

Wind Energy Turbine Success Attributed to Unique FRP Flexbeam



Over ninety Windtech wind turbines stand in a "windpark" in the San Gorgonio pass in Palm Springs, California. These 80 kW turbines feed the Southern California Edison grid with non-polluting, renewable energy to supplement non-renewable fossil fuels. Each turbine supplies enough energy to satisfy the needs of 15 single family homes.

The flexbeam forms the heart of the rotor system. Measuring 12 feet in length x 1.25" thick x 9" wide, this solid beam is among the largest all unidirectional, glass fiber reinforced pultrusions ever manufactured. The flexbeam supports the 20 foot long blades at each end from which the aerodynamic driving torque is derived. Not only does the flexbeam withstand the high centrifugal forces produced by the blades, but also allows important blade pitch changes to occur in order to optimize performance. This is possible through the low torsional modulus achieved with the all unidirectional fiber orientation. Its ability to be machined as well as its resistance to the extremes of windpark operating environments has ensured this pultrusion a permanent place in the wind energy industry.

Materials: E-glass fiber in modified vinyl ester resin system

Properties: Low torsional modulus, high flexural modulus, resistance to centrifugal forces and environmental extremes

Size: 1.25" x 9" x 12'

Weight: 9.5 lbs./lineal foot

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