



Brochure

# Life cycle services

## Motors, generators and mechanical power transmission products



We provide motors, generators and mechanical power transmission products, services and expertise to save energy and improve customers' processes over the total life cycle of our products, and beyond.

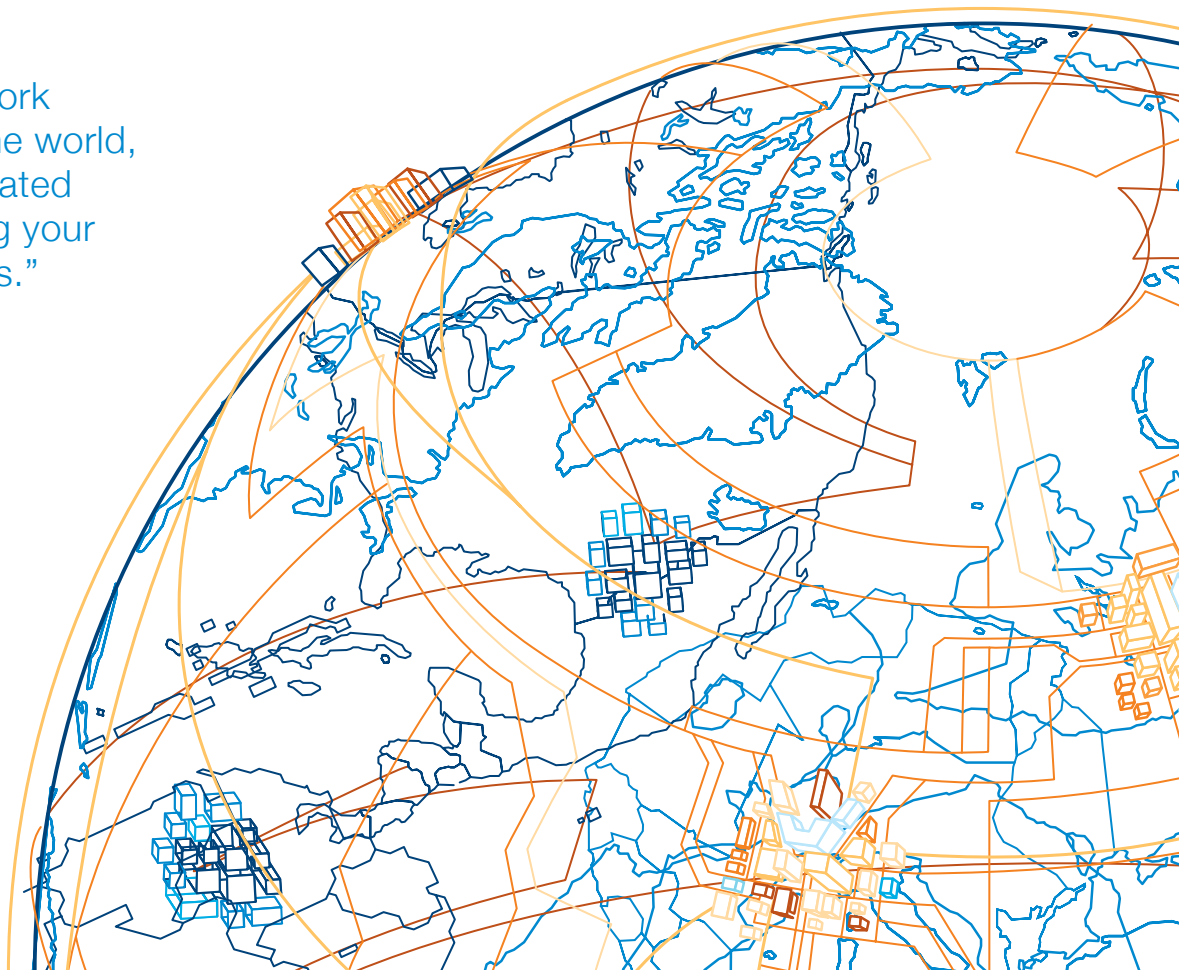
## Services designed to help you add value

From installation and commissioning, through spares and repairs, to upgrades and replacements - we've got it covered. Based on 120 years of experience in building motors, generators and mechanical power transmission products, we provide services that help plant operators to add value and optimize their cost of ownership.

