

# INNOVATION

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## Adwen and LM Wind Power Create the Longest Blade in the World

Adwen and LM Wind Power have come together to build the longest turbine blade in the world.

The component is 88.4 meters long and has been specifically designed for Adwen's AD 8-180 wind-turbine model, with 8 MW nominal capacity and 180-meter rotor diameter. The first of these huge blades was manufactured at LM Wind Power's factory in Lunderskov, Denmark.

The engineering teams of both companies have been working together for months to design and integrate a blade that represents an important step forward in the race to lower the Levelized Cost of Energy (LCoE). With the largest rotor in the industry (180 meters), the AD 8-180 has the highest annual energy production of all wind turbines.

The LM 88.4 P blade has been designed with manufacturing and reliability in mind, benefiting from the know-how of LM Wind Power, which has developed large blades for offshore application for 25 years and resulting in a 925 MW installed base. LM Wind Power's track record combined with Adwen's powerful turbine, technology, and experience from operating 630 MW offshore wind farms have resulted in a state-of-the-art rotor integration.

The blade's 88.4-meter length is the best compromise between swept area, energy production, and weight as well as loads transferred to the wind turbine. This combination provides the optimum balance of plant costs and contributes to one of the most competitive LCoE in the industry. In addition, the blade design



has been conceived with scalability in mind so Adwen's 8 MW platform can be developed.

"When you are building the largest wind turbine in the world, almost everything you do is an unprecedented challenge," said Adwen General Manager Luis Álvarez. "We are going where no one else has ever gone before, pushing all the known frontiers in the industry. Having developed and integrated together with LM Wind Power the first unit of the longest blade ever and being able to start testing is a key step forward in the development of our AD 8-180 and proves that Adwen is at the forefront of the industry."

"The LM 88.4 P blade is an extraordinary example of industrialized

The longest blade in the world is 88.4 meters.

innovation at record-breaking scale," said LM Wind Power CEO Marc de Jong. "It is based on innovation building blocks, rooted in 35 years of real-life experience, in the design, technology, and manufacturing of ultra-long, reliable blades. This blade is a strong proof point of the shared ambition of Adwen and LM Wind Power to bring forward best-in-class and proven rotor solutions for offshore application, increasing annual energy output through efficient and reliable technology." ↵

Source Adwen

For more information, go to [www.adwenoffshore.com](http://www.adwenoffshore.com).

## 180 MW Armow Wind Facility Opens in Ontario

The Armow Wind Power Facility in Ontario held a grand opening hosted by Samsung Renewable Energy, Inc. and Pattern Energy Group LP. The 180-MW Armow Wind is expected to generate enough clean energy to power about 70,000 Ontario homes each year, based on average annual residential energy use in Ontario.

“The Municipality welcomes the Armow Wind Power Facility to our community,” said Murray Clarke, chief administrative officer of the Municipality of Kincardine. “Throughout the process ... the developer has demonstrated a solid commitment to work with the municipality and maintain an open line of communication ... The Armow Wind project will contribute close to \$20 million of new tax, non-tax, and permit revenue directly to the Municipality of Kincardine. The community benefit component alone will equal close to \$13 million which will be used to support local projects and programming.”

“We want to thank the landowners, other community members, and the municipality for their hard work and collaboration,” said Mike Garland, CEO of pattern development. “Armow Wind was built by Ontario workers using Ontario-made wind-turbine components. It is having a strong positive impact on the community by generating millions of dollars in local lease payments and property taxes, updating the local airport, and improving the community of Kincardine through our community benefits program.”

“Armow Wind is operational and not only producing renewable energy but also generating economic growth for the Kincardine community,” said Steve Cho, president of Samsung Renewable Energy Inc. “We are pleased to have delivered on our commitment to the Green Energy Investment Agreement by producing hundreds of jobs in construction and manufacturing. Armow is the fourth wind project to be completed under the GEIA, and Samsung Renewable Energy is pleased to be a part of the Kincardine community.”

Using Ontario-made wind-turbine components, Armow Wind provided jobs for more than 350 Ontario workers during peak construction activity with an average of 200 workers on-site throughout the construction process. Towers for the 91 Siemens 2.3 MW wind turbines were made in Windsor, and the 273 blades were manufactured in Tillsonburg by more than 750 Ontario workers.

“Siemens is proud to be a key supplier for our partners on another successful wind project in Ontario,” said Da-

vid Hickey, vice president of Wind Power & Renewables for Siemens Canada Limited. “With locally produced steel, towers, and blades, Armow Wind is another great example of the positive economic impact the wind-power industry has on the Province of Ontario and is a progressive step towards environmental sustainability.”

In addition to producing clean power, Armow Wind is bringing strong economic benefits to the Kincardine community, including more than \$75 million over 20 years in property taxes, landowner lease royalties, and community benefits.

Armow Wind committed \$13.6 million to the Municipality of Kincardine as part of a long-term Community Benefit Program, which supports education and other initiatives, including a contribution of \$1 million to the Kincardine Airport to improve local operations.

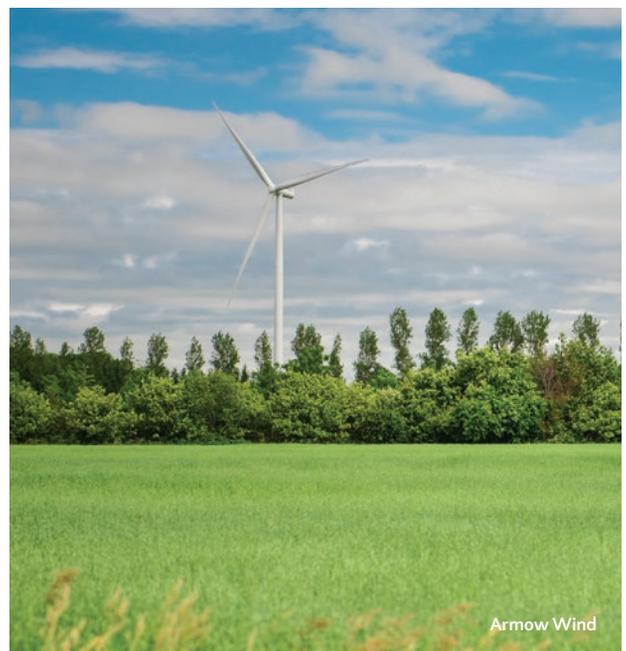
The Armow Wind power facility operates under a 20-year power-purchase agreement with the Independent Electricity System Operator.

Samsung C&T and its partners are making a \$5 billion private-sector investment in Ontario to create clean, renewable energy for generations to come.

Samsung signed a commercial agreement with the Government of Ontario that will result in 1,369 MW of installed renewable energy capacity in Ontario. ↴

*Source Pattern Development*

For more information go to [www.patterndev.com](http://www.patterndev.com).



A wind turbine at the 180 MW Armow Wind Facility.

Armow Wind