



**SIEMENS**

# Powered by partnership

Sustainable solutions for your  
onshore wind power projects

[siemens.com/wind](https://www.siemens.com/wind)

# Invest in a partner who invests in you

We believe sustainable investments are powered by partnerships. Our dedicated employees work closely with you to understand your needs and optimize your solution to achieve the best long-term returns.

**Countless onshore solutions, one priority: your vision**

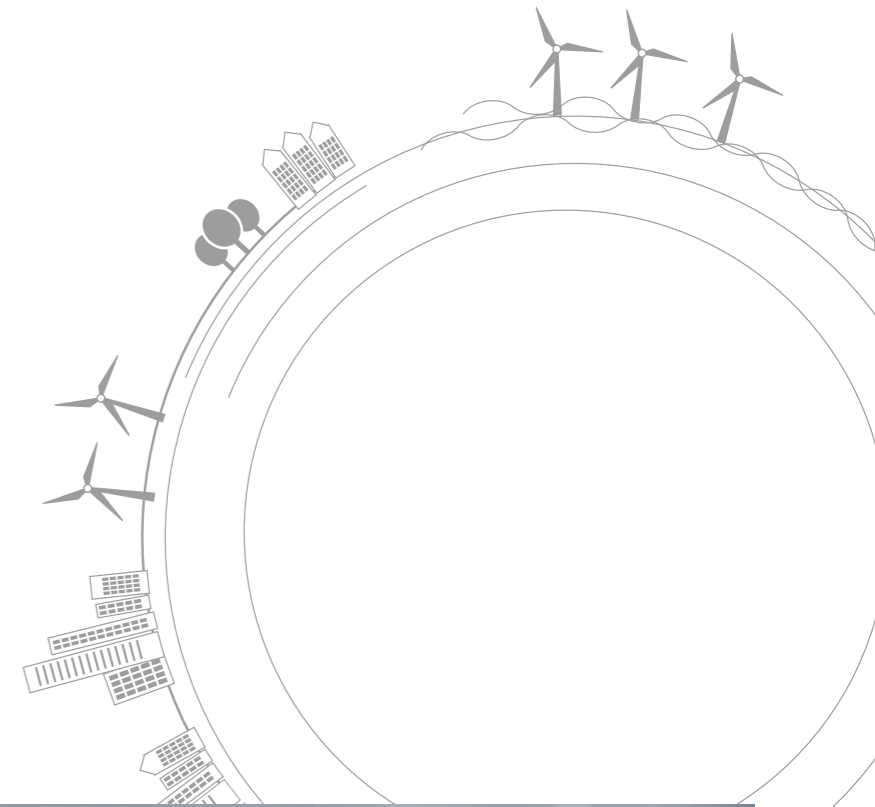
Our employees are committed to seeing the world through the eyes of our customers. The solutions we provide are driven by the benefits they deliver to you: whether this means inventing new technologies, customizing an existing product, or simply finding a smarter way of working, we strive to help you realize your vision, maximize your returns, and lead the industry in delivering a lower cost of energy for everyone.

**Your specific needs, our customized expertise**

Whether you're in Europe, the Americas, or Asia; a medium-sized developer or a large utility; a private-sector company or a publicly operated wind power plant – your individual needs are important to us. Because the needs of our customers vary greatly, we offer a broad portfolio of proven solutions, from individual wind turbines to comprehensive turnkey solutions.

**Global presence, local partner**

Every location is different, and local variations call for solutions tailored to local requirements. This is why Siemens maintains a global network that extends over 190 countries, including production facilities in Europe, the Americas, and Asia. This network means that no matter where you are, you can do business with a local partner – a Siemens employee familiar with your location – who understands your specific needs and expectations.





# Two platforms, one pedigree

Our portfolio meets your requirements for diversity, scalability, and quality.

### Custom-built for your constraints

To satisfy both the capacity and positional constraints unique to each onshore project, we have developed two main turbine families – our Onshore Geared platform and Onshore Direct Drive platform.

### The Onshore Geared platform for capacity constraints

We are continuously evolving our Onshore Geared platform to deliver greater returns for a wide range of wind and market conditions. With over 19.8 GW of installed capacity worldwide, the Onshore Geared platform's performance, productivity, and availability are trusted around the globe.