We take the time to understand our customers and their service priorities. Some need fast repairs to fix problems when they arise, others carry out preventive maintenance to minimize stoppages, and some focus on getting maximum efficiency through optimization. Whatever your needs, we offer a full range of services to keep your equipment running.

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 located, and ensures that we always provide the optimum, most cost-effective solution.

“With a network that spans the world, we are dedicated to addressing your service needs.”



# We offer

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## Installation and commissioning

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## Spares and consumables

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## Maintenance

- Preventive maintenance
  - Predictive maintenance
    - Life cycle assessment
    - On-site condition monitoring
    - Remote condition monitoring
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## Repairs

- On-site and workshop
  - Remote troubleshooting
  - Technical support
- 

## Advanced services

- Energy efficiency
  - System performance
  - Other solutions
- 

## Extensions, upgrades and retrofits

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## Replacements

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## Training

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## Service agreements

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## Services tailored to your industry

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# Installation and commissioning

“Getting it completely right from the very start.”

**That's the idea behind our professional installation and commissioning services. When you use these services you are making an investment in the long-term trouble-free operation of your equipment.**

We provide certified commissioning engineers with extensive experience in rotating electrical and mechanical start-ups. Their know-how, backed by the expertise of our design team, makes commissioning fast and smooth and lays the foundation for high reliability and efficiency.

## Key benefits

- Work carried out by skilled personnel only
- Safe, controlled start-up methodology
- Clearly defined procedures (eg, alignment protocol)
- Standard reporting and recording of parameters
- Faster installation and commissioning
- Improved process operation for optimized cost of ownership
- Increased reliability, efficiency and safety



# Spares and consumables



Easy access to our global spare parts operations through your local ABB Service unit helps you to maintain availability. The latest web technology enables you to identify the spare parts and find the information you need. Registered users can also check availability and prices. Our logistics network makes sure you get the right part in the right place at the right time.

We supply genuine spare parts, spare part packages and maintenance kits for all ABB motors, generators and mechanical power transmission products. As we are the original equipment manufacturer you can rely on us to supply the correct part. 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.

## ABB spare part packages

Operational - for commissioning and initial years of operation

Recommended - extended version of operational package to cover anticipated spare parts needs over the life of the equipment

Capital - for critical applications where all downtime must be minimized

## Key benefits

- All necessary parts available from a single source
- Access to original parts
- Expert support in identifying parts based on equipment condition and criticality
- Increased availability and minimized downtime
- Online access to detailed parts information:  
<http://online.abb.com/>

# Maintenance

## Preventive maintenance



From preventive maintenance programs to predictive condition monitoring solutions based on the latest technologies, we offer an extensive range of maintenance services for motors, generators and mechanical power transmission products. Our proactive maintenance services provide the most efficient and effective way to keep your production running.

Unplanned stoppages always seem to occur at the worst possible moment. Our preventive maintenance program cuts the risk of unscheduled downtime. The program takes a step-by-step approach with procedures undertaken at intervals over the lifetime of the equipment. The exact timetable will be based on the operating profile and methods as well as ambient conditions.

Preventive maintenance is an investment in the avoidance of failures – the program can eliminate disruptions to your production and help you secure your long-term competitiveness.

### 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 planned around production and plant schedules
- Minimize unplanned downtime
- Reduce or eliminate loss of production
- Reduce overall cost of maintenance
- Warranty protection

# Maintenance

## Predictive maintenance

Predictive condition based maintenance keeps you one step ahead of problems. Our sophisticated condition monitoring services collect data from your equipment and analyze key parameters to optimize the maintenance schedule.

These powerful tools identify defects at an early stage, while there is still time to take action. By establishing exactly what maintenance is needed when, they can prevent potential failures and significantly enhance reliability, availability and performance. They are not limited to ABB motors, generators and mechanical power transmission products but can be used just as effectively with equipment from any manufacturer.

### Life cycle assessment

**ABB LEAP** (ABB Life Expectancy Analysis Program) is a reliable solution for estimating the expected lifetime of the stator winding insulation in motors and generators. A special feature is that the service produces an actual lifetime estimate. The measured values are converted into physical attributes indicating the strength of the insulation. These include contamination, ageing, void content, and discharging void space. The findings provide inputs for life cycle cost estimations and can be directly integrated into a maintenance plan.

