

INNOVATION

Research & Development • Design & Engineering • Forecasting & Analysis
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Nabrawind makes turbine blade transport easier

Nabrawind Modular Blade System (Nabrajoint) is a technology applicable to any wind-turbine blade (existing or new) that allows manufacturing blades in two or more parts that are transported separately and assembled on site.

Nabrajoint technology is based on a bolted connection between blade modules with conventional, controlled, and robust assembly methods.

Nabrajoint is conceived to have a simple integration in the blade, without relevant modifications in the global design. The manufacturing process of the blade is not affected either: With no significant investments in the original production line, the process may be adapted to produce modular or standard blades as demanded.

Nabrajoint breaks all the blade logistic barriers even for rotor diameters over 70 meters. It is a game-changer technology configuration for onshore wind farms located within islands or on mountainous onshore sites. Difficult access sites may become feasible with the Modular Blade.

Nabrajoint technology is conceived to be the most reliable, light, and cost-effective segmented blade solution in the market.



Nabrajoint technology is based on a bolted connection between blade modules with conventional, controlled, and robust assembly methods. (Courtesy: Nabrawind)

Nabrajoint has been highlighted by MAKE Consulting as one of “the technologies capable of revolutionizing the wind-power industry.” ↵

Source: Nabrawind

For more information, go to www.nabrawind.com

Self-erecting towers reduce assembly time and cost

Nabrawind Self Erecting Tower (Nabralift) is a new tower technology developed to break the barriers that conventional towers are facing for hub heights greater than 120 meters:

- Tower manufacturing and transportation costs increase significantly, making additional hub height increase unprofitable.
- Resonances between the tower and the turning rotor are usual on conventional steel towers, increasing the tower loads and cost.
- Massive and expensive cranes are needed, with long assembly and disassembly times that delay the wind-farm installation rate.

large towers by 30 percent and integrates a self-erection system to erect the full wind turbine (including nacelle and rotor), avoiding large and expensive cranes. Nabralift is maintenance-free, and it is conceived to be easily integrated with any wind turbine (existing or new). Wind turbine aerodynamics and mechanical/electrical design are not affected, and the stiffness of the tower avoids any resonance with rotor turning.

Additionally, Nabralift breaks all the tower logistic barriers for any hub height. It is a game-changer technology for onshore wind farms located within islands or on mountainous

Artist conception of a self-erecting tower in place. (Courtesy: Nabrawind)



Nabralift reduces the cost of extra

onshore sites. Difficult access sites may become feasible with the self-erected tower.

The first Nabralift prototype (160-meter hub height) is already in construction and will be installed during 2018 in Eslava (Spain). It will be the third highest wind-turbine tower in the world.

The tower will be tested after erection to demonstrate operative life. For this purpose, several millions of load

cycles will be applied in an innovative fatigue tower test method developed together with CENER.

Nabralift serial production and installation will start in 2018. ↘

Source: Nabrawind

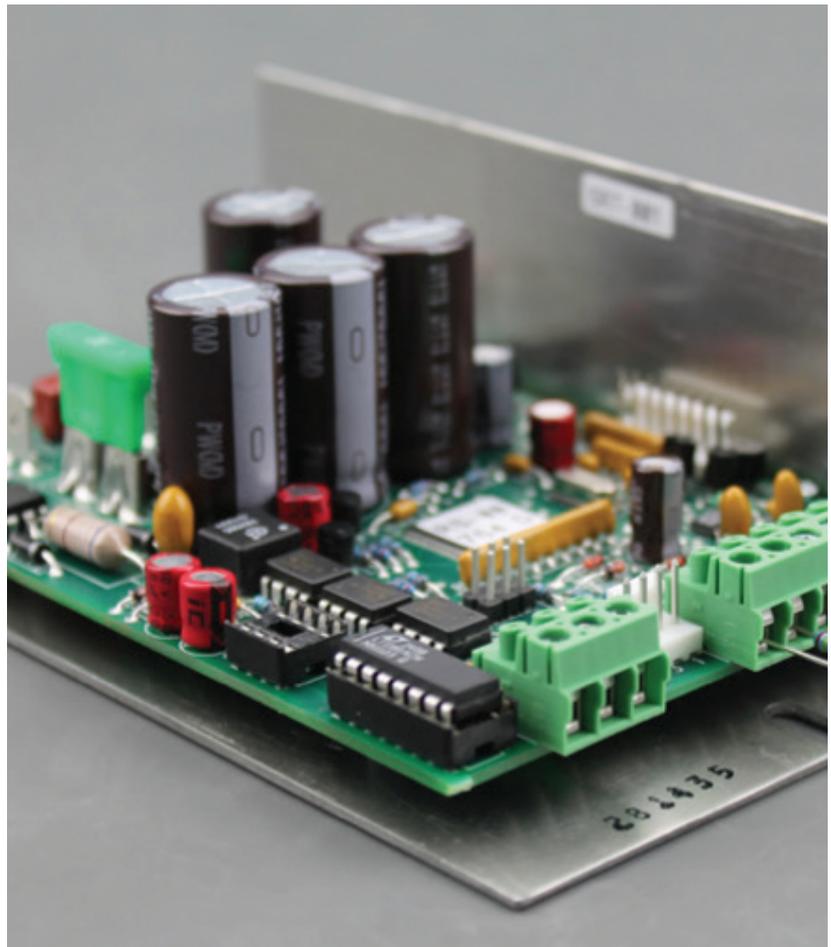
For more information, go to www.nabrawind.com

Oven Industries introduces communication port temperature controller

Oven Industries recently introduced its standard 5R7-001(RS232) and 5R7-002 (RS485) temperature controllers.

The bi-directional or unidirectional H-bridge configuration of this temperature controller creates a seamless transition between heating and cooling as it commands the thermoelectric modules. The included user-friendly PC software makes it easy for the user to change control configurations through the RS232 or RS485 interface, which has 1500VAC isolation from the electronic circuitry, virtually eliminating interference from noise or errant signals. Once the temperature controller is set up, the computer may be disconnected, and the temperature controller becomes a standalone unit, or the computer can remain connected for data acquisition. The load circuit is pulse width modulated at 2.7 KHz and delivers a load current of 0.1 to 25 amps.

Oven Industries, Inc. (OI) was founded in 1964 and specializes in the development of custom electronic temperature controllers and sensors along with extensive turn-key contract manufacturing capabilities and international sourcing. OI also carries a full line of standard products, purchasable online, including temperature controllers and sensors, power supplies, heat sinks, thermistors, and thermocouples. OI supplies precision electronic devices that serve an ar-



The bi-directional or unidirectional H-bridge configuration of this temperature controller creates a seamless transition between heating and cooling as it commands the thermoelectric modules. (Courtesy: Oven Industries)

ray of clients not limited to these industries; aerospace, automotive, biomedical, defense markets, medical and semiconductor. With a superior design engineering staff and complete production facilities, the

company is a leading technology and development company. ↘

Source: Oven Industries

For more information, go to www.ovenind.com