
ABB DRIVES SERVICE

Optimize your wind economy.

Wind Converter Services



ABB Drives Service

Targeting superior lifetime performance

ABB Drives Service – your strategic partner, offering wind converter services tailored to your needs.

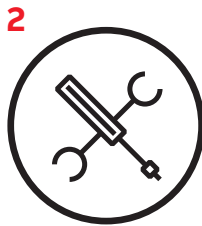
We help you find the most effective approach to optimizing your wind economy. Our services are designed to detect and address issues in the operation of wind turbines at an early stage, before they become serious. We can provide ongoing care for your assets and help you reach your performance targets. ABB Wind Converter Services offer total protection for your wind investment – now and into the future.

A clear, three-stage process to maintain your wind turbines and optimize your wind economy.



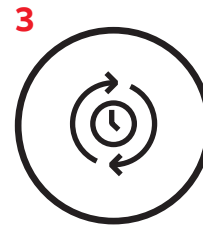
Evaluate

The most effective way to start the process is an ABB site audit. We evaluate the current status of your converters with inspections and diagnostic assessments, including Drive Health Check and Drive Stress Check. We provide you with a full report and set of recommended actions. This gives you up-to-date information on the health of your converters and forms the basis for continually improved uptime over the whole lifetime of your turbines.



Implement

The actions we recommend – based on the site audit – are designed to improve the condition of your converters and reduce wear and stress factors. They will upgrade your system, enhance its availability and ensure it is optimized to your needs. You choose how the recommended actions are implemented. We can help by providing a specialist team from ABB, or you can have the work carried out by your own personnel.