### On-site condition monitoring

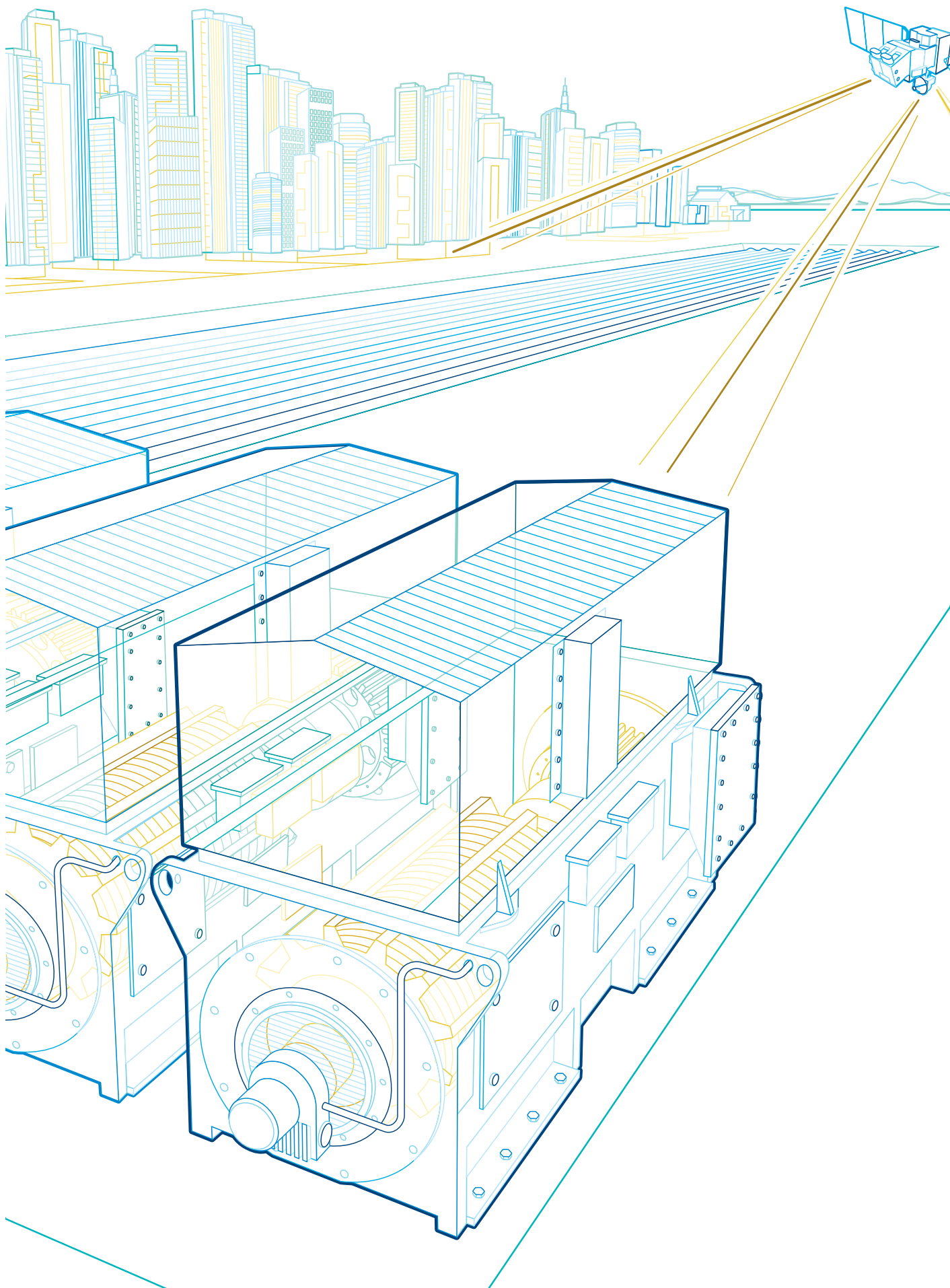
**ABB MACHsense-P** is used to perform regular 'health checks' on motors and mechanical power transmission products. It processes vibration and electrical data in order to address issues in four crucial areas: the rotor winding, bearings, overall mechanical condition, and power supply quality. Vibration and electrical measurements are used in combination, and the data is analyzed with a single instrument and software platform. Another advantage of our solution is that its powerful software customizes the analysis for each particular unit. Special algorithms ensure that defects and their severity are reliably identified.

