

# Summary of Cup Anemometer Classification According to IEC61400-121 Committee Draft

Make and Type: RISØ P2546

**Description:**

Rotor diameter: 188mm  
 Cup diameter: 70mm  
 Height: 285mm  
 Signal reading: Permanent magnet with switch, two pulses per revolution

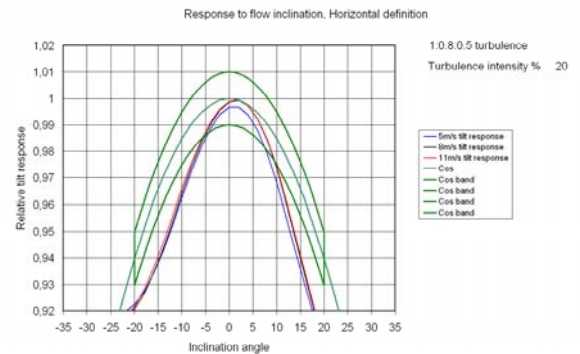
Reference reports: RISØ-R-1364(EN)ver.2, Jan 2004 and SITEPARIDEN Task 6, Report JOR3-CT98-0257-0601-DEWI07, A. Albers, 2001



## Classification result: All requirements met

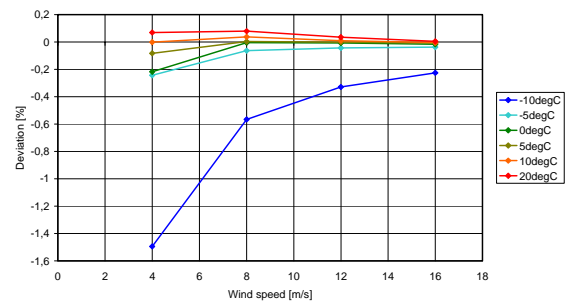
**Angular characteristics:**

Requirements:  
 Angular response within 1% of cosine for 20% turbulence  
 Result:  
 Requirements met for average flow inclination angles from -4° to 7°.



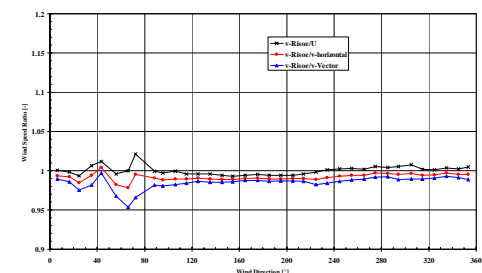
**Friction**

Requirements:  
 Deviation due to friction less than 1%  
 Result:  
 Requirement met down to -5°C



**Field comparison**

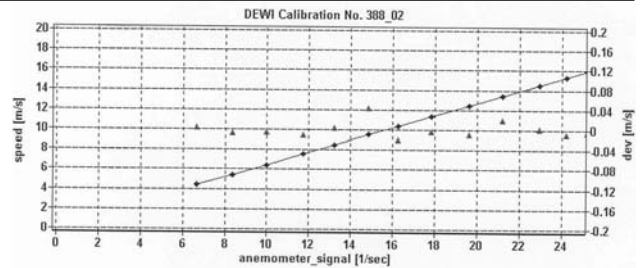
Requirements:  
 Deviation in comparison with calibrated sonic less than 1%  
 Result:  
 For non wake wind directions 110° to 350° average deviation is less than 1%



## Basic measurements of characteristics

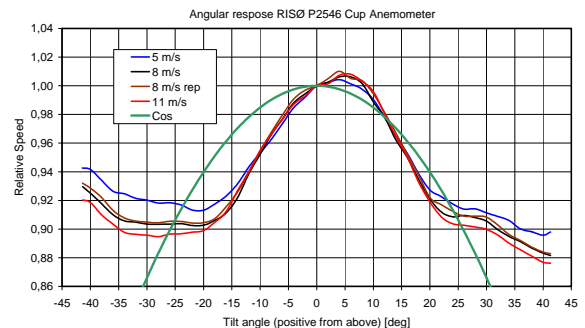
### Calibration

Calibration certificate: DEWI 22/4-2002  
 Slope: 0.62251 m  
 Offset: 0.241 m/s  
 Correlation  $r^2$ : 0.999991  
 Uncertainty: 0.08-0.14m/s



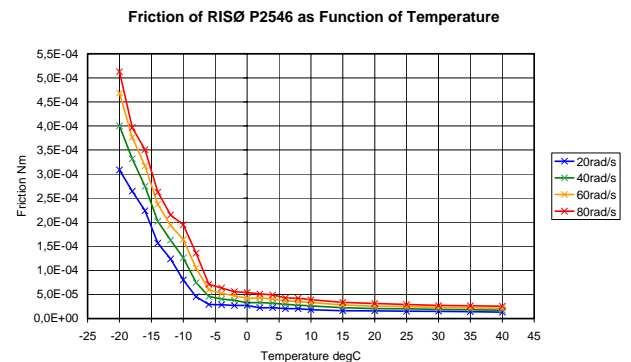
### Angular Characteristics

Wind tunnel: FOI-LT5  
 Wind speeds: 5, 8, 11m/s



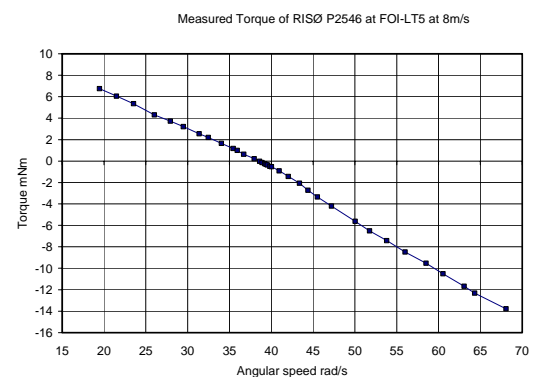
### Friction Characteristics

Method: Flywheel testing  
 Temperature range: -15°C to 40°C



### Torque Characteristics

Wind tunnel: FOI-LT5  
 Wind speed: 8m/s  
 From presented measurement torque of rotor is generalized as torque coefficient versus speed ratio



### Rotor Inertia

Method: Oscillation test  
 Inertia:  $1,01 \cdot 10^{-4} \text{ kgm}^2$