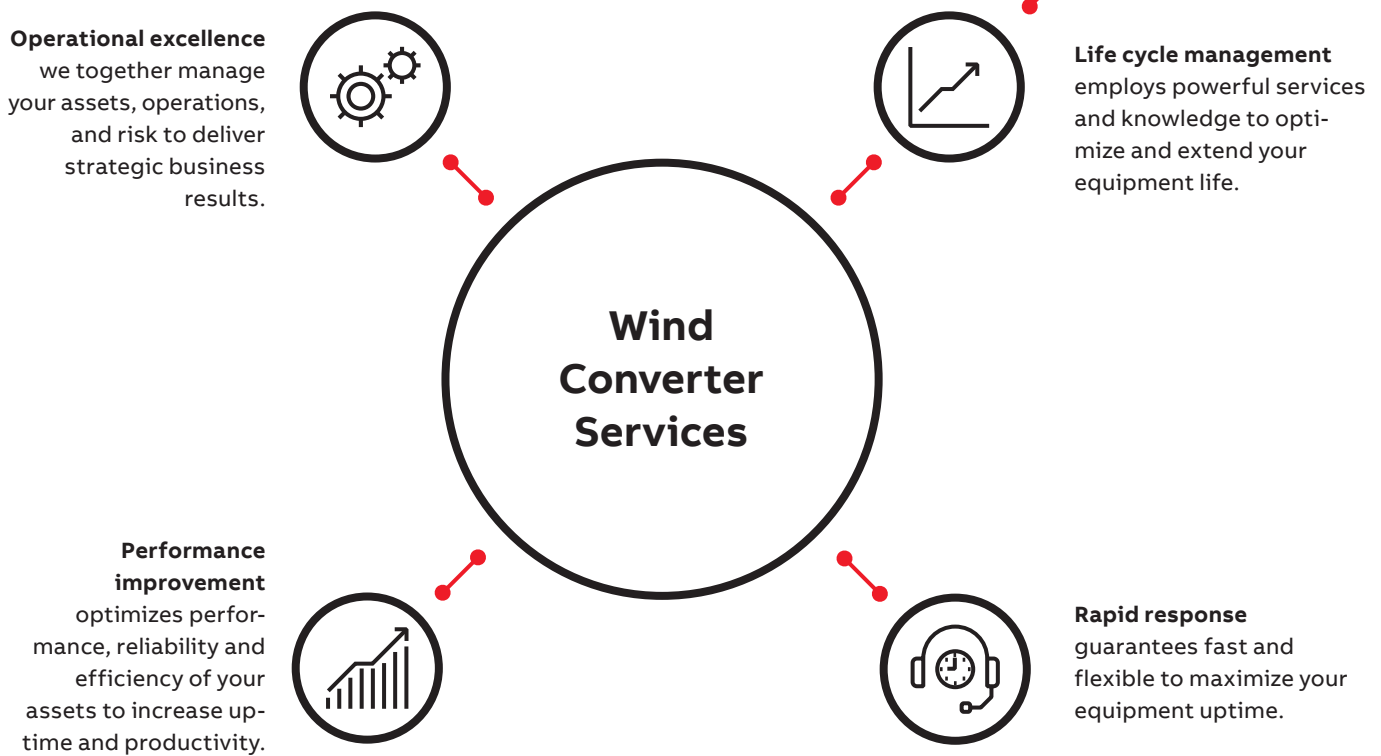


Sustain

By making ABB your wind converter service partner you not only benefit from our domain expertise and global network, but also from easy access to your local ABB service team. They will regularly assess your system for any products, software and solutions that are no longer in production or supported, and for any available upgrades or retrofits that could enhance your converters and extend their lifetime. This ensures a long-term approach to promote sustained, trouble-free operation and optimized performance.

Four tailored packages

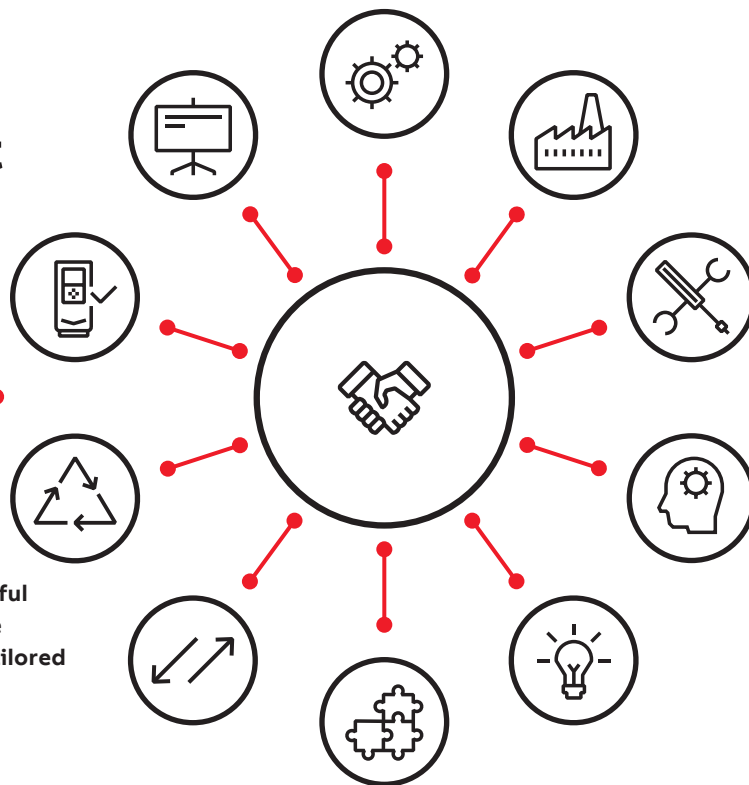
The services you need, when you need them, to keep your turbines producing energy.



Imagine being able to forget about hardware and software issues, compatibility problems and upgrades, and simply focus on your core business.

Now you can do just that – by choosing a tailored wind service package from ABB.

Life cycle management



When do you need life cycle management?

► When you need a customized service agreement that covers the whole life cycle of your wind converters. Life cycle management employs powerful services and know-how to optimize and extend the lifetime of your converters. Your package will be tailored to your specific needs from our broad offering of wind converter services.

• Installation and Commissioning

ABB service engineers work quickly and efficiently to get your equipment into operation. We also offer training to enable your own team to carry out the work.

• Training

- Classroom Training
- E-Learning

Our comprehensive range of training options includes classroom courses – at your location or an ABB center – and convenient E-Learning programs.

• Spares and Consumables

The genuine spare parts you need, delivered when you need them by our logistics network. We can also store spare parts at your site, ready for use.

• Maintenance

- Inspection and Diagnostics
- Preventive Maintenance
- Reconditioning

Maintenance provides long-term support for your production with services that include equipment inspection, needs diagnostics, failure prevention and converter lifetime extension.

• Repairs

- Onsite Repairs
- Workshop Repairs
- Technical Support
- ABB Ability™ Remote Assistance

Fast help when a problem arises, with repairs on-site or at one of our workshops. For 24/7/365 access to expert help, select the Remote Assistance service.

