

# MANUFACTURING

Production • Fabrication • Components • Supply Chain • Materials • Tooling • Machinery

## Siemens Inaugurates New Blade Factory in U.K.



Siemens' new turbine blade factory in Hull, U.K. (Courtesy: Siemens)

Siemens recently inaugurated the new rotor-blade factory for offshore wind turbines in Hull, U.K., in an event attended by the Secretary of State for Business, Energy, and Industrial Strategy Greg Clark and representatives of the local community.

The site at Alexandra Docks has been transformed in under two years from a derelict industrial wasteland to a busy high-tech manufacturing hub. Now, the state-of-the-art factory has completed the first 75-meter-long blades stored on racks on site. Shipping to the first offshore wind project Race Bank is expected early this year.

“Our new factory in Hull ... is located in one of the most significant markets for offshore wind power and will produce rotor blades for our 7- and 8-MW wind turbines,” said Michael Hannibal, CEO Offshore of Siemens Wind Power. “The new manufacturing plant is part of our efforts to establish offshore wind power as a

key pillar of a sustainable energy mix in Europe. At the same time, we are creating 1,000 attractive jobs here and thereby supporting sustainable regeneration in the Humber region.”

With its partner Associated British Ports (ABP), Siemens is investing £310 million in Hull to create a world-class center for offshore wind manufacturing, assembly, and logistics. The centerpiece of the investment, the wind-turbine blade factory, is now fully operational. The full Alexandra Dock site, including a new harbor for pre-assembly and load-out of wind-turbine components, will be fully on stream this year. Siemens had employed almost 700 people in Hull so far. Another 100 permanent staff are employed at Alexandra Dock working for Siemens' suppliers. Additional recruitment up to 1,000 people will continue as the site becomes fully operational.

Hundreds more jobs have been created during construction and in the supply chain.

The new production site has an area of 540,000 square meters, including an area reclaimed from a wet dock. The new factory itself covers 40,000 square meters and has an optimized material flow based on the Siemens Production System (SPS). Storage, supply chain, and assembly work are interconnected with modern database systems to produce 75-meter-long rotor blades for offshore wind turbines of the 7- and 8-MW class.

Offshore wind-manufacturing sites such as Hull or Cuxhaven in Germany are efficiently linked by new transport vessels and embedded in Siemens' logistics concept with the goal to leverage innovation and industrialization on the way to lowering the costs of offshore wind energy. A key element of the concept is an improved transport solution, using dual-purpose transport vessels to avoid both heavy component lifting through innovative Ro/Ro handling and cost intensive shipping of heavy components.

There is a growing market for wind turbines designed for erection off shore. Offshore wind-power plants are being built primarily in the North Sea and Baltic Sea off Europe's northern coastline. However, wind-power projects are being developed in other regions as well, such as along the East Coast of the United States and in Asia off the coast of China and Taiwan. ↗

