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Status and Work Plan for WP5

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Meeting at DTU, DEC 3, 2013

WP5: Work Plan

WP5: wind tunnel validation

Task 5.1: Testing the designed high speed airfoils in the wind tunnel at YZU.

Task 5.2: Testing the designed wind turbine model in the wind tunnel at YZU.

Task 5.3: Comparing experimental data with CFD computations in.

The Wind Tunnel at YZU

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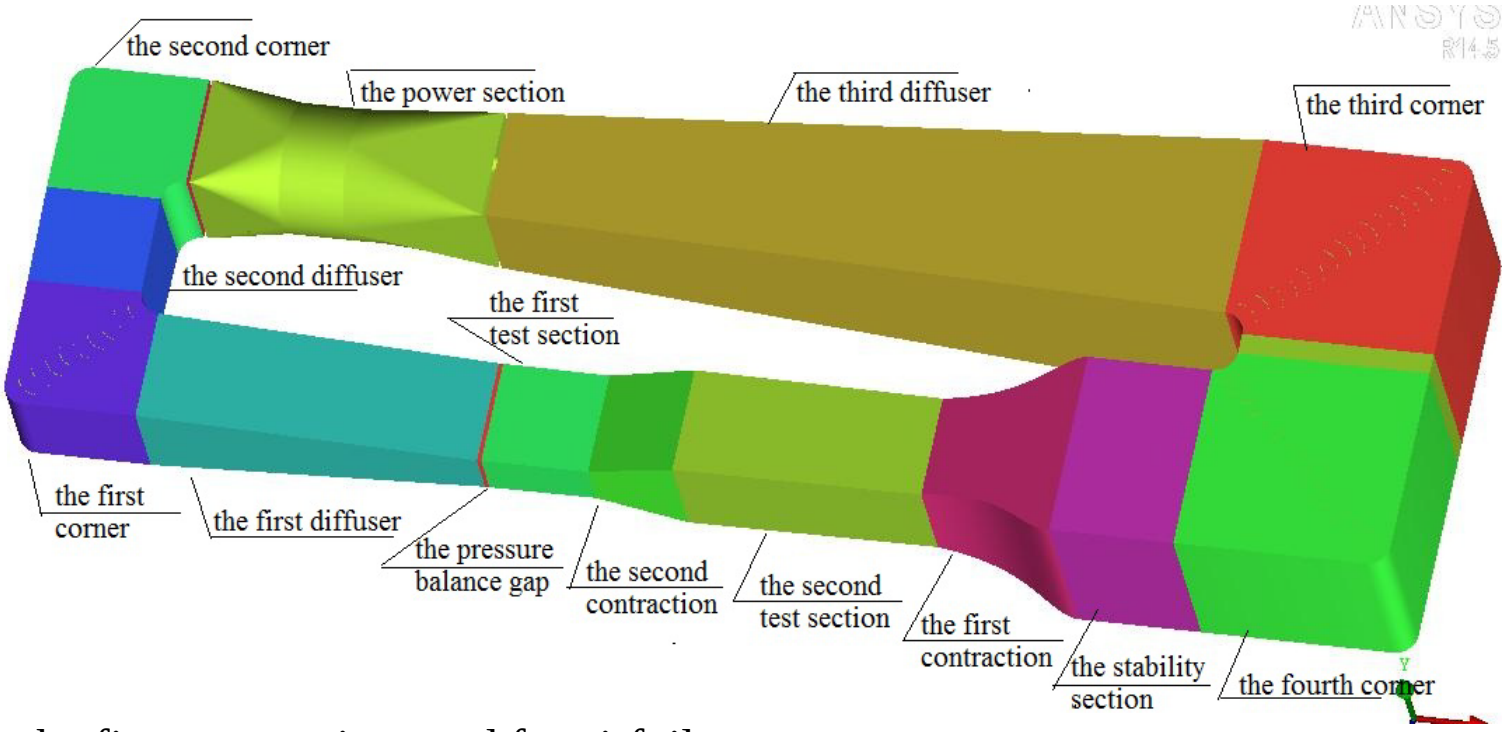

the first test section used for airfoil test :

L × W × H : 3m × 3m × 1.5m, velocity : 4~50m/s;

the second test section used for rotor test :

L × W × H : 7m × 3m × 3m, velocity : 2~25m/s.