• Engineering and Consulting

- Engineering Consulting
- Engineered Solutions

Leading converter system experts help you to improve the reliability, usability, maintainability and performance of your equipment.

• Advanced Services

- ABB Ability™ Condition Monitoring
- ABB Ability™ Predictive Maintenance

Optimize the production of your turbines with services that give you accurate, real-time condition monitoring data and predictive maintenance capabilities.

• Upgrades and Retrofits

- Hardware Upgrades
- Retrofits
- Third Party Modernization

Keep your systems and converters up to date with the latest technology for improved efficiency, reliability and overall performance.

• Replacements

When you need to replace an entire converter, we plan and implement the replacement quickly and efficiently, and with minimal downtime.

• End-of-life Services

We ensure that your equipment is dismantled, recycled or reused responsibly, in compliance with regulations and with minimal environmental impact.

ABB Ability™ remote services boost wind parks' performance

The new services are based on analysis of real-time data collected by the electrical drivetrain in wind turbines, consisting of the generator, frequency converter and transformer. As a major supplier of components for the electrical drivetrain, ABB is working closely with customers to lead the digital transformation of wind turbines.

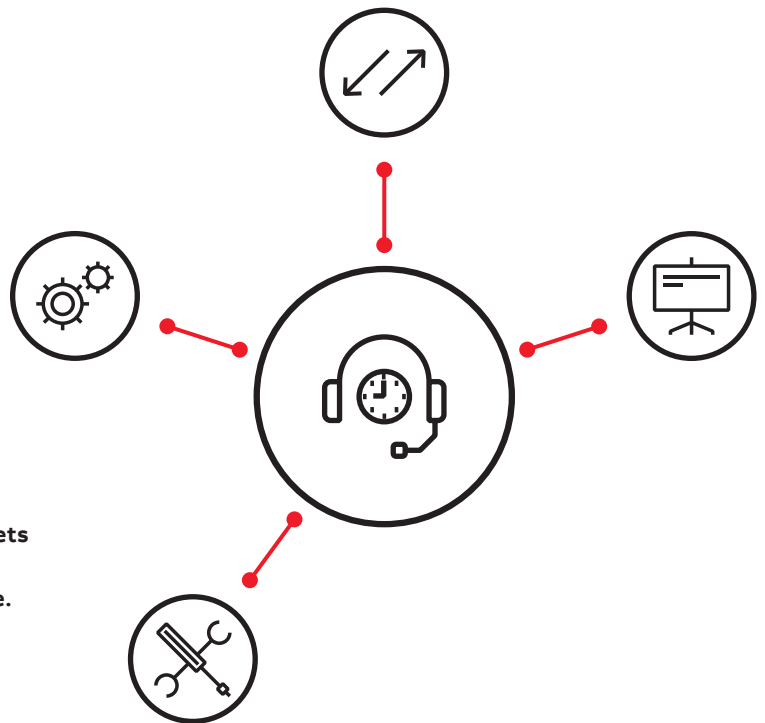




Rapid response

When do you typically need rapid response?

- ▶ When you need a converter service package that meets all your basic requirements and guarantees fast and flexible response to maximize your converter uptime.



- **Repairs**

Fast help when a problem arises, with repairs on-site or at one of our workshops.

- **Spares and Consumables**

The genuine spare parts you need, delivered when you need them by our logistics network. We can also store spare parts at your site, ready for use.

- **Replacements**

When you need to replace an entire converter, we plan and implement the replacement quickly and efficiently, and with minimal downtime.

- **Training**

Our comprehensive range of training options includes classroom courses – at your location or an ABB center – and convenient E-Learning programs.

Performance improvement

When do you typically need performance improvement?

- ▶ When you need a service package that optimizes the availability, reliability and efficiency of your converters to increase turbine uptime and productivity.