### Remote condition monitoring

**ABB MACHsense-R** provides continuous, remote monitoring with instant alarms and expert follow-up. It checks the status of key parameters while the motor, generator or connected mechanical power transmission unit is running, and alerts the user if it detects a problem. Measured data is analyzed and transmitted wirelessly to an ABB web server. Customers can access real-time data on their equipment via a web portal.

## Key benefits

- Improved reliability and performance
- Minimized downtime
- Extended equipment lifetime
- Reduced operating risks
- Decreased replacement costs
- Improved spares management
- Increased maintainability
- Optimized cost of ownership



# Repairs



With the market's widest service network globally, and certified service engineers standing by to carry out repairs on-site or in authorized workshops, we can offer different repair options to match your needs.

## **On-site repairs for the fastest turnaround**

Downtime can be expensive, so we have fully trained engineers ready to help when failures occur. Our global scale means that we can get a team to your site quickly to analyze the root cause of the problem, determine the corrective actions needed and carry out repair work. On-site repairs avoid the need to ship 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 use the ABB MACHsense-R condition monitoring solution 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 fully trained to repair products from ABB and other vendors
- Access to original technical documentation
- Both warranty and non-warranty repairs
- Large network of Local Service Centers
- Problems quickly analyzed and identified
- Direct service actions carried out to prevent failure and minimize knock-on effects
- Your equipment brought back on-line fast and downtime minimized

# Advanced services



To make the right decisions you need reliable information. Our advanced services give you that information, with the aim of maximizing availability and reducing risks.

These services, provided by some of the leading experts in the field, not only cover management issues such as optimal procurement, but also technical concerns like diagnostics, prognostics, load optimization, troubleshooting and root cause analysis.

## Energy efficiency

Energy efficiency based services evaluate the opportunities that exist at your site for energy efficiency and reliability based savings.

### ABB Replacement Savings Analyzer

ABB Replacement Savings Analyzer shows the potential savings that can be achieved by replacing an existing product with a more efficient and reliable unit. An analysis will give you an indication of the potential savings in energy, carbon dioxide and reliability. The analysis will also include payback calculations to provide a solid basis for investment decisions.

## System performance

We offer services to help motor or generator users to optimize their system performance.

## Transient mitigation services

Transient mitigation services check the susceptibility of your network to transients which could damage the stator windings of motors. A software assessment will warn you of potential problems, and if mitigation is required we will supply chokes for mounting on the motor cables.

## Other solutions

Other solutions are available for dealing with specific problems that may arise at the site. They can indicate how well the product is matched with its load, for example, or show whether the performance parameters can be improved or modified to suit proposed changes.

These services enable us to make reliable recommendations, including replacement solutions, performance upgrades and maintenance planning.

## Key benefits

- Access to ABB's extensive knowledge base
- Hard facts that enable informed decision-making for investments
- Single point of contact for any query related to electric motors and generators
- Systematic, non-interfering methodology for all assessments
- Reliable recommendations

## Extensions, upgrades and retrofits



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

We are not only committed to delivering the latest technology to you in new, world-class motors, generators and mechanical power transmission products, but also in the form of upgrades for older products. In fact, the potential for upgrading the installed base is one of the factors driving our constant efforts to develop world-leading technology.

In many cases plant operators can upgrade their existing ABB equipment by retrofitting it with new technology. Upgrades can deliver increased production capacity, lowered energy and maintenance costs and increased lifetime as well as better availability and reliability. We will be pleased to advise you on the feasibility of upgrading your ABB equipment.

### Key benefits

- Increased productivity
- Reduced operating and maintenance costs
- Increased equipment lifetime
- Improved reliability

# Replacements



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

Replacing existing equipment with a new ABB product is a great investment: the new unit's superior efficiency and performance can ensure a very short payback time. Whether you select a new motor, generator or mechanical power transmission product from our wide range of standard items or choose a tailor made unit, we can generally optimize it to replace your existing equipment. In most cases we will be able to adapt the mechanical and electrical designs to make the replacement fully interchangeable with the original. Utilizing our know-how and experience, we can easily 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 will be pleased 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
- Option of choosing from standard products, tailor made units and replicas
- Access to original drawings and specifications for ABB products
- 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

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

Course topics fall into the broad areas of product knowledge, operation and maintenance. Our courses will ensure your employees are competent in maintenance and first-line troubleshooting, and able to interpret alarms and undertake appropriate actions to avoid failures. They will also be in a stronger position to interact with our expert technical support.

