

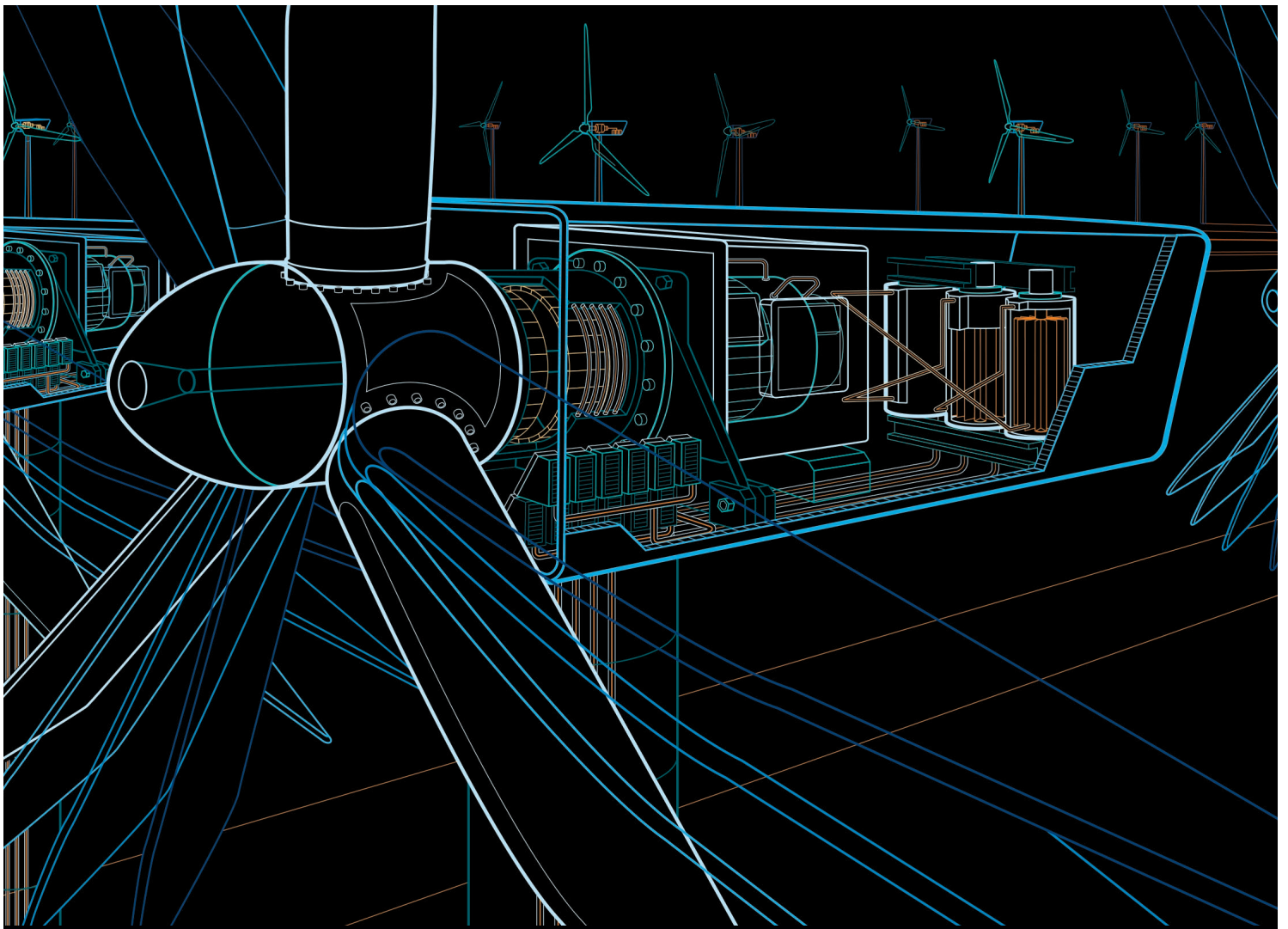


ABB Wind Retrofit

Increase production, reliability
and lifetime of your wind turbine

Power and productivity
for a better world™



What is ABB Wind Retrofit?

Optimized control and power conversion systems are essential for maximum production and power quality.

Fixed speed wind turbine technologies don't allow for maximum production capability.

ABB can improve the wind turbine production and increase reliability, leading to extended lifetime by using new components and technologies.