- **Engineering and Consulting**

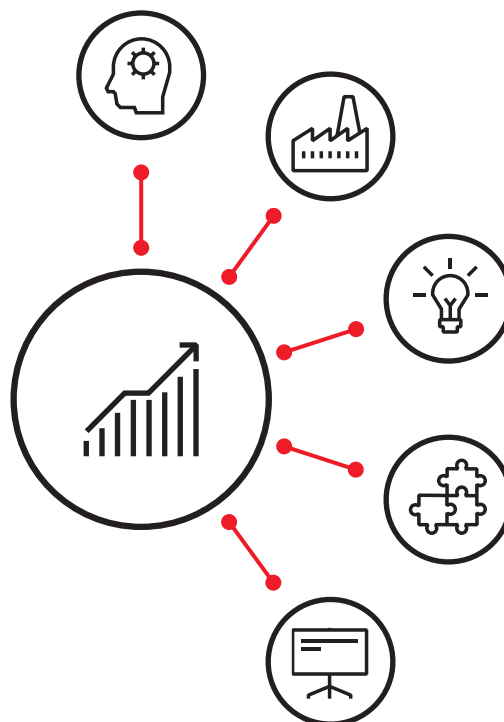
Leading converter system experts help you to improve the reliability, usability, maintainability and performance of your equipment.

- **Maintenance**

Maintenance provides long-term support for your production with services that include equipment inspection, needs diagnostics, failure prevention and converter lifetime extension.

- **Advanced Services**

Optimize the production of your turbines with services that give you accurate, real-time condition monitoring data and predictive maintenance capabilities.

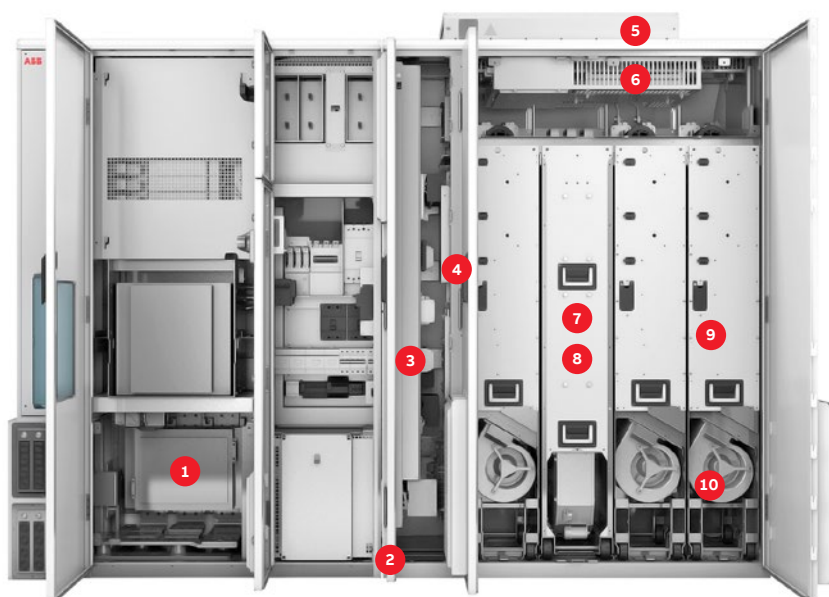


- **Upgrades and Retrofits**

Keep your systems and converters up to date with the latest technology for improved efficiency, reliability and overall performance.

- **Training**

Our comprehensive range of training options includes classroom courses – at your location or an ABB center – and convenient E-Learning programs.



Typical example of an converter upgrade

- 1 Contactor upgrade
- 2 Slide-out frame rail improvement
- 3 Main control board upgrade NDCU-CX
- 4 Voltage measuring upgrade
- 5 Brake Chopper upgrade
- 6 Active Crowbar upgrade
- 7 Fully reconditioned LCL filter
- 8 Upgraded contactor for inverter supply unit (ISU)
- 9 Inverter module upgrade
- 10 Long-life cooling fan upgrade

Operational Excellence

When do you typically need an operational excellence service package?

- ▶ **When you want to work together with a reliable service provider to manage your converters, operations and risk in order to deliver strategic business results.**

- **Advanced Services**

Optimize the production of your turbines with services that give you accurate, real-time condition monitoring data and predictive maintenance capabilities.

- **Engineering and Consulting**

Leading converter system experts help you to improve the reliability, usability, maintainability and performance of your equipment.

- **Upgrades and Retrofits**

Keep your systems and converters up to date with the latest technology for improved efficiency, reliability and overall performance.

- **End-of-life Services**

We ensure that your equipment is dismantled, recycled or reused responsibly, in compliance with regulations and with minimal environmental impact.

