VAISALA

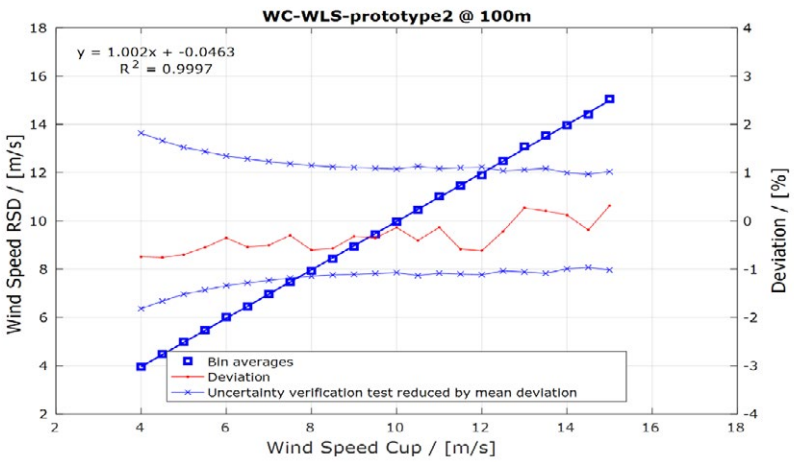
WindCube®

New WindCube®
performance verification

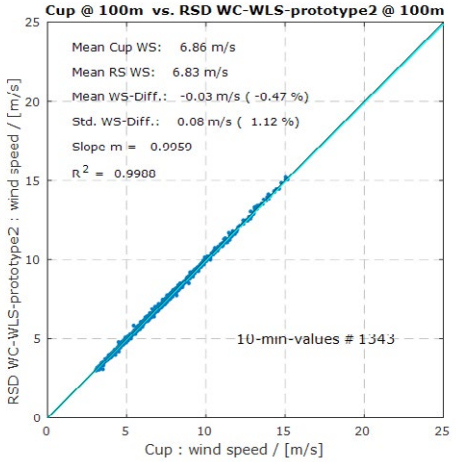
The metrology of WindCube® has been thoroughly studied since its first release in 2007 and a multitude of independent validations have been published along the way. It reached DNV's Stage 3 in 2012 and completed full IEC compliance in early 2018 with the publication of three independent classifications campaigns performed at Deutsche Windguard.

The new WindCube® is in line with these proven performances and brings further sensitivity reduction with the implementation of vector averaging.

Low uncertainty verified against IEC met mast at DNV test site



Bins averaged deviations (red line) and verification uncertainty (blue line): the WindCube deviation is better than the calibration uncertainty.



Scatter plot of deviations and linear regression (blue line): all points are aligned showing high precision.

"In terms of accuracy, precision, and data availability, the new WindCube v2.1 performance is consistent with the results achieved in more than ninety independent WindCube v2 performance verification campaigns done by DNV to date. It confirms the WindCube's suitability for energy yield assessment and power curve validations. We were also able to confirm the benefits brought by vector averaging, which reduces the wind speed measurement sensitivity of the system to turbulence intensity."

– Bastian Schmidt, Team Leader Remote Sensing, DNV

High accuracy and precision across all heights at DNV test site

Height (m)	Slope	R^2
57	-0.3%	99.8%
75	-0.7%	99.8%
100	-0.5%	99.9%

- Very low uncertainty with a maximum mean deviation of -0.67% (in line with best practice acceptance criteria
- High consistency across heights
- Very precise measurements with R2 above 99.8% at all heights

Classification: Low sensitivities to environmental parameters at all heights

Height (m)	Accuracy class	Standard uncertainty
131m	0.4%	0.23%
101m	0.7%	0.41%
82m	1.0%	0.58%
61m	0.9%	0.52%

- Results from WindCube v2 vector averaged classification campaign at Deutsche Windguard test site
- Accuracy classes of 0.4 to 1.0 across all heights up to 131m

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