CONSTRUCTION

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Siemens Gamesa To Supply EnBW Albatros Offshore Wind Power

Following the 497-MW order for the EnBW Hohe See offshore wind-power-plant, EnBW has also awarded Siemens Gamesa Renewable Energy with the installation of the neighboring 112-MW-project EnBW Albatros. The scope of supply includes 16 direct-drive SWT-7.0-154 wind turbines on monopile foundations and the grid connection via a Siemens Offshore Transformer Module (OTM). Siemens Gamesa will install both wind-power plants in parallel. Installation will start in spring 2018.

The projects are 90 kilometers north of Borkum Island in the German North Sea with water depths up to 40 meters. The combination of both projects offers synergies to EnBW in respect to planning, construction, and during operation. Due to Siemens Gamesa Renewable Energy's complete solution for Albatros — ranging from turbines to substation technology — the project benefits from full optimization opportunities: Through the project-specific approach, all technology components are perfectly aligned so the risk for all involved parties is mitigated. At the same time, a bundling of installation works and centralized project planning create valuable synergies. After commissioning in 2019, Siemens Gamesa initially will provide service and maintenance for the turbines over a period of five years.

EnBW Albatros is the first German offshore wind power plant that Siemens will supply as a full-scope project. Furthermore, it includes the entry of the compact Siemens OTM in the German market. Thanks to focusing on key electrical components and cutting auxiliary systems, it allows a reduction in weight and size of more than 30 percent compared to a conventional AC substation. Further cost out is achieved by using the same foundation type for the OTM as for the turbines. The ultra-compact design of the platform not only reduces installation costs due to its low weight, but it also reduces service and maintenance efforts. EnBW Albatros will be connected to the power grid via the Borwin Beta HVDC converter-platform approximately 25 kilometers away and had been delivered by Siemens as well.

In the same way as for EnBW Hohe See, Siemens also is partnering with the Belgian offshore construction specialist GeoSea for Albatros regarding construction and installation of the monopiles. Again, the extended scope and the inter-coordinated complete solution including installation works, construction elements, and wind-turbine technology add to the synergies of the combined projects to enable a highly efficient realization of the projects. Inter-array cabling and coordination of the construction work remain in the scope of EnBW.

A SWT-7.0-154 wind turbine. (Courtesy: Siemens Gamesa)

"EnBW Albatros allows us to demonstrate our broad competence in offshore projects, ranging from project specific engineering services and the beneficial combination of power generation and transmission technology to service and maintenance concepts," said Michael Hannibal, CEO Offshore of Siemens Gamesa Renewable Energy. "This project has a high relevance for us since we will turn the 112-MW wind-power plant into a highly profitable investment for our customer via cutting edge technology and smart details."

Source: Siemens Gamesa

For more information, go to
www.gamesacorp.com/siemensgamesa

Concrete for Taller Towers Could Help Expand Wind Energy Nationwide

Sri Sritharan called up a digital map of the United States and pointed to a dark blue band running through the middle of the country.

That's wind country. The blue band runs east from the Rockies to just south of the Great Lakes, then around Arkansas and down to south Texas. It shows where there's potential capacity for wind turbines 80 meters (about 262 feet) above the ground. That height is the current standard. You can see those towers all over Iowa.

But look at another map, Sritharan said, who is the Wilkinson Chairman in Iowa State University's College of Engineering, a professor of civil, construction and environmental engineering and the interim assistant dean for strategic initiatives. When turbines are 140 meters (about 459 feet) off the ground, that blue band expands to the Southeast, moves around the Appalachians and covers parts of the Northeast, according to studies by the U.S. Department of Energy's National Renewable Energy Laboratory based in Golden, Colorado.

"These slides are starting to create a lot of interest," Sritharan said. "Taller turbine towers can enable wind energy production in all 50 states, including those in the Southeast."

Winds at higher elevations, generally, are stronger and more consistent, even in wind-rich states such as Iowa and Texas. In fact, Sritharan said a 20-meter increase (about 66 feet) in tower height creates a 10 percent boost in Iowa energy production.

And so Sritharan has been leading development of new concrete tower technology capable of reaching those heights.

He calls the technology "Hexcrete," which can also be combined with steel tubular technology to create hybrid wind-turbine towers.

The basic idea of Hexcrete is that it's assembled from precast panels and columns made with high-strength or ultra-high-performance concrete. Those panels and columns can be cast in sizes that are easy to load on trucks. They are tied together on-site by cables to form hexagon-shaped cells. A crane can stack the cells to form towers as high as 140 meters.