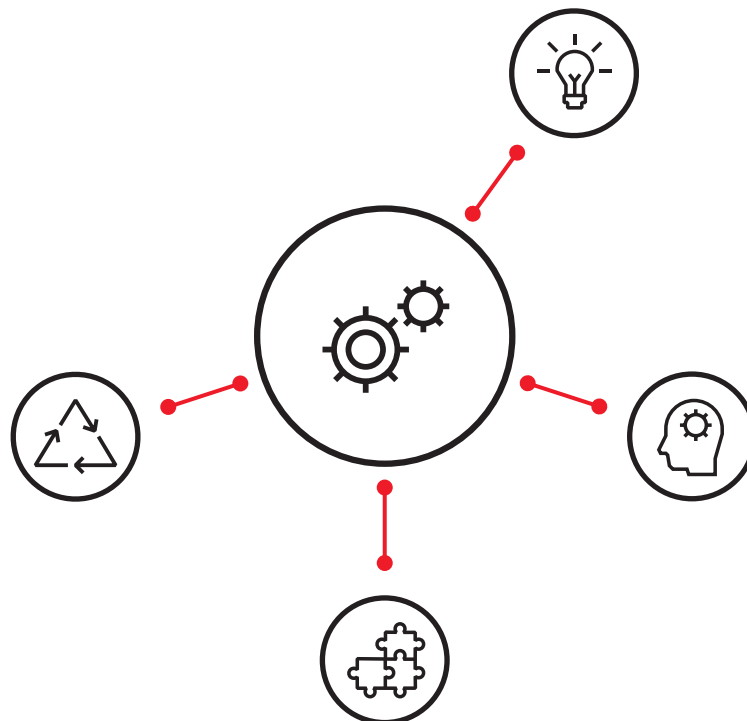




ABB Drives Service

Your strategic partner for a changing world

Our service packages are designed by us, built for you and provide ongoing support to meet most of your requirements. We also offer tailor-made service agreements and products that can be designed to match your specific requirements. Simply select the services you need and contact us – let's discuss how we can make them work best for you and your business.



Service agreements



Installation and Commissioning

With know-how covering the whole turbine electrical drivetrain, our service engineers ensure fast and reliable **installation and commissioning**. Alternatively, we can train your personnel to carry out the work.



Training

Select from our comprehensive range of training options, including both **Classroom Training** – delivered at your location or an ABB center – and convenient **E-Learning** programs. Ensure your team is ready to respond, no matter what situations arise.



Spare parts and Consumables

This service makes sure you get the genuine spare parts you need within the agreed timeframe and in full working order. Depending on your requirements, we can store **spare parts** on-site ready for use, or have them delivered directly from our warehouse.



Maintenance

Systematic, long-term support for your converters, with services covering a broad spectrum of needs. **Inspection and Diagnostics** help your team to recognize future converter maintenance needs. **Preventive Maintenance** consists of regular inspections and component replacements in line with the maintenance schedule. **Reconditioning** is an efficient way to extend your converter's lifetime.



Repairs

Select this service to quickly get help when a problem arises. During emergencies or planned production breaks, we carry out **repairs on-site** or at a **service center** or **workshop**. **ABB Ability™ Remote Assistance** automatically and continuously collects performance data from converters to allow faster reaction in failure cases, with help available 24/7/365.



Engineering and Consulting

Helps you identify ways to improve the reliability, usability, maintainability and performance of your equipment.

Engineering Consulting applies leading-edge converter system expertise to help you develop customized solutions to optimize your assets. **Engineered Solutions** are tailored for an exact match with the needs of your converters and turbines.



Advanced Services

Designed to optimize the production and energy efficiency of your converters. **ABB Ability™ Condition Monitoring** delivers accurate, real-time information about converter events to ensure your equipment is available, reliable and maintainable. **ABB Ability™ Predictive Maintenance** harnesses the combined power of cloud computing, machine learning and ABB domain expertise to recommend highly targeted maintenance actions, before problems occur. This gives you better availability and turbine uptime, as well as peace of mind.



Upgrades and Retrofits

Select this service to ensure that your systems and converters are kept up to date for high overall performance.

Hardware Upgrades put the latest technology into your converters, enhancing their efficiency and reliability.

Retrofits are a fast, efficient way to modernize installed converters, immediately boosting turbine performance. **Third-Party Modernization** is the right choice when you need engineered solutions for non-ABB converters.



