Technology Advancement in Small Wind Power

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Chief Technical Officer
WindTronics, LLC
Germany, April 2005
Germany, April 2005
US Wind Map and Classes
Class 4:
Rayleigh Distribution of 12.2 MPH (5.8 m/s)
Annual Average at a Height of 33 ft (10m)

Class 6:
Rayleigh Distribution of 14.9 MPH (6.7 m/s)
Annual Average at a Height of 33 ft (10m)
Typical Wind Farm Wind Chart

Wind Speed (mph) vs. Time
How does a wind turbine work?

1. Inflow of wind
2. Inflow of wind activates rotor (A) & blades (B)
3. Rotor & blades spin the main shaft (C) and gearbox (D), which spins the generator (G), resulting in electrical output

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The Future of Wind Technology

Traditional Wind Turbines

WindTrronics Wind Turbine

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The Future of Wind Technology: No Gears

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The Future of Wind Technology: Blade Tip Power System

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WindTronics WT6500 Power Curve

Power (W) vs. Wind Speed (mph)

- **Cut in Wind Speed**: 0 mph
- **Plate Power**:
- **Cut Off Wind Speed**: 40 mph

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Turbine Power vs. Wind Speed

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Turbine Power Curve Comparisons

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## IEC 61400 One Day Result

### IEC 61400 Data Summary

<table>
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<tr>
<th>Date</th>
<th>Period (hr)</th>
<th>Min (mph)</th>
<th>Max (mph)</th>
<th>Average (mph)</th>
<th>Max Power (W)</th>
<th>Ave. Power (W)</th>
<th>Total Energy (kWh)</th>
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<td>12/6/11</td>
<td>24</td>
<td>10</td>
<td>51</td>
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Site Assessment
Computational Fluid Dynamics Modeling

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Class 4: 12.5 mph
P=140%

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Site Assessment
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Class 4: 12.5 mph
P=68%
Birds Resting on the WindTronics Turbine!

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