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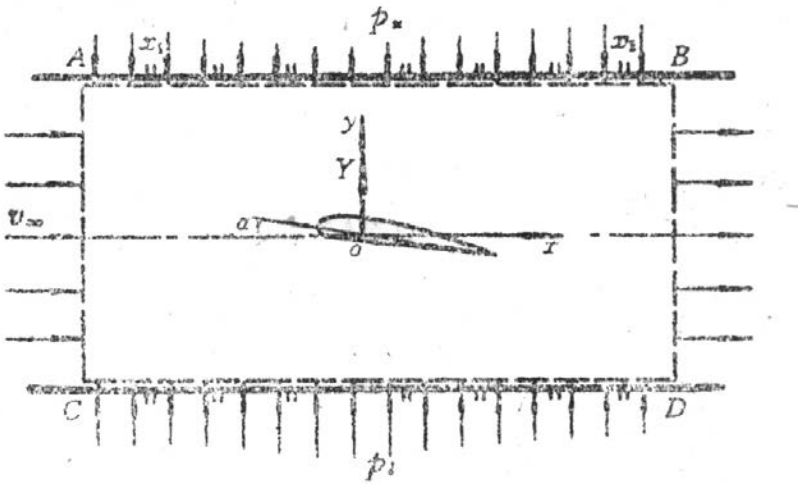
Testing the designed high speed airfoils



Flow fields will be measured by PIV;

Forces on the airfoil will be measured by three methods.

1. **Balance**
2. **Pressure distribution will be tested**
3. **Momentum method**

Testing the designed rotor model

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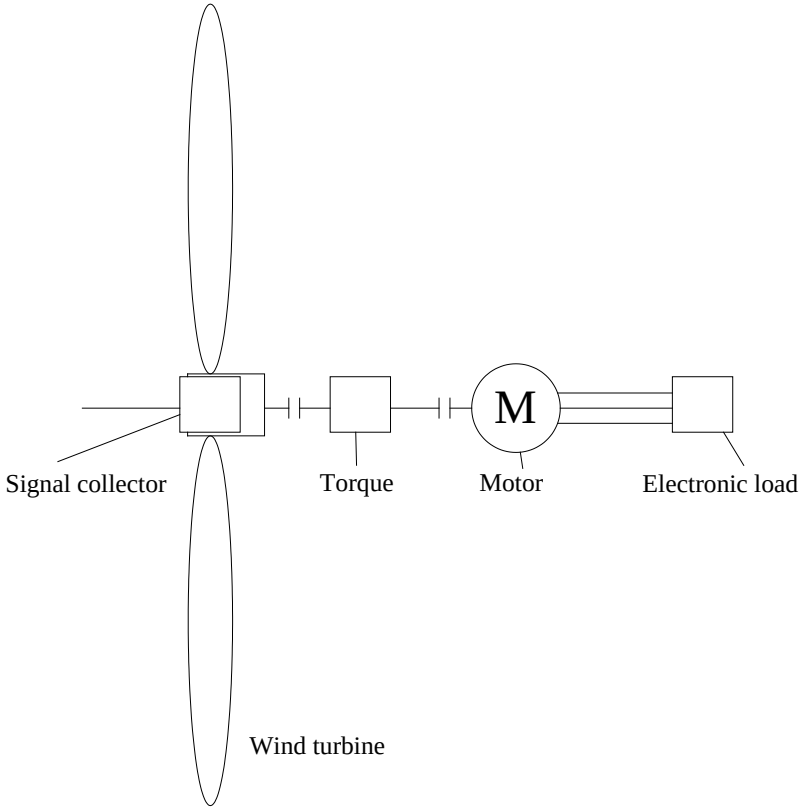

The rotor have 3 blades and diameter is 1.5m

The device will be manufactured in next May.