### The Onshore Direct Drive platform for position constraints

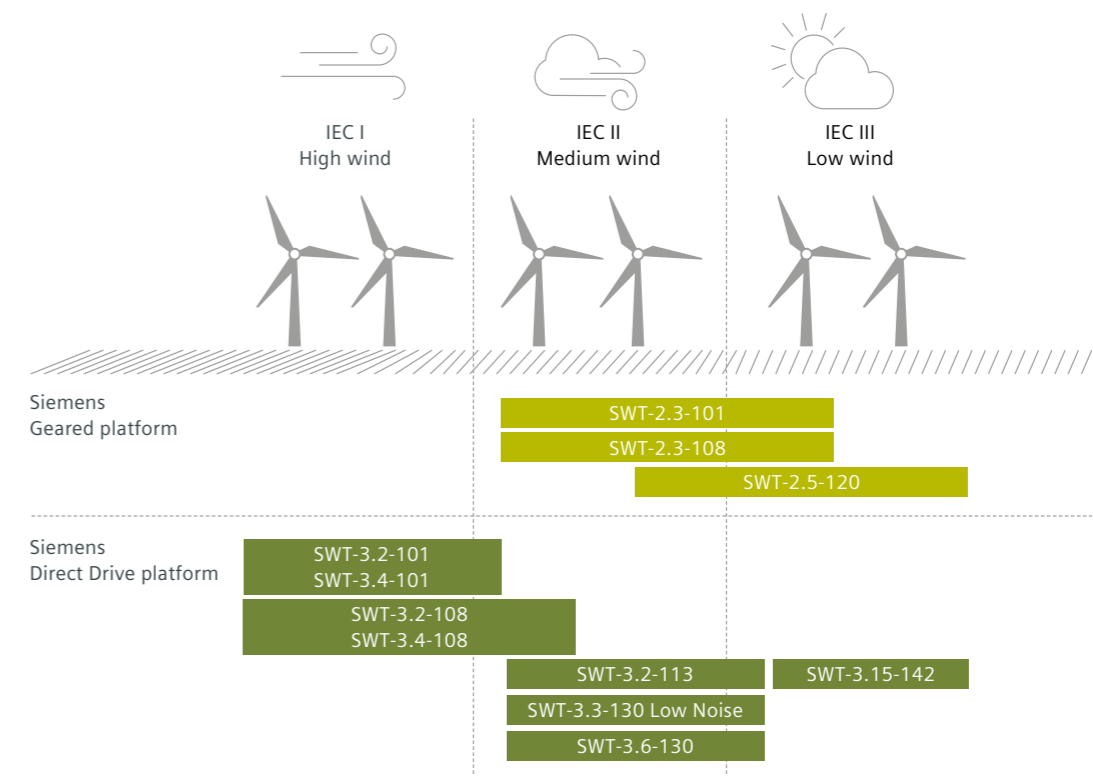
To help optimize output with minimal outlay, our employees can recommend the Onshore Direct Drive turbine best suited to your needs. Featuring some of our largest turbines, the Onshore Direct Drive platform offers higher

yields in low, medium, and high wind conditions – with excellent returns.

### 360° solutions for a one-stop-shop

We also offer our advanced and reliable products as part of extended-scope and turnkey solutions. Our experienced employees offer project management consultancy and support throughout the lifetime of your project. Working with a single partner offers the significant added value of efficiency, simplicity, and consistent quality – for you and other stakeholders. Drawing on our track record of quality and market-driven innovation at all levels, we work with you to help you achieve all the goals laid out in your business plan – on time and within budget.

Two product platforms for all wind conditions.