Source: Siemens

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

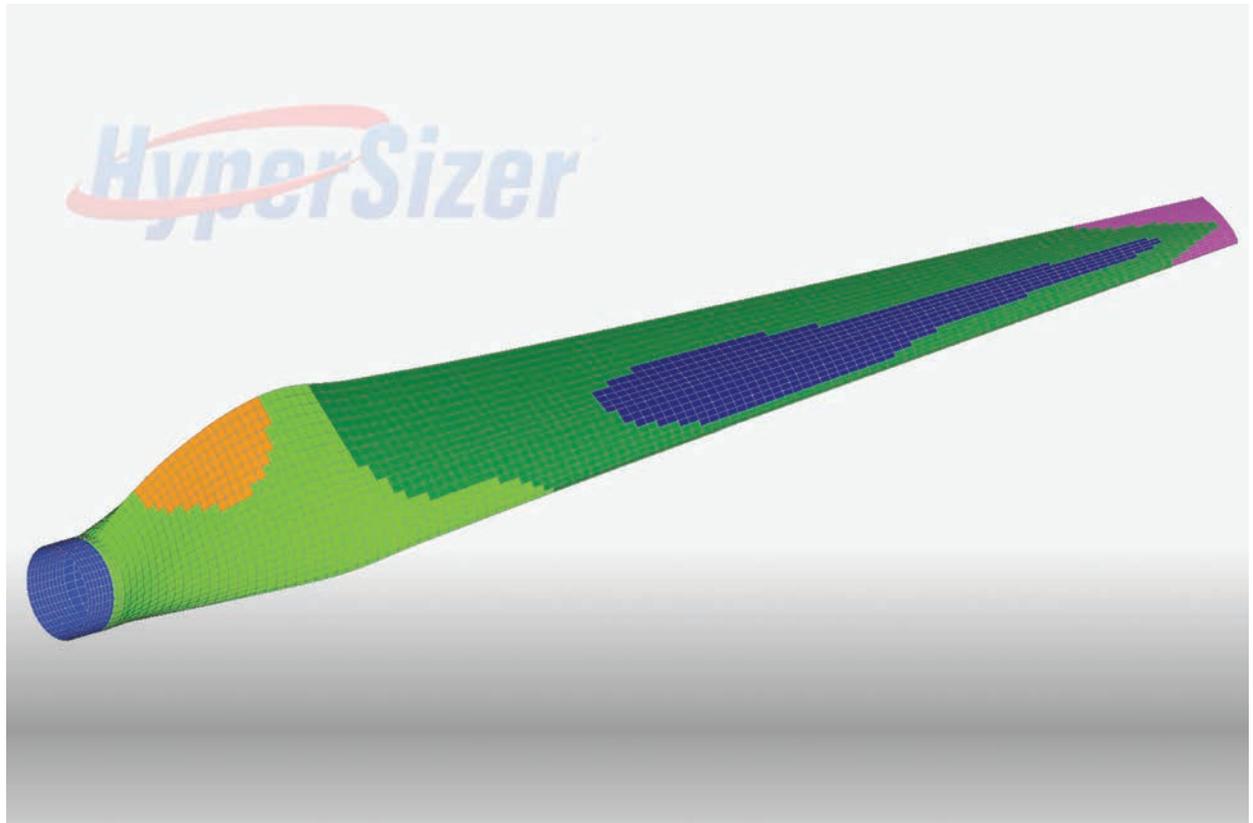
## HyperSizer Express Is Designed for the Wind-Industry Composite Engineer

Manufacturers in an ever-widening array of industries are discovering the versatility of composites for strong,

