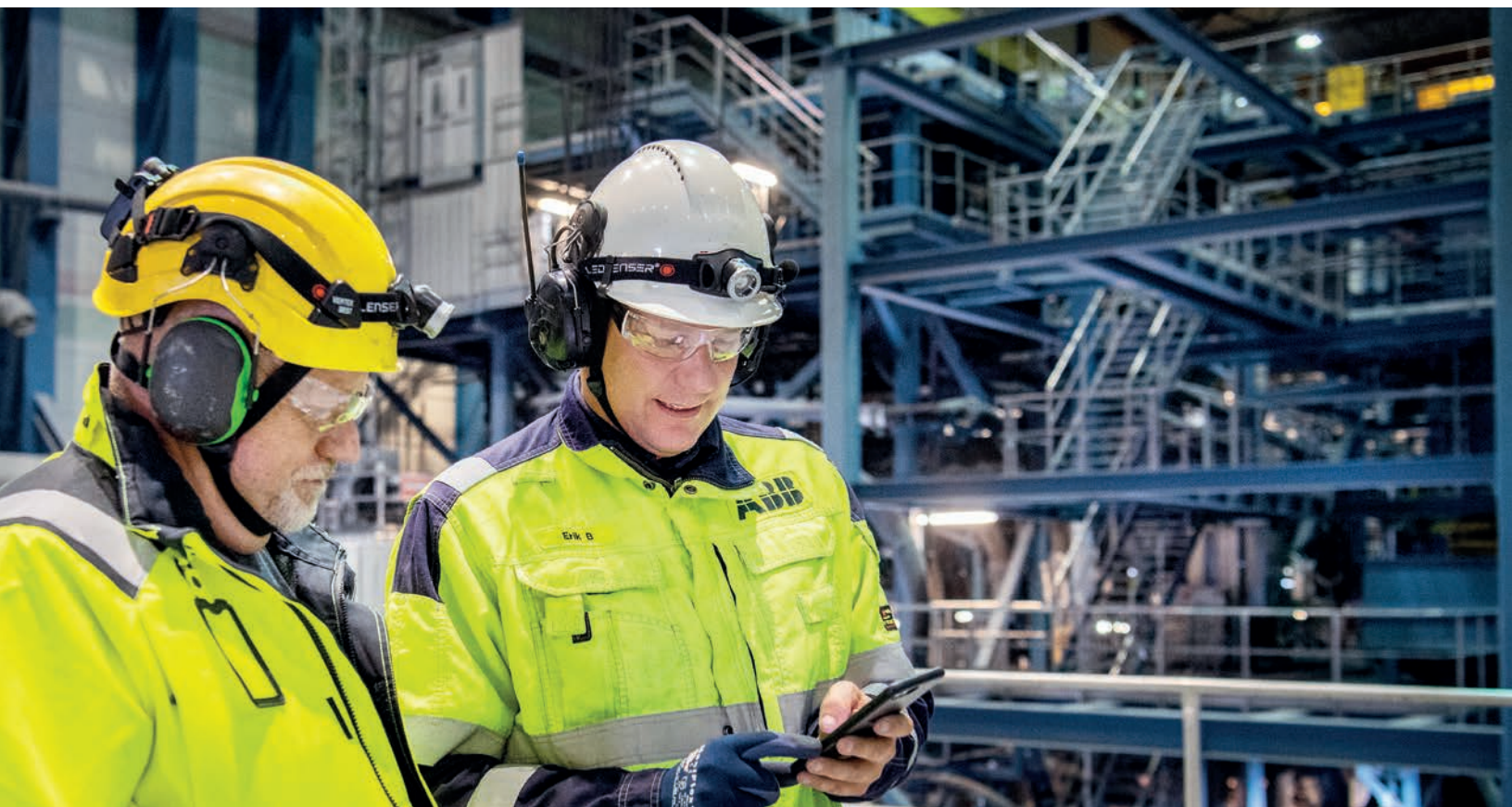


Course topics cover product knowledge, operation and maintenance. Our courses ensure your employees are competent in maintenance and first-line troubleshooting, are able to interpret alarms and undertake appropriate actions to avoid failures.

