

# **Wind Turbine Blade Effects on Turbine Design and Lifecycle Cost**

Sandia National Laboratories  
Wind Turbine Blade Workshop 2012

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# **Molded Fiber Glass Companies (MFG)**

- ***Providing Custom-Molded Composite Components to the Wind Energy Industry for 25 years***
- ***Six Manufacturing Plants in Five States that are Committed to Wind Energy Products***  
*Blades – Nacelles – Spinners*
- ***Field Service and Factory Refurbishment***  
***Wind Energy Services Company – WES***
- ***Design Support Services***  
*Material and Process Selection – Material Testing and Qualification – Design for Manufacturability and Assembly*

## **The Wind Energy Industry's Ongoing Challenge . . .**

### **Constantly lower the cost of each kilowatt-hour of electricity generated by wind power**

- *How much cost is built into a wind turbine because the blades are not ideal prime movers?*
- *How much cost is built into a wind turbine blade because of variation in materials and fabrication processes?*
- *How much can blade technology reduce the cost to operate a wind turbine for its design life?*
- *What investment in blade design, materials and manufacturing processes will provide the optimum return by reducing turbine lifecycle costs?*



2007 Indianapolis 500 Winner – Dario Franchitti



2012 Indianapolis 500 Finish . . .

- 1 - Dario Franchitti
- 2 - Scott Dixon
- 3 - Tony Kanaan

Four wheels, engine and driver – otherwise cars from these two years have very different aerodynamics.

What aero package investment over five years was worth improving the pole winner's average track speed to 226.484 from 225.817 in 2007?

**Thank you**