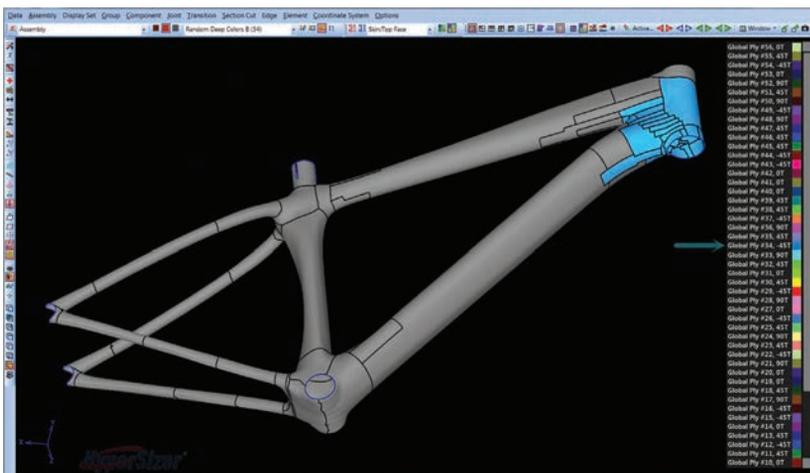
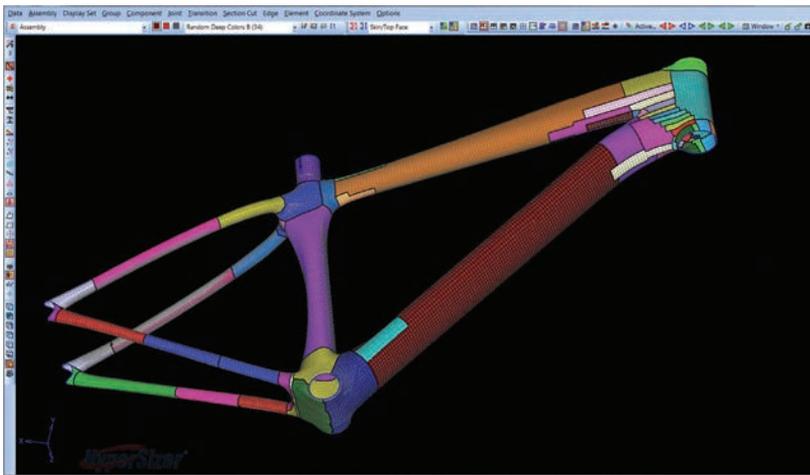
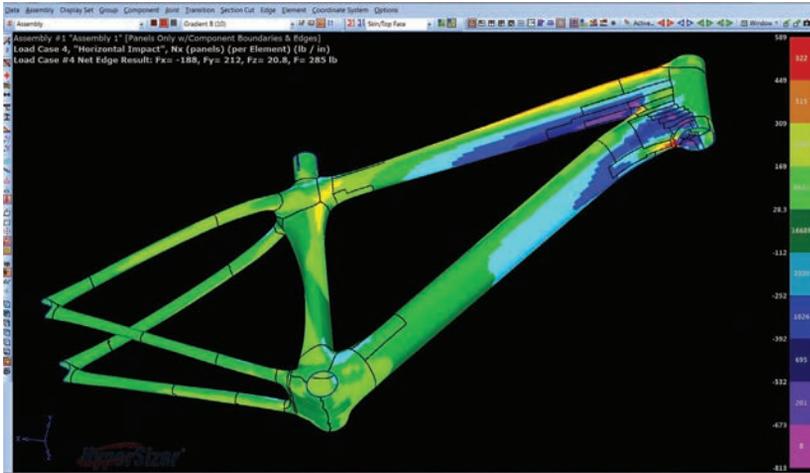
lightweight designs. Whatever the application, for the most cost-efficient and highest performance use of

these advanced materials, design optimization software is essential.

Now, NASA-born Collier Research,



HyperSizer Express optimizes the ply shapes of a composite wind blade to meet stiffness and strength requirements simultaneously. (Courtesy: Collier Research)



Screenshots of a HyperSizer Express analysis of bike-frame: (top) Import FEA stresses, (center) optimize property zones, (bottom) sequence laminates. The sequence would be similar with any composite structure, from a wind-turbine blade to a sailboat hull. (Courtesy: Collier Research)

a leader in the field of aerospace composites and metals optimization for more than 20 years, has just released HyperSizer Express, which delivers key capabilities of Collier’s high-end HyperSizer tool in a user-friendly package aimed at the composite engineer.

“Not every designer or engineer working with composites needs all the options in the professional version of our software,” said Collier founder and President Craig Collier. “But they do want the robustness of a proven, core analytical code running underneath, from the very early stages of their design process. HyperSizer Express provides all that — and it’s insanely fast and easy to use as well.”

Collier said 95 percent of users can, without a manual or instructions, import their finite element model (FEM) into Express and produce optimum composite laminates that satisfy all analyses to all load cases within 30 minutes. The automatically updated model will arrive at the minimum weight with global plies identified, layer-by-layer, producing fully manufacturable laminate designs.

“This kind of nonparametric optimization in Express is one reason it is so easy to use,” Collier said. “You don’t have to put in constraints or minimum/maximum values. You just say, ‘I want to make this out of carbon fiber,’ or ‘I want to make this out of fiberglass,’ and the software will show you the optimum solution based on your FEM.”

**TIGHTER COUPLING TO FEA OPTIMIZES PRODUCT BEHAVIOR ANALYSIS**

Express is even more tightly coupled to FEA programs, such as NAS-TRAN and Abaqus, than the Pro version is.

“Tight FEA coupling is key for the

types of mechanical response analyses an engineer would carry out with Express,” Collier said. “These are driven primarily by bending stiffness, which requires a direct interaction with FEA solutions when optimizing laminate stackings.”