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Pressure measurement

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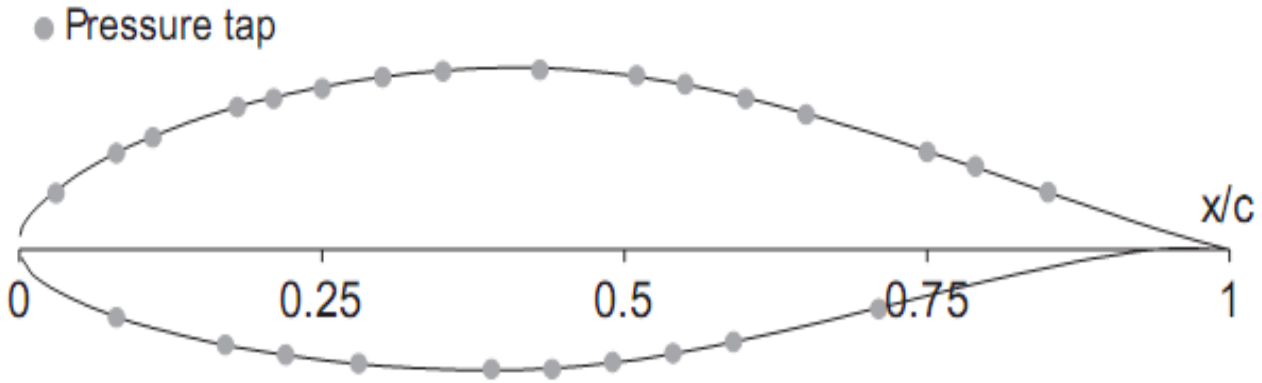

Many pressure sensors are equipped

Signal collector

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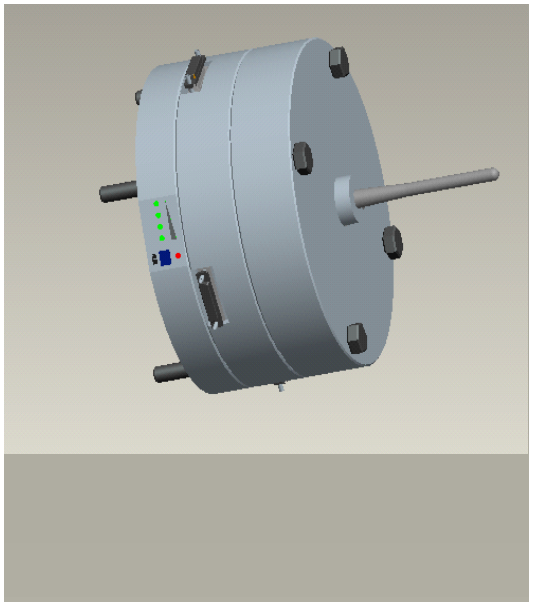
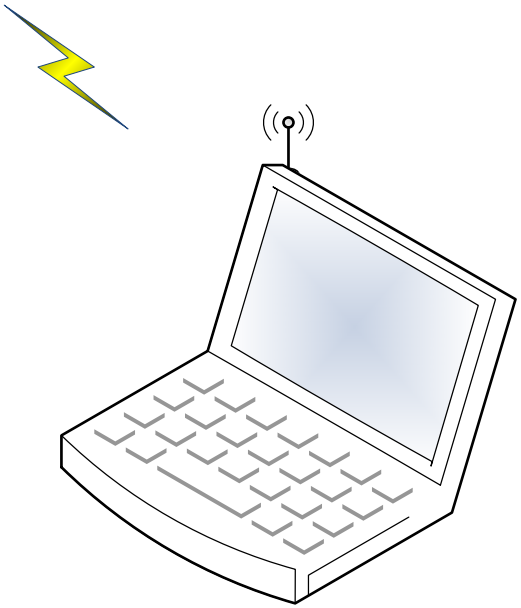


Channel: 24
Sampling frequency:10 KHz



PIV measurement

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- Three dimensional PIV is used to measure flow fields.
- Operation condition: axial-flow, yawed flow, dynamic inflow by changing rotor speed, parked.
- Measuring position: Radial traverse at different circumferential in rotor plane, axial traverse from upstream to downstream

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Thank you for your attention

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