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.

## Key benefits

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



# Service agreements

A ‘fully tailored’ service agreement gives you the best possible fit with your needs. Our experts will help you to design the ideal agreement for you. We will analyze your service requirements – carefully reviewing the condition of your equipment and its importance in your operations – and recommend the most appropriate service agreement level.

Our service agreements always take into account your competencies and resources, and are based on the optimum way of sharing the work. In particular, when technical support or remote troubleshooting services are added to the agreement it becomes critical to have competent personnel present on-site. Based on our recommendation you can select the service elements to include in the agreement. For additional convenience, a number of service plans can be coordinated under a single agreement.

An ABB service agreement is the most efficient way to manage the total life cycle of the motors, generators and mechanical power transmission products at your plant, while minimizing production risks.

## Key benefits

- Based on expert recommendations
- Customized solutions for exact match with needs
- Efficient and cost-effective
- Single agreement for easy management

“Everything we do, we do safely, sustainably and with integrity.”

## Services tailored to your industry

We utilize our extensive applications experience to tailor our services to match the needs of each industry. Our global network of service centers and certified partners ensures that the services you require will be delivered by resources located close to you.



### Chemical, oil and gas

ABB Ex accredited field service engineers with a deep understanding of safety issues in the COG industries are located worldwide. To help you maintain high RAMS and optimize your total cost of ownership, we offer agreements with defined response times, and fast-response breakdown maintenance on site or at local authorized workshops.



### Traction

Tailor made and life cycle services for rolling stock and infrastructure include service for rolling stock regardless of type or age – even equipment from other manufacturers. We provide spare parts, maintenance, upgrades and retrofits, on and off-site. A customized bundle of services is available based on your operating needs, either on-demand or under multi-year agreements.



### Marine

Reliability and availability are maximized through a preventive maintenance program tailored to your operational profile. State-of-the-art condition monitoring with diagnostics helps to avoid unplanned interruptions. Our presence in or near major ports in all continents ensures fast technical support, workshop repairs and spare part supplies.



### Mining and minerals

We deliver service solutions – including spare parts, upgrades, repairs, refurbishments, service agreements and training – that are specifically designed for the mining and minerals industries. The focus is to reduce maintenance cost, improve reliability and increase revenues. You can count on our long-term commitment to providing ongoing service and support throughout the life cycle of your plant.



### Power generation

Service products for the power generation industry are based on extensive process and application know-how and one of the largest installed bases in the world. Our philosophy is to protect your investment through the stepwise evolution and upgrading of your electrical, control and instrumentation systems to reduce the consumption of energy, prolong asset operating life, and minimize the cost of ownership.



### Water

Our service products span the entire asset lifetime, from the moment a customer makes the first enquiry to disposal and recycling of the product. In an industry where equipment reliability is vitally important, one of our key objectives is to maximize the uptime of your processes. We do this by ensuring the optimum lifetime of all ABB products in a predictable, safe and economical manner.



### Wind power

A complete portfolio of services helps ensure optimized kWh production and reduced turbine downtime. We offer spare parts and capital spares for ABB wind power generators, as well as repairs and replacements for ABB and many other brands. For rapid replacement we store generators for several large fleets. ABB MACHsense-R is the optimum predictive maintenance solution for all wind power generators.