“These capabilities meet the needs of a broad range of composite engineers who work with laminates as well as with honeycomb or foam cored sandwiches,” he said.

Applications include:

- Wind energy: Turbine blades
- Automotive: Doors, trunks, hoods, body panels, floor panels, body in white
- Sporting goods: Bike frames, snowboards, tennis racquets
- Medical: Orthopedic prostheses
- Industrial: Robotic end effectors
- Marine: Yachts, sailboats
- Aerospace: Seats, doors, winglets, flaps

## A DEEP AEROSPACE PEDIGREE

Collier Research’s professional version of its software was the first to be commercialized out of NASA and has most recently been used to help design the heat shield of the space program’s multipurpose crew vehicle and the Bell Helicopter/Spirit AeroSystems entry in a Department of Defense program competition.

“When using Express, you get the same exact margins of safety and the same exact material allowables as our Pro version intended for the aerospace industry, with 25 years of maturity and verification behind it,” Collier said. “But now it’s wrapped in a new interface streamlined for more efficient composite design optimization.”

Express and Pro products are both being used at large OEMs. Some

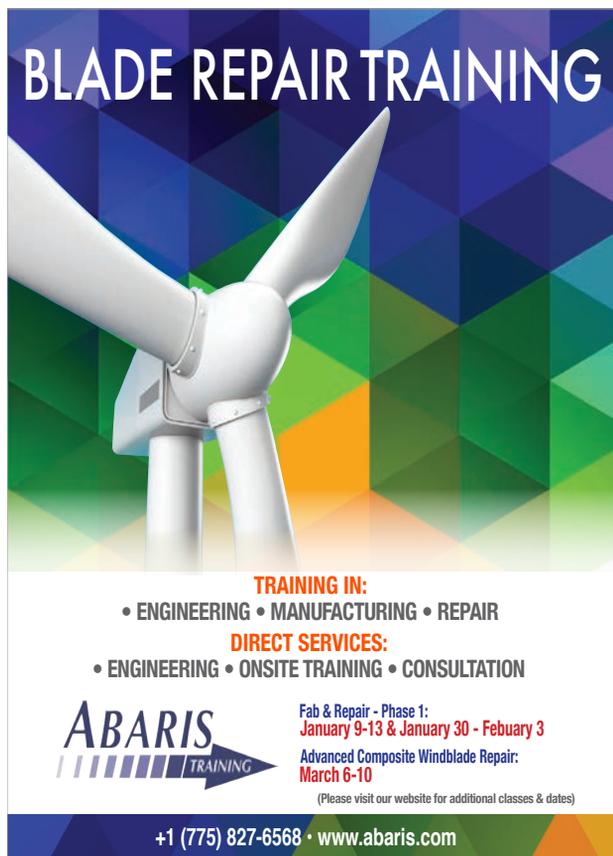
parts are completely designed, analyzed, and certified with Express, and others parts may first be done in Express, then handed off to Pro to do stiffened panels or bolted/bonded joints.

The transition from Express to Pro is seamless because the two programs share the same database.

“Should you want to go to the Pro level later, all the data you’ve entered and computed with Express will be intact so you can see everything you’ve done so far,” Collier said.

## HOW EXPRESS WORKS

The Express interface guides the user through the entire analysis process in a highly intuitive manner, step-by-step. Checkboxes on the status console confirm progress — from model import through material selection, FEA solver choice, selection of failure