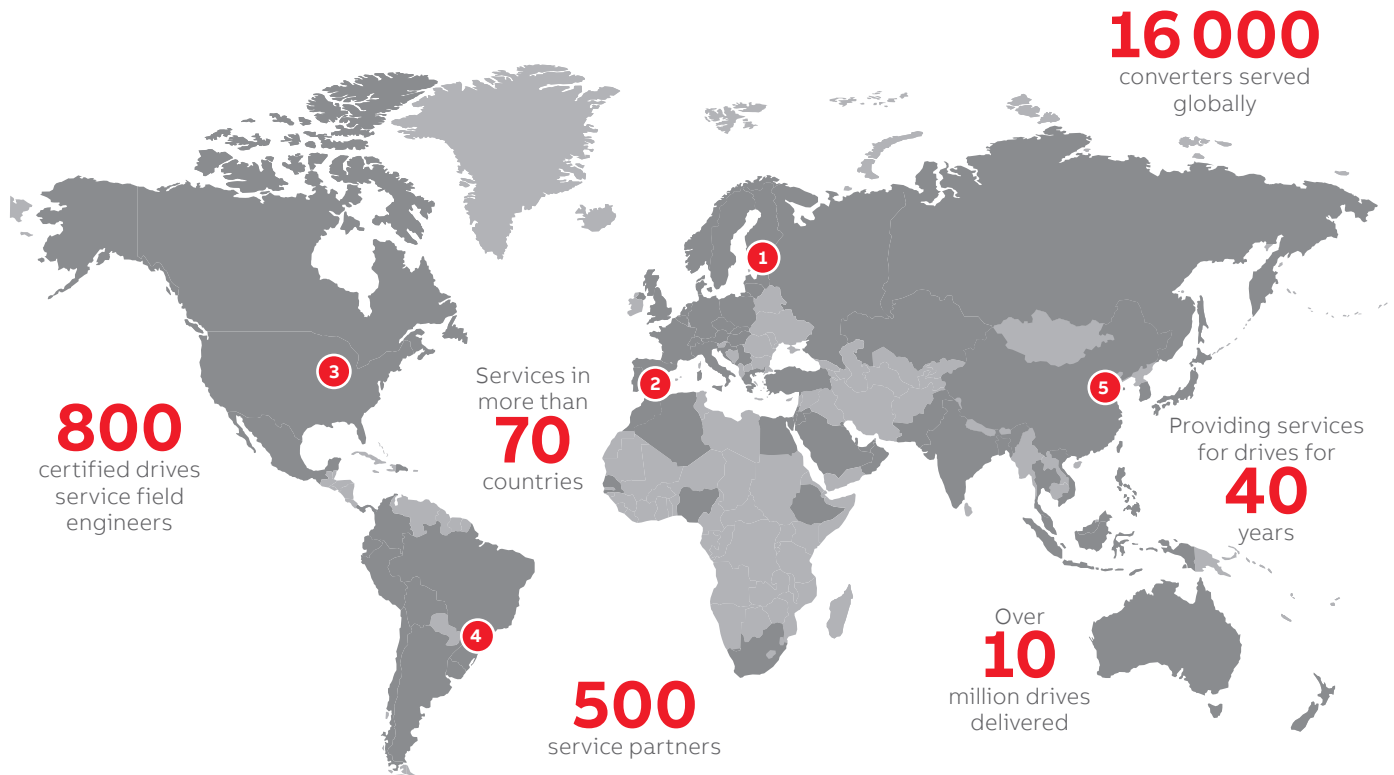
Replacements

Under this service we assess the appropriate replacement time for your equipment and handle the implementation quickly, efficiently and with minimal turbine downtime.



End-of-life Services

With these services you can be confident that your equipment will be dismantled, recycled or reused responsibly, and in accordance with the relevant laws and industrial standards.



● ABB Drives Service countries

Wind service workshop:

- 1 Helsinki, Finland
- 2 Barcelona, Spain
- 3 New Berlin, USA
- 4 Sorocaba, Brazil
- 5 Beijing, China

For decades we have built one of the most precise and comprehensive service networks, globally. ABB Drives Service has 800 certified drives service field engineers around the world with extensive experience of wind converters. In addition we have more than 500 service partners, who together cover over 70 countries. Our experts and partners are ready to help you meet today's tough challenges and prepare for those that lie ahead in the future.

Contact your local service and sales support team to discuss your requirements.
For further information visit:

new.abb.com/drives/services

**Additional information**

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

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