# Innovating in your interest

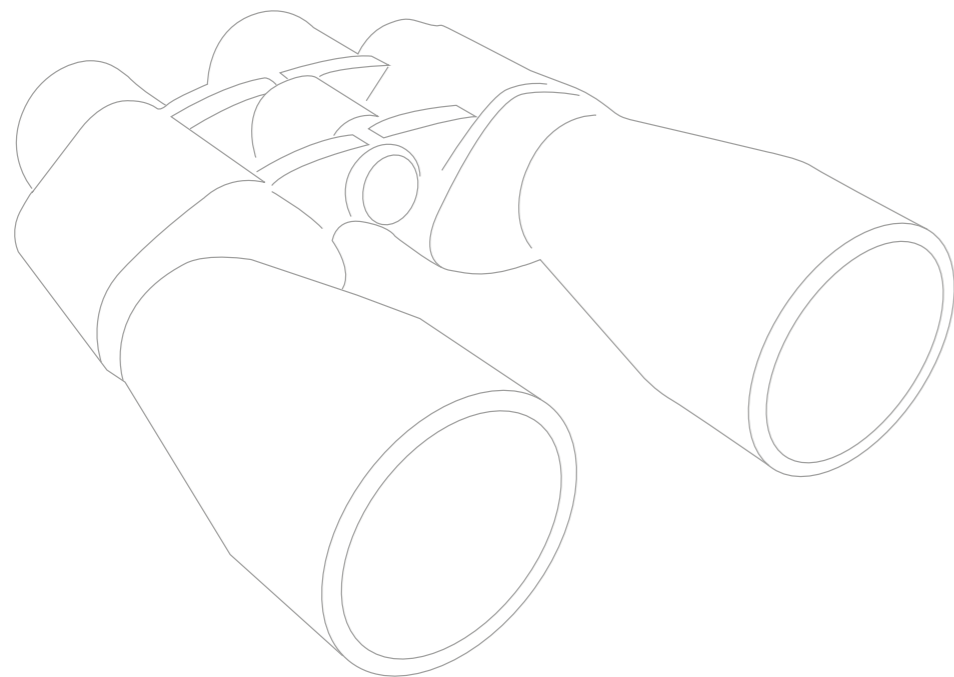
When proven technologies meet industry-leading innovations, you reap the rewards.

## Your challenge, our insight

Our R&D centers are driven by the interests and insights of our customers, ensuring that we never lose sight of your ultimate goal. Whether it's a new turbine or an improvement to an existing product, we take pride in our work, and never stop looking for new ways to maximize performance and availability, simplify or reduce maintenance, and deliver the best return on your investment.

## Precise predictions

Siemens employees truly live our R&D culture. We are committed to maximizing wind turbine efficiency on your behalf: for example, with upgrades like the power boost functionality that can deliver an increase in energy output from existing assets with minimum outlay. And thanks to the dedication of Siemens employees like software engineer Per Egedal, we can reliably predict how large that increase will be.



## Turning hindsight into foresight

Siemens system engineer Per Egedal's simulator uses your turbine's historical performance to predict how much extra output you'll get from a power boost upgrade. By introducing a degree of precision to the tricky business of prediction, his data tool helps our customers make challenging investment decisions. His attitude is typical of the Siemens approach: dedicated employees harnessing their passion to innovate the solutions we deliver to you. Together with our customers, we have come a long way in our thirty years of working with onshore wind power – and with people like Per in our corner, we can go a lot further.