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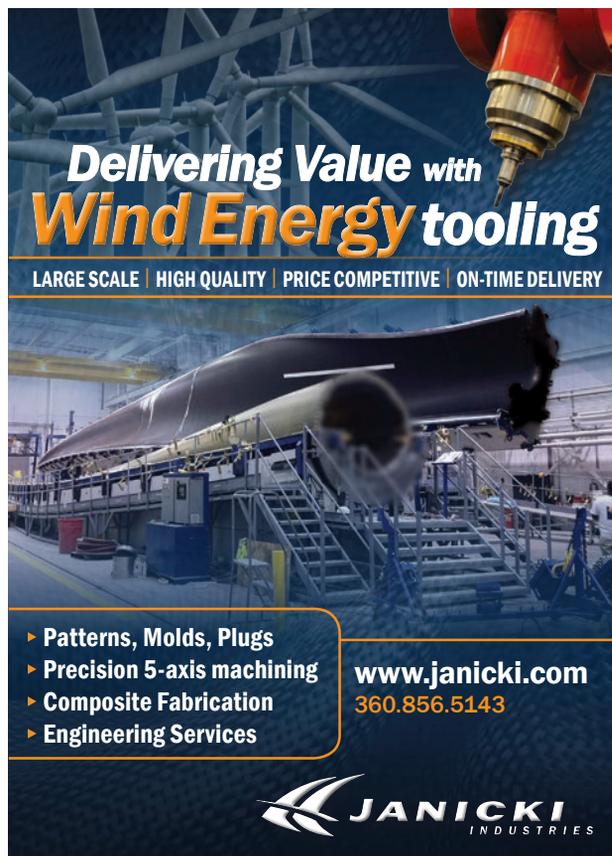
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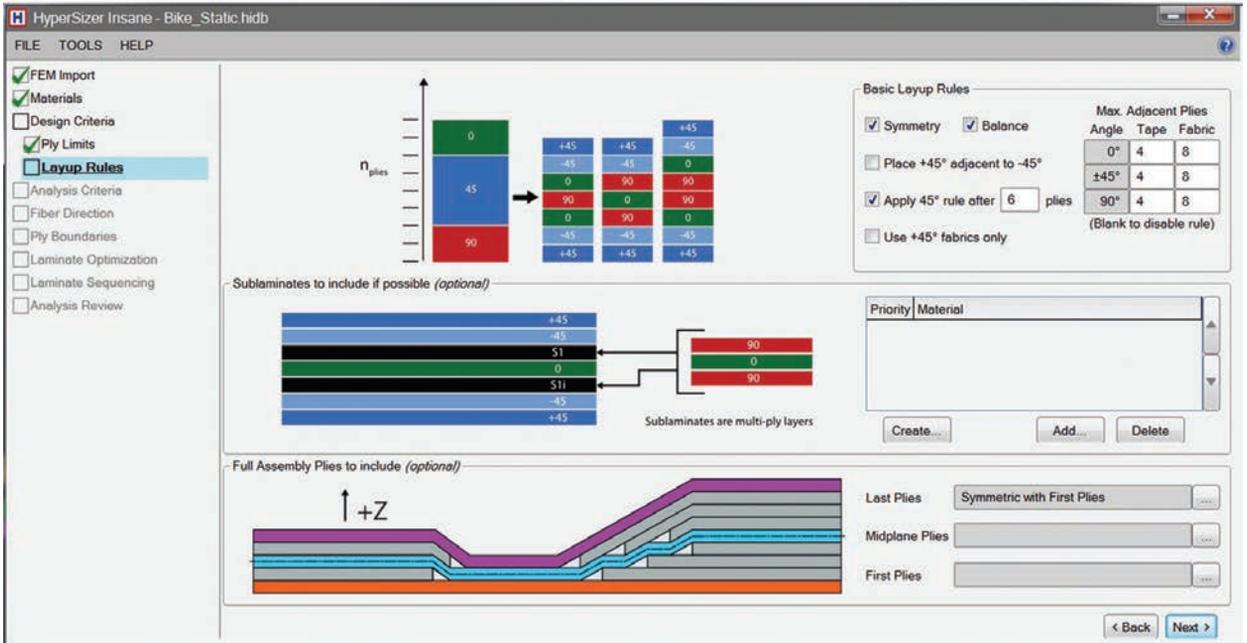
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Screenshot of HyperSizer Express composites ply layup tracking. Note interface checkmark system at upper left. (Courtesy: Collier Research)

and design criteria, laminate optimization and sequencing, and analysis results (controlling load case, failure mode, safety factors, and update of FEM with optimal laminates).

While Express is primarily aimed at the composite engineer, it does provide capabilities for metals optimization as well.