Wind Retrofit enables your wind turbine to work at variable speed by controlling the system torque and allowing the maximum power transfer between the wind and turbine blades.

This improvement is possible with the addition of a low voltage full power converter, upgrade of superior control system, and reconditioning of the generator to work at variable speed.



What benefits do you get from retrofitting your turbine?

Significant production increase (kWh) in terms of efficiency by taking advantage of low winds.

Power quality improvement by smoothing torque fluctuations.

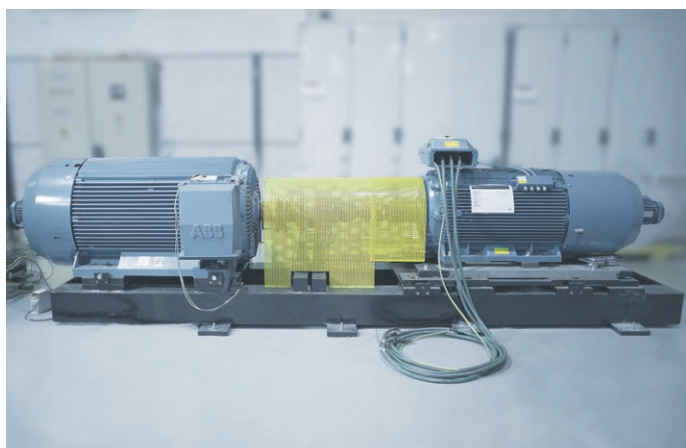
Full reactive power production.

Converter provides generator torque and speed control.

Longer turbine lifetime by reducing its mechanical stress.

Grid code compliance.

ABB's Service Center of Excellence for wind turbines in Spain is an international workshop where a team of dedicated technicians and engineers develop and assemble the Wind Retrofit packages. Retrofitting a fixed speed turbine improves efficiency, reliability, grid code compliance and lifetime, whether the turbine is in production or dismantled to be installed in a new location.



Test Bench at ABB's Service Center of Excellence



Wind turbine nacelle after cleaning and refurbishment

ABB Wind Retrofit is available for stall and pitch controlled onshore turbines.

ABB works with OEMs, project developers, IPPs (Independent Power Producers) and utilities to make renewable generation technology like wind power affordable, reliable, efficient, and safe.

Did you know that ABB:

Is the world's largest supplier of the electrical components of wind turbines.

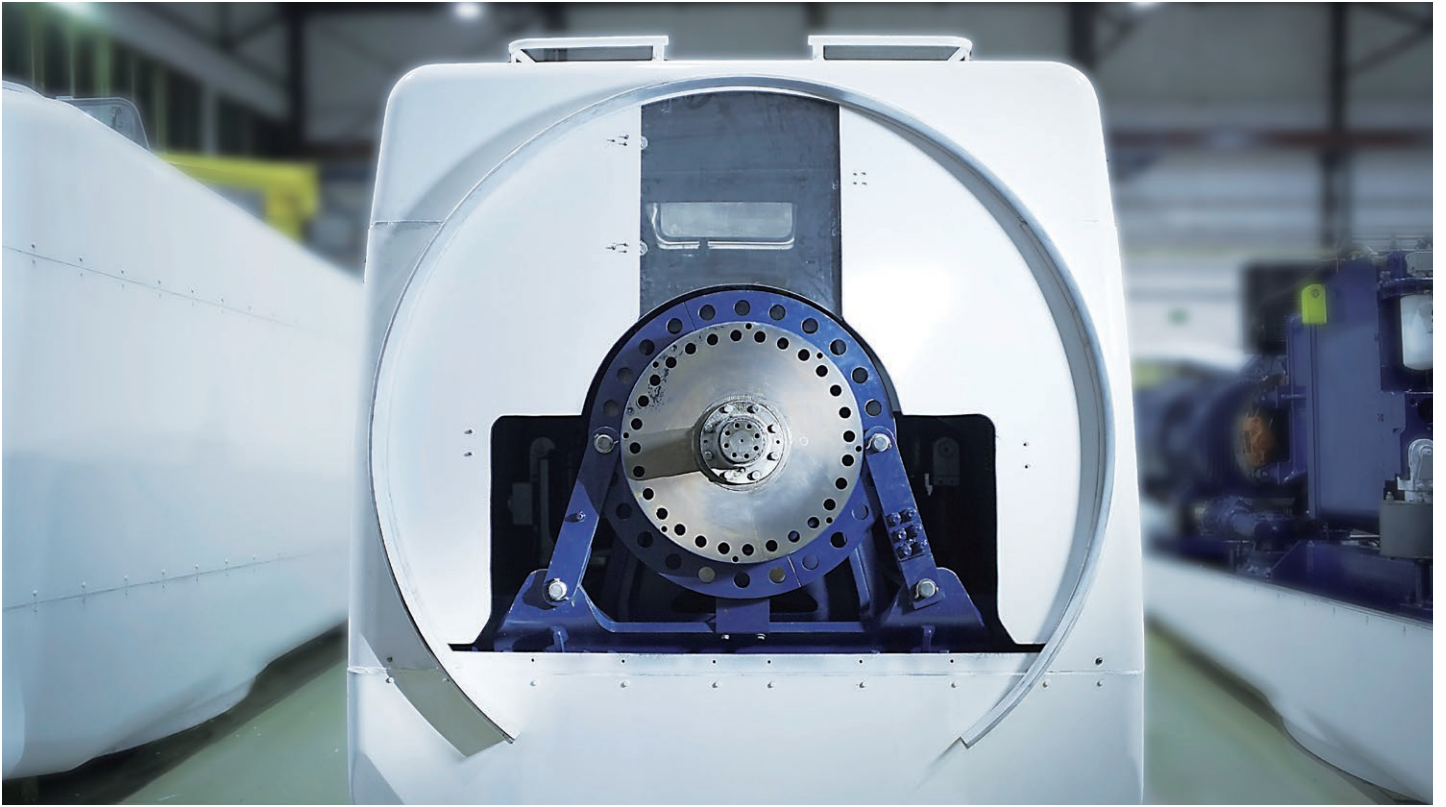
Provides solutions for every major wind generator technology.