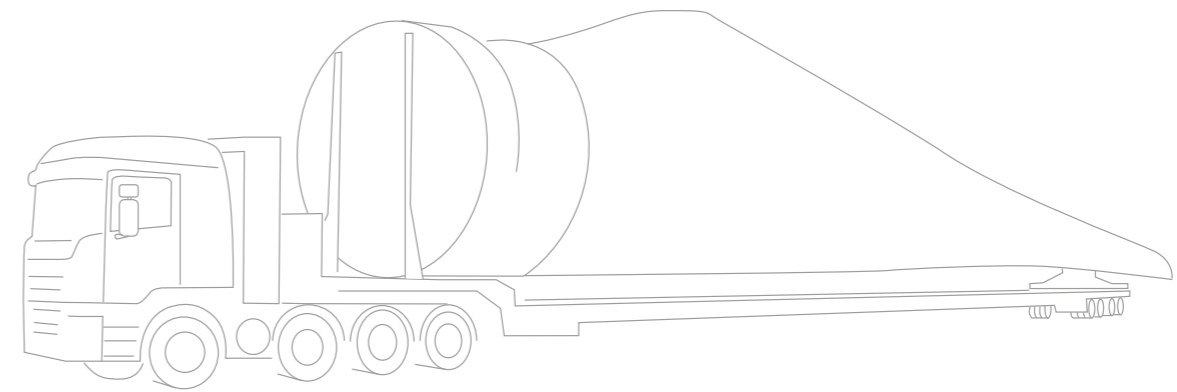
## Rigorous testing, secure investment

When it comes to the reliability and durability of our products, we don't depend on calculations alone. The major components in all of our platforms have to pass Highly Accelerated Lifetime tests that demonstrate their ability to perform in the harshest operating conditions. In Denmark, our seven blade test stands in Aalborg and three blade-test stands in Brande together form the largest wind turbine blade testing facility in the world. But meeting our high product quality standards isn't our only goal. Our Zero Harm philosophy is a rigorous, Siemens-wide health and safety approach to every aspect of our operations that aims for the highest possible safety standards for our most valuable resource: our employees. We refuse to compromise when it comes to the health and safety of our team members, just as they refuse to compromise when it comes to the quality of their work and the excellence of our product – so you can rest assured in the safety of your investment.



## Cutting costs to increase your returns

Our innovations reduce the cost of generating wind power.



### Our priority: your bottom line

To achieve maximum cost efficiency for your investment, we look at the bigger picture. From a new cost-analysis model, to standardization and modularization, to monitoring and transport processes, you benefit directly from our forward-thinking, cost-conscious approach.

### Spend less on peripherals

Our turbines come with SCADA, a straightforward system for monitoring and remotely controlling key variables via a standard Web browser – so there’s no need to invest in an additional interface. The same applies to our NetConverter® system. It delivers maximum flexibility in response to voltage and frequency control, fault ride-through, and output adjustment – for full conversion of the power your wind turbine generates.

### Spend less, long-term

To provide our customers with an accurate basis for long-term comparisons of the cost of wind power, we developed the Society’s Cost of Electricity (SCOE). The SCOE is a more realistic calculation than the conventional Levelized Cost Of Energy (LCOE). By taking socioeconomic factors into account, it shows that wind power compares favorably to other energy sources.

### Spend less on transport

Our transport specialists have found a way to offset rising transport costs – and even decrease them. Siemens transportation engineers Kim Joergensen, Liann Graakjaer, and their teams redesigned our transport processes and contracts to create savings that are reflected directly in your bottom line.

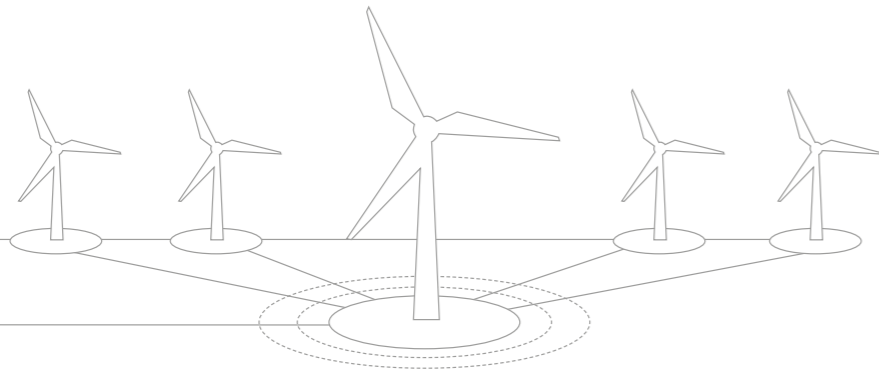
## Driving down the cost of transport

By reexamining every facet of the process, Liann Graakjaer, Kim Joergensen, and their teams didn’t just freeze transport costs – they reduced them. Thanks to these teams, your turbine starts to repay you with cost savings before it even completes its first revolution. That’s what our people do: go the distance in search of efficiency that lowers the cost of onshore wind power and increases our customers’ profitability. This has been our goal since we created our first turbine over 30 years ago. Liann, Kim, and the rest of our remarkable colleagues make it all possible.



# Connected thinking

Siemens Service is committed to comprehensive care for the lifetime of your turbines.