# Total offering of motors, generators and mechanical power transmission products with a complete portfolio of services

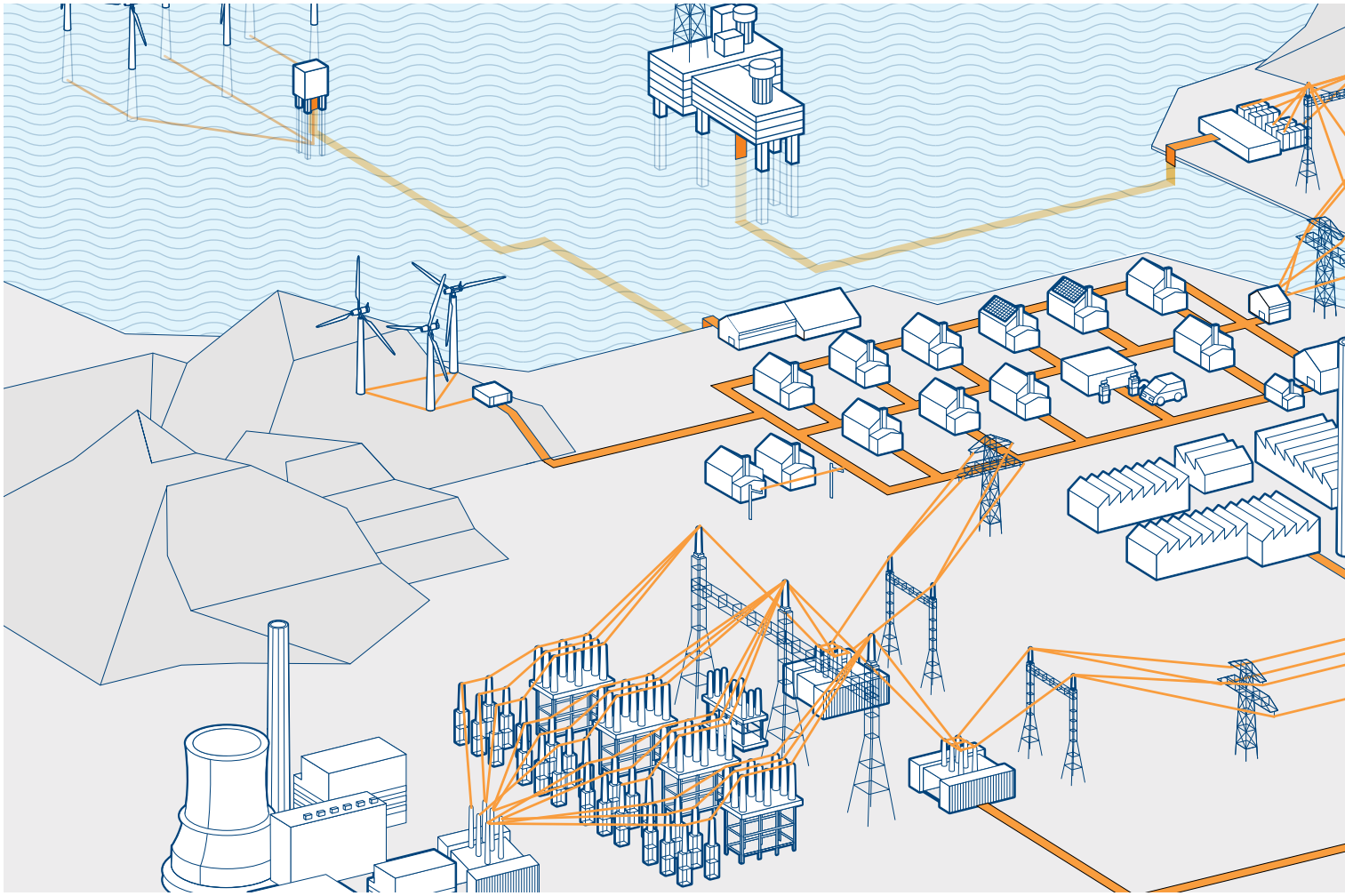


ABB is the leading manufacturer of low, medium and high voltage motors and generators, and mechanical power transmission products. ABB products are backed by a complete portfolio of services. Our in-depth knowledge of virtually every type of industrial process ensures we always specify the best solution for your needs.

## Low and high voltage IEC induction motors

- Process performance motors
- General performance motors
- High voltage cast iron motors
- Induction modular motors
- Slip-ring modular motors
- Synchronous reluctance motors

## Low and medium voltage NEMA motors

- Steel frame open drip proof (ODP) motors
- Weather protected, water cooled, fan ventilated
- Cast iron frame (TEFC)
- Air to air cooled (TEAAC) motors

