

Lower Cost, Easier Transportation, And Longer Blades

Triblade - a new rotor blade technology



Winfoor has developed a new type of rotor blades for large scale wind turbines. The unique technology, called Triblade, is a 3-in-1 blade that lowers the costs for rotor blades dramatically. It makes shipping easy and efficient. Blades become lighter, they can be made in modules and the production process can be automated to a level that is not possible to reach with conventional blades. Looking ahead, Triblade can also spearhead the development of next generation larger and more powerful wind turbines, by allowing for longer blades than today.

Prototype demonstration at Nordic Folkecenter

To take Triblade to the market, Winfoor has teamed up with Marstrom Composite, who is a leading composite manufacturer from Sweden. The project is co-funded by the European Commission program SME Instrument (project ID number 778553). In the project the Triblade technology has advanced further and a 22m diameter Triblade rotor has been built. The rotor was installed on a wind turbine at Nordic Folkecenter, where it has been evaluated extensively and under real conditions. The test results are good and demonstrates the validity of the technology working under real conditions and for a longer period of time.

Triblade at a glance

Triblade is a 3-in-1 blade. Three slender blades are linked together by supporting structure (bracing) to form a truss (framework). It makes it very stiff and lightweight. The three slender blades are the ones that drive the rotor. They are approximately parallel to each other. Each one has one third of the chord length (width) of a standard blade.

The supporting structure is called bracing and it runs between the blades on the diagonal and perpendicular to the blades. The blades and the bracing form triangles that together make up truss structure. Trusses is a very well-known and a common building technique that can be found in numerous applications such as bridges, cranes, roof beams etc. It makes lightweight and stiff structures. Trusses have an optimal mechanical action since its members are mainly subjected to pure tension or compression, which results in structures having high stiffness and strength.

The rotor blade market

The top priority for the wind power industry is to reduce total Cost of Energy (CoE). One of the components that influence CoE the most are the wind turbine rotor blades. They use a lot of expensive material, they are mainly produced by hand, they are made in one piece, and they are often long. Both production and shipping are challenging and come at high cost. Triblade is a game changing technology that can

- lower the total Levelized Cost Of wind Energy (LCOE) and thereby making it more attractive as an energy source,
- accelerate the transition to greater use of wind power worldwide.

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