Key benefits

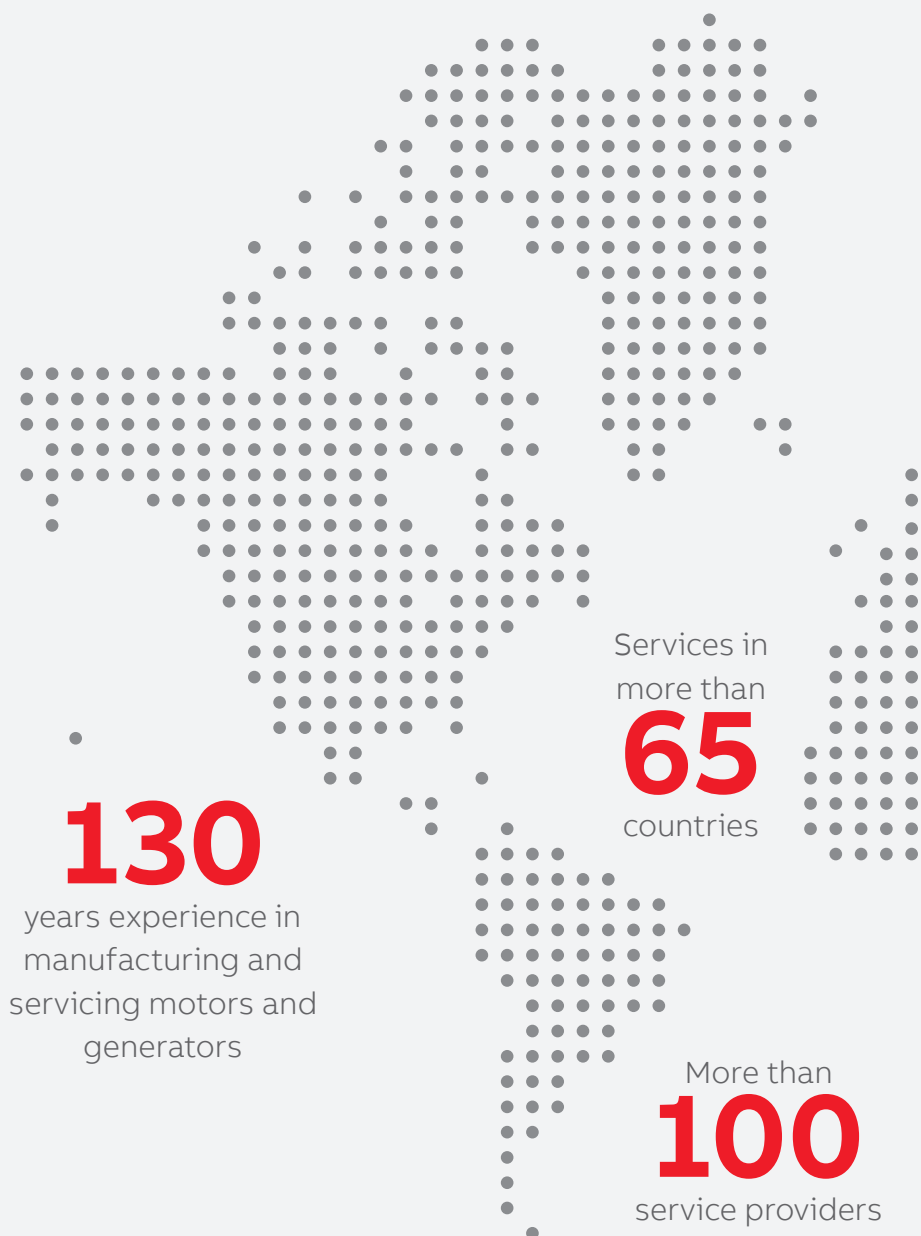
- Practical approach for effective training
- Develop employee motivation and confidence
- Can be tailored to suit customer needs
- Reduced risk of downtime

We also offer eLearning courses, which are a cost-effective way for your employees to maintain their certification level and keep up-to-date with the latest information and knowledge from ABB.



You choose, we respond. Globally.

When you make the decision to choose our expert service solutions, we are with you every step of the way. To guide and facilitate whatever service choices suit your business, for the entire lifetime of your motors.



For decades we have built one of the most comprehensive global service networks. It ensures you have all the experts close at hand, locally and globally. Local ABB service units are complemented by external ABB third party channel companies in over 65 countries.

Regional service centers, training centers and authorized motors and generators service workshops form a well-structured and large service organization, making sure that our motors and generators service team is never too far from your site.





For more information, please contact
your local ABB representative or visit

new.abb.com/motors-generators/service