“You can use Express to determine whether composite is really the material system you want to use for your product,” Collier said. “You can quickly identify the perfor-

mance with a different metal, such as aluminum or steel.”  
 “Optimization has become an essential tenet of engineering,” Collier said. “But there are still so many people out there who are not doing any optimization at all. Our aim is to support them with a user-friendly, practical tool that works for every engineer.”

Source: Collier Research

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

## Senvion Acquires Euros as Next Step of Its Product Strategy

Senvion, a leading global manufacturer of wind turbines, has acquired 100 percent of the shares of Euros Group in an all-cash transaction, just three months after announcing the acquisition of Kenersys assets in India. Euros, located in Berlin and southern Poland, covers all areas of rotor-blade design and production as well as master plug and mold design, backed by its skilled product development team.

The fully functional blade, mold, and master plug manufacturing facilities in Żory-Warszowice and Ustron in Poland are part of the transaction. The acquisition also includes the production site staff. The facilities in southern Poland are able to produce all onshore mold and blade types, including all blades in the Senvion portfolio.

“The Euros transaction successfully builds on Senvion’s product innovation and market entry strategy,” said

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Jürgen Geissing, CEO at Senvion. “With the addition of a mold factory and an experienced mold and blade development team, Senvion will be able to reach a shorter time to market for new blades and also be able to produce additional new blades with a reduced time to market. This will enable Senvion to enter new markets with new products more quickly. This strategic move is important to further prepare for our next market entries and also to achieve cost savings and thereby contributing to lower LCOE efforts.”

“Senvion is pleased to announce this partnership with the experienced and skilled blade development team at Euros,” said Paulo Silva, senior vice president of global blades at Senvion. “This agreement will help us to benefit from the complementary skill sets and the rich and varied experience of the Euros team, in addition to expanding and complementing our own blade capacities. Together, we will be able to offer complete blade solutions in-house — from the development and the mold-making through to the final blade.”

“Euros and its employees see the acquisition by Senvion with great optimism,” said Michael Wolf, managing director of Euros group. “The obtained know-how over the past 20 years about innovative tools for rotor blade engineering for on- and offshore areas including mold design and construction as well as blade production can now be applied on a broader scale.”

To date, Senvion has produced its blades in Bremerhaven in Germany and Vagos in Portugal. With the addition of the Euros production sites in Poland, Senvion will control both the end-to-end production cycle and also expand its blade manufacturing capacity by 25 percent. ↵

Source: Senvion

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

## Vestas Wins 65 MW Order in Sweden

Long-term partner OX2 has placed an order for 18 V126-3.45 MW turbines with power-optimized mode to 3.6 MW for the Högkølen wind-power project in the Ljusdals municipality in eastern Sweden.

The Högkølen wind farm will be another in a long series of orders between Vestas and OX2 and the fourth order placed by OX2 in 2016. The cooperation between Vestas and OX2 spans more than 10 years and has yielded more than 900 MW in total wind projects across the Nordics.

“With the Högkølen wind farm, we further strengthen our long-standing partnership with Vestas as well as our market position in northern Europe as a leading developer and EPC supplier,” said Paul Stormoen, managing director

of OX2 Wind. “Högkølen will be OX2’s 36th wind power project in the Nordics”

“We are very proud that OX2 has yet again chosen our upgraded 3 MW platform for their latest project,” said Klaus Steen Mortensen, president of Vestas Northern Europe. “The more than 900 MW in wind projects across the Nordic region is the result of the close collaboration and strong track record between OX2 and Vestas.”

The order includes Vestas de-icing system as well as supply, installation, and commissioning of the turbines. Delivery is expected to begin in the second quarter of 2018. ↵

Source: Vestas

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

**ITH Boltting Technology**

Tension & Torque tools for wind turbines

- Bolt Tensioning systems
- Torque Wrench systems
- Nut Runners (Torque multipliers)

The advertisement features three images of ITH tools: a bolt tensioning system, a torque wrench, and a nut runner. Below these are two photographs showing a worker using a torque wrench on a turbine component and another worker using a nut runner. The ITH logo is prominently displayed at the top.

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