Has more than 30 year experience providing products and technology for wind generators.

Has installed thousands of transformers for wind turbines worldwide.

Has installed thousands of substations at wind power plants around the world.

Offers one of the most comprehensive ranges of low voltage products for wind industry.



Wind turbine nacelles being retrofitted at ABB's Service Center of Excellence

Scope of ABB Wind Retrofit:

Full power converter

Generator reconditioning

Upgrade of sensors with
optical fiber communication

Superior turbine control

Commissioning

System integration

Support and testing





Wind turbine dismantled components to be remounted after the retrofit by ABB's Service Center of Excellence

ABB is the largest supplier of electrical components, systems, and services to the wind power industry. With continued investment and expansion of service offering, ABB is uniquely positioned to support and optimize your turbine and wind power plant throughout the entire life cycle.

Full power converter

- Direct torque control (DTC).
- Decouples the generator from the grid.
- Reduces mechanical shocks on the turbine during grid faults.
- Increases grid code compliance.
- Enables full speed range.
- Increases annual power yield.
- Enables full reactive power production with flexibility to configure desired power factor.
- Full control of the power.
- Noise reduction by avoiding harmful resonance frequencies to the mechanical structure.

Generator

ABB can recondition, replace or rewind the generator depending on its condition in order to support variable speed with the full power converter.

Superior control

ABB uses its own or third party PLC for the superior control system.

With the PLC range we provide a reliable and powerful platform to design and create scalable, cost-effective and flexible solutions.





ABB engineers during workshop assembly



ABB field service engineer during commissioning

ABB’s services span the entire product ownership life cycle, from pre-purchase engineering to installation, commissioning and operation. ABB provides a comprehensive portfolio of life cycle services that will increase return on investment and keep wind turbines operating at their highest efficiency levels for the longest possible time.



Installation and commissioning

ABB’s certified commissioning engineers have extensive know-how and experience in wind turbines leading to fast and reliable commissioning.



Technical support

ABB provides remote services, support line, and on-site field support as part of its maintenance program for wind turbine converters.



Spares and consumables

Having the correct spare parts available at the correct locations, requires proper planning to ensure reliable wind turbine production. ABB provides support in planning spare part stock management throughout the life cycle of the wind turbine.



Preventive maintenance

ABB offers preventive maintenance kits containing all the genuine ABB spare parts needed to perform a specific maintenance task, helping to simplify the preventive maintenance process.





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