Sritharan has just completed an 18-month study of Hexcrete supported by $1 million from the U.S. Department of Energy, $83,500 from the Iowa Energy Center, and $22,500 of in-kind contributions from Lafarge North America Inc. of Calgary, Alberta, Canada. The project's industry partners also include the Siemens Corp.'s Corporate Technology center in Princeton, New Jersey; Coreslab Structures (OMAHA) Inc. of Bellevue, Nebraska; and BergerABAM of Federal Way, Washington.

LAB TESTS, ECONOMIC STUDIES

Sritharan and his research group have pushed and pulled an assembled test section with 100,000 pounds of force for more than 2 million cycles. The test section passed that fatigue test. The researchers also have tested a full-scale, cross-section of a tower cell for operational loads and extreme loads for a 2.3 MW Siemens turbine. Again, Hexcrete passed the tests.

"The testing was very successful," Sritharan said. "The testing did show the system will work as we expected. There are no concerns about the cable connections or the concrete panels and columns."

The technology also looked good in economic studies.

"Our study shows the Hexcrete option at heights of 120 to 140 meters (about 394 to 459 feet) will be cost competitive," he said.

The Iowa State researchers used models from the National Renewable Energy Laboratory to calculate the levelized cost of energy. The levelized cost is the total cost of installing and operating an energy project over its expected life.

The researchers also worked with about a dozen wind-energy companies to evaluate the models and confirm the economic findings were realistic.

Sritharan said the models show using Hexcrete technology to build 120- to 140-meter wind-turbine towers could drop the levelized costs 10 percent to 18 percent under the costs of current 80-meter technologies.

A PROTOTYPE TOWER

With the lab and economic studies showing positive results, Sritharan said he's working to form a university-industry partnership to build a prototype Hexcrete tower. He said the tower would likely be 100- to 120-meters high (about 328 to 394 feet). And it could be entirely Hexcrete, or it could be a hybrid tower with a Hexcrete base and a tubular steel top.

With appropriate financing, Sritharan said a prototype tower could be built in about a year. It could even be built in the Southeast.

That could be a good demonstration of the wind maps that, for example, show little potential for Alabama wind energy at 80 meters, a little potential in the northeast corner of the state at 110 meters (about 361 feet) and nearly statewide potential at 140 meters.

"Tall towers can add more capacity for renewable energy in all states across the nation," Sritharan said.

Source: Iowa State University

For more information, go to www.news.iastate.edu

Left to right: Carsten von der Geest (Terex Cranes), Sabine Wiesbauer, Sissy Wiesbauer, Thomas Wiesbauer, and Michael Zieger (Terex Cranes). (Courtesy: Terex)

Rate Estimator, Booking Platform Offered for Heavy Haul Shippers

FR8 Revolution Inc., an Oakland-based company that develops free cloud-based tools to improve efficiency in freight transportation, has launched a fully integrated freight-rate estimator and booking platform for open deck loads at www.fr8star.com. FR8Star offers a marketplace where shippers of large and heavy renewable energy materials can receive bids on loads and book directly with heavy haul and open-deck carriers.

FR8Star simplifies the load-bidding process, so shippers can easily manage carrier relations without a broker. Among the benefits to shippers is direct knowledge of the marketplace, what carriers themselves are bidding, not the marked-up quotes from brokers. Benefits accrue to both parties in a transaction, and shippers are particularly empowered to easily participate directly in this specialized marketplace.

A free FR8Star account enables shippers to directly access FR8Star's load marketplace that includes a patent-pending rate calculator for pricing oversize/overweight loads, including up-to-date state permit fees and escort costs.

FR8Star provides carriers with free dispatch software and an app that includes tracking and communication to keep shippers informed of load status automatically.

To use FR8Star's free estimator, a shipper goes to www.fr8star.com, sets up an account, and begins operating. The shipper can then post loads in the FR8Star platform and receive bids from carriers.

For decades, brokers have facilitated transactions between shippers and carriers. But pricing information is not evenly distributed. Broker interaction can increase this lack of pricing transparency resulting in higher rates for shippers and lower rates for carriers.

"We believe the United States truck freight market operates most efficiently when carriers and shippers work directly with one another," said Matthew Kropp, CEO of FR8 Revolution. "Given our patent-pending heavy-haul rate estimator, and our experience in the heavy haul market, focusing on this underserved space was an obvious decision."

"We designed FR8Star to provide better service to shippers by allowing them to both contract directly and share real-time information about loads," he said. "FR8Star helps each side of the transaction to make more profit while eliminating the need for a pricey middleman."

"The FR8Star platform continues to build on the fr8.guru dispatch platform launched a year ago and has been the result of a deep collaboration with our customers and our VW-MAN and Velocity Vehicle Group strategic partners," Kropp said.

Source: FR8Star

For more information, go to www.fr8star.com