



The Maine Composites Alliance annual

## 2010 Maine High School Wind Blade Design Challenge

May 14<sup>th</sup>, 2010

Hosted By AEWC, University of Maine, Orono

Sponsored By Maine's North Star Alliance Initiative

**The Composites and Wind Industries are growing in Maine and represent new economic growth opportunities. The state needs to encourage a future workforce to capture these opportunities. Current Maine High School students are the workforce for the next decade. The Maine Wind Blade Challenge hopes to incorporate students' curiosity, creativity and drive to experience the world of composites and wind power development through the collaboration of linked composite educational institutions, industry and other associations.**

### **The 2010 Maine High School Wind Blade Challenge will:**

- Inspire learning through hands-on application with Math, Science and Alternative energy.
- Motivate high school students and teachers to explore the advanced use and application of composite materials in a safe and guided atmosphere.
- Provide students experience with the most modern, safe and clean composite manufacturing techniques.
- Foster the relationships between high schools and secondary educational institutes which provide composite material training/education.
- Create interaction with schools and students to learn from each other.
- Expose students to the growing Composite businesses through partnership, project development and creation of the wind blades.

### **Maine Wind Blade Challenge Organization:**

All Maine High Schools are challenged to develop teams of students with an academic advisor to design the most efficient wind blade. School teams will partner with either an educational facility or composite business to complete the infusion process.

Each team will be provided an identical kit of materials:

- 3 - 18" x 3" x 6" Polyisocyanurate Foam blocks
- Glass Cloth
- Polyester Resin (available through the composite industry partner)

The teams will research wind blade design and performance. Next, the teams will shape the provided foam blocks per the design they deem best as a result of their research. After completion of the shaping of the blades, school teams will travel to their partner composite lab. There they will work in conjunction with the lab instructors and technicians to apply the provided fiber glass cloth and infuse the projects with resin. The result will be a blade with a hard smooth shell. Teams must then finish the blades.

Maximum blade length cannot exceed 18" and final blade turbine assembly cannot exceed 42" diameter.

Teams also must design a central hub to mount the individual blades to. The hub specifications must be per the competition rules. Teams must also prepare a presentation of their research and design process.

**The Advanced Engineered Wood and Composite Center (AEWC) at the University of Maine** will create a universal testing instrument to mount all blade turbines on and will host the blade testing competition. The University will measure the power output of each blade turbine design at a set wind speed. Awards will go to the top teams which have the greatest power. There will also be awards for the most comprehensive research and design process. **Competition will take place on May 14<sup>th</sup>, 2010.**

Maine High School Wind Blade Challenge  
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