### The four pillars of our partnership

For increased return on investment throughout a project's life cycle, you need service that is both smart and proactive. We aim to maximize the performance of your assets with support and maintenance in four key areas:

**Remote Diagnostics**  
The figures are impressive. Our diagnostics experts monitor more than 10,000 turbines, and our diagnostic center in Brande collects over 200 gigabytes of new data every day.

Remote Diagnostics in operation since: 1998

Permanent staff on site: 130+ experts

Amount of data in the database: 150 terabytes (2016)

Number of measured anomalies: 6,000+ per week

Diagnostic warnings to service teams: 500+ per week

### Reliability

Whether wind is steady or stormy, you need to know that your turbines will thrive for their designed lifetime. For your unique requirements, we have developed flexible service solutions to keep your turbines running and enhance your ROI. Smart diagnostics and innovative offshore logistics boost uptime and performance.

### Reassurance

To achieve maximum benefit, you need to achieve the highest level of wind turbine availability possible. We have invested knowledge, experience, and technical expertise to produce a range of premium time and yield-based service options that will meet this need and surpass expectations.

### Optimization

Service means more than just maintenance and repairs. To offer you permanent asset optimization, once your turbine is installed we continue to improve on it – ensuring that you profit from the ongoing development of our technology.

### Knowledge

Especially in the field of wind energy, knowledge truly is power. You can now choose from diverse modules that offer multiple opportunities to investigate and better understand your turbines – from data interfaces to hundreds of training courses. By utilizing Siemens' own decades of experience and expertise, you can reach new heights in the industry.

# Committed to a sustainable future

For over 30 years, we have helped transform the wind power industry, but one thing has never changed: our commitment to our partners. You can rely on the support of our teams for the entire lifetime of your turbines. On your behalf, our employees constantly pursue innovation and improve on proven products, enhance availability, and tailor our extensive service portfolio to the specific needs of your project. Because we invest in sustainable partnerships, you can rest assured that your wind power investment is sustainable over the long term.



### Santa Isabel, Puerto Rico

The Santa Isabel Wind project features 44 SWT-2.3-108 wind turbines and is located on the south coast of Puerto Rico. 100% of the electricity generated by the project is sold to the Puerto Rico Electric Power Authority (PREPA). The project falls under Siemens' 2014 10-year wind service agreement that encompasses over 400 onshore wind turbines in the U.S., Canada and Puerto Rico.

Capacity: 101.2 MW  
Turbines: 44 x SWT-2.3-108  
Turbine rating: 2.3 MW



### Süderlügum, Germany

In Germany, Siemens Wind Power constructed several community-owned wind farms and is known as a trustworthy partner for delivering projects on time. The publicly-operated Bürgerwindpark Süderlügum in northern Germany was built in 2014 and underlined the reliability of Siemens as a solution-oriented partner.

Capacity: 36 MW  
Turbines: 11 x SWT-3.0-101 and 1 x SWT-3.0-113  
Turbine rating: 3.0 MW



### Snowtown II, Australia

In 2012, Trustpower needed 90 onshore wind turbines on a tight budget and timing. The solution? A full turnkey project solution that also included the substation, switchgear, and transformers to connect the power plant to the grid. Our teams completed the project on budget and ahead of schedule – much to our partner's delight.

Capacity: 270 MW  
Turbines: 10 x SWT-3.0-101 and 80 x SWT-3.0-108  
Turbine rating: 3.0 MW

**Published by  
Siemens Wind Power GmbH & Co. KG**

Beim Strohhouse 17-31  
20097 Hamburg, Germany  
[siemens.com/wind](http://siemens.com/wind)

For more information, please contact  
our Customer Support Center.  
Phone: +49 180 524 70 00  
Fax: +49 180 524 24 71  
(Charges depending on provider)  
Email: [support.energy@siemens.com](mailto:support.energy@siemens.com)

Article No. WPON-B10022-01-7600  
RS 1501275BR

All rights reserved.

Trademarks mentioned in this document are the property of  
Siemens, its affiliates, or their respective owners.

Subject to changes and errors.

The information given in this document only contains general  
descriptions and/or performance features which may not always  
specifically reflect those described, or which may undergo  
modification in the course of further development of the products.  
The requested performance features are binding only when they  
are expressly agreed upon in the concluded contract.