## Motors and generators for explosive atmospheres

- IEC and NEMA motors and generators, for all protection types

## Synchronous motors

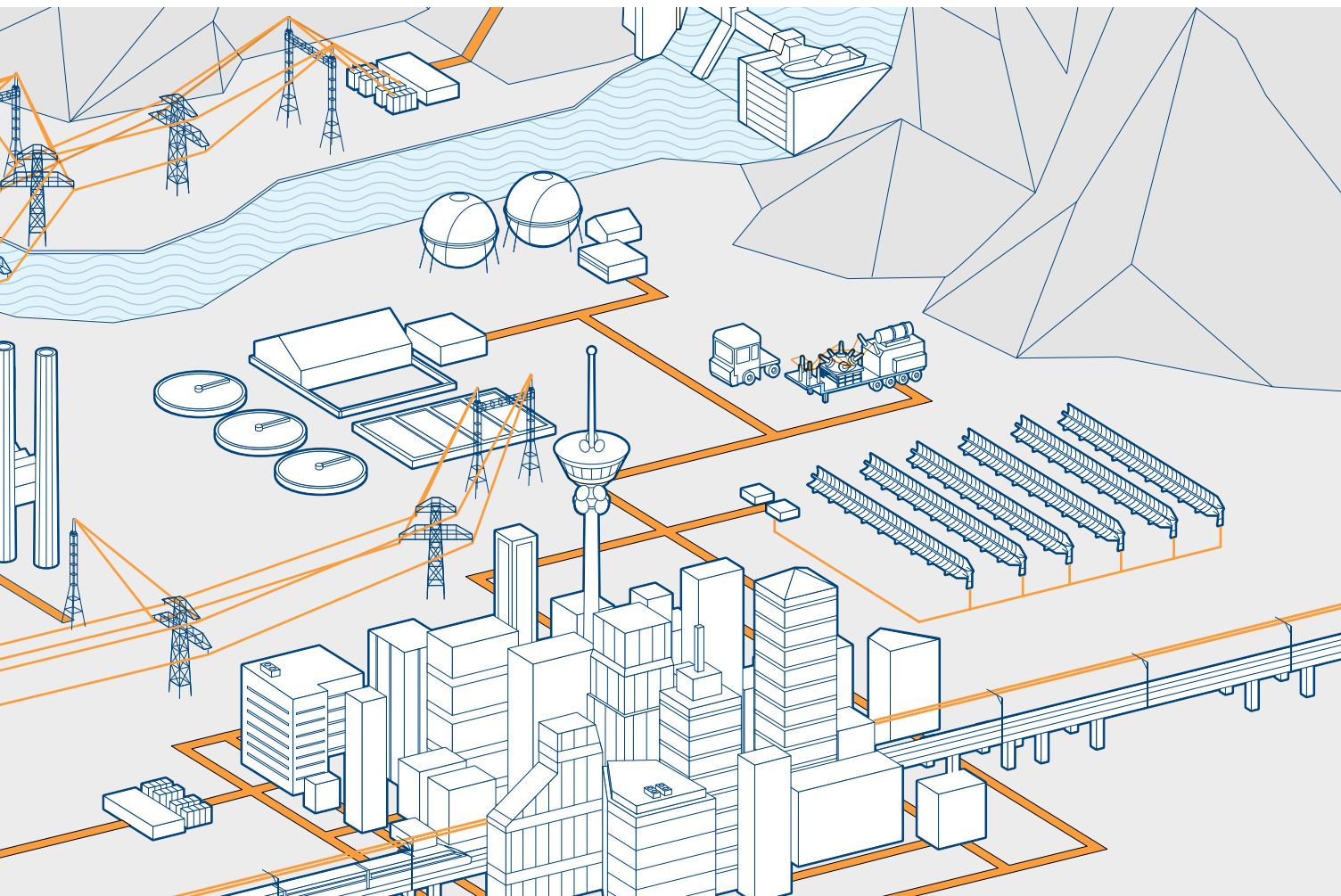
## Synchronous generators

- Synchronous generators for diesel and gas engines
- Synchronous generators for steam and gas turbines

## Wind power generators

## Generators for small hydro

## Mechanical power transmission components, bearings and gearings



#### Other motors and generators

- Brake motors
- DC motors and generators
- Gear motors
- Marine motors and generators
- Single phase motors
- Motors for high ambient temperatures
- Permanent magnet motors and generators
- High speed motors
- Smoke extraction motors
- Wash down motors
- Water cooled motors
- Generator sets
- Roller table motors
- Servo motors
- Traction motors

#### Life cycle services

- Installation and commissioning
- Spare parts
- Maintenance
  - Preventive maintenance
  - Predictive maintenance
    - Condition monitoring
- Repairs
  - On-site and workshop
  - Remote troubleshooting
  - Technical support
- Engineering and consulting
- Extensions, upgrades and retrofits
- Replacements
- Training
- Service agreements

# Contact us

[www.abb.com/motors&generators](http://www.abb.com/motors&generators)  
[www.abb.com/mechanicalpowertransmission](http://www.abb.com/mechanicalpowertransmission)

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Motors and generators



Mechanical power transmission products