

# Summary of Cup Anemometer Classification According to CLASSCUP Classification Scheme

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 report: RISØ-R-1364(EN)ver.2, Jan 2004



## Classification Results:

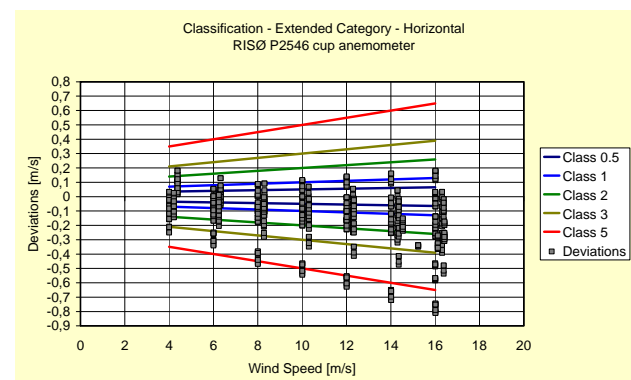
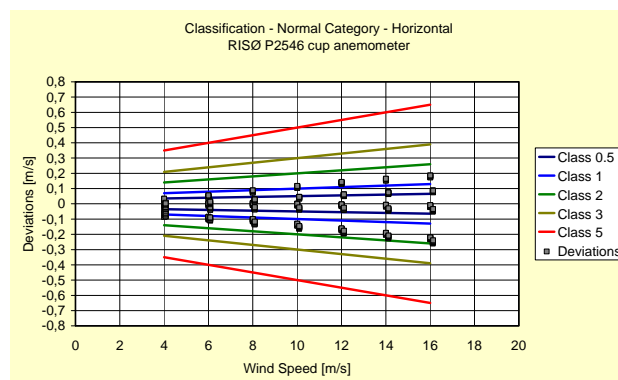
Method: CLASSCUP (Report: RISØ-R-1348(EN))

Classification is made according to the horizontal wind speed definition

Normal and extended ranges of influential parameters according to tables below

Parameter	Normal range		
	Min	Ave	Max
Wsp (10min) [m/s]	4	4-16	16
Turb.int.	0,03	0,10	0,12+0,48/V
Turbulence structure $\sigma_u/\sigma_v/\sigma_w$ .	1/0,8/0,5 (non-isotropic turbulence)		
Length scale $L_k$ [m]	100	500	2000
Air temp. [°C]	0	10	40
Air density [kg/m <sup>3</sup> ]	0,9	1,23	1,35
Slope [°]	-5	0	5
Ice, snow, rime conditions	Not included		

Parameter	Extended range		
	Min	Ave	Max
Wsp (10min) [m/s]	4	4-16	16
Turb.int.	0,03	0,10	0,12+1,13/V
Turbulence structure $\sigma_u/\sigma_v/\sigma_w$ .	1/1/1 (isotropic turbulence)		
Length scale $L_k$ [m]	100	500	2000
Air temp. [°C]	-10	10	40
Air density [kg/m <sup>3</sup> ]	0,9	1,23	1,35
Slope [°]	-15	0	15
Ice, snow, rime conditions	Excluded		



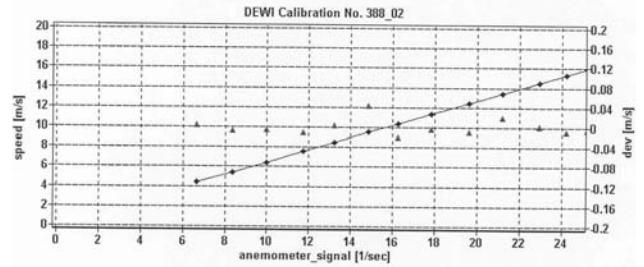
Results:

Normal category: Class 1,99 (horizontal wind speed definition)  
 Extended category: Class 6,24 (horizontal wind speed definition)

## Basic measurements of characteristics

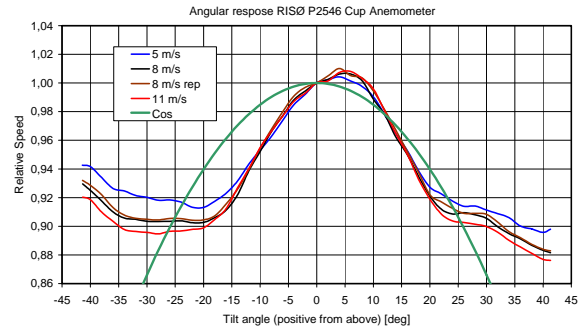
### Calibration

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



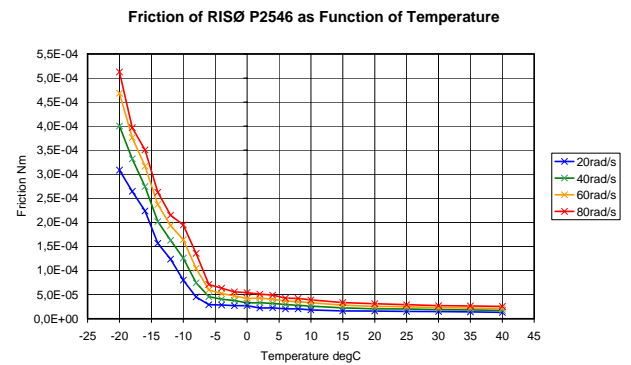
### Angular Characteristics

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



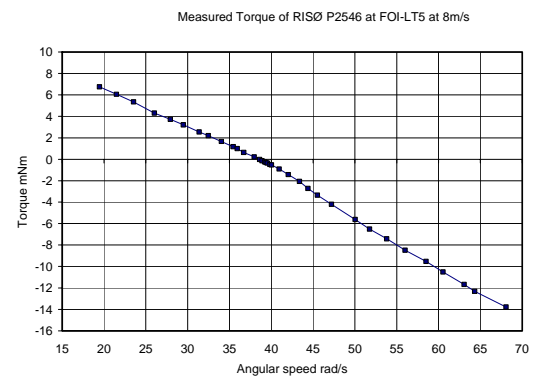
### Friction Characteristics

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