



# Blade Pitch Angle Inspection Report

**WTG: EX-XXX**

**WIND FARM:**

**Parc éolien d'XXXXXX,  
(Ardennes, France)**

**Measurement date : 10/04/2017**

ALPHA **WIND**

*Société par Actions Simplifiée au capital de 1000 euros*

*SIREN 507 735 199 RCS Toulouse*

*25 Ter rue des chênes, 31830 Plaisance du touch - France*



alpha wind

## Project data

**Client:** XXXX **Report number:**  
 Operator: XXXX Project title: XXXXX  
 Location of WTG: XXXX Order number:  
 GPS: Contractor: ALPHA WIND  
 WTG number: XXXXX

## WTG data

**Manufacturer:** XXXXX **Power [kW]:** 2000  
 WTG model: XXXXX Rotor Ø [m]: XXX  
 Number of blades: 3 Hub height [m]: 100  
 Blade type: chord(root)[mm]: 3900  
 Blade marking: Blade 1 opposite of the hub hatch chord(tip)[mm]: 900

## Measuring conditions

**Measurement system:** ROMEG-M 20 G **Serial-number:** Root :2222654  
 Tip : 2222634  
 Weather: Slightly Cloudy Measure. type: Ground front  
 Wind [m/s]: 9 Measure. option: 1  
 Temperature [°C]: 12 Technican: LJO  
 Revolutions [r/min] 13 Date : 10/04/2017  
 Comment:

## Results

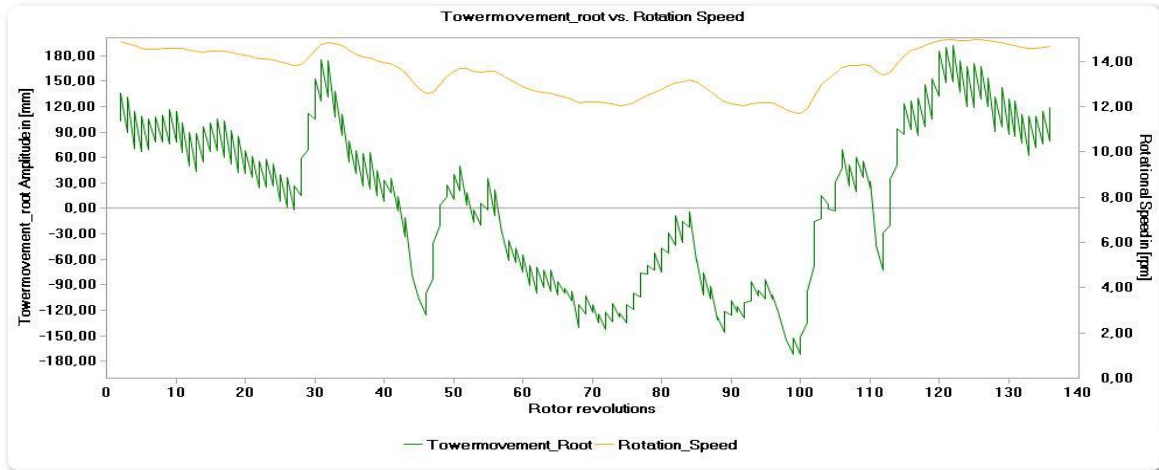
Initial	Blade 1	Blade 2	Blade 3	Difference
Root[°]	0,07	0,59	-0,66	1,25
Tip[°]	0,15	0,66	-0,81	1,47
Twist[°]	0,08	0,07	-0,15	
Half Twist[°]	0,08	0,05	-0,10	0,18
Sharing(°)	0,09	-0,26	0,18	

**Correction recommended:** The pitch difference of 1,25° is higher than the 0,6° recommended by GL\*. The tower oscillation graph presents some abnormal high frequency oscillations (50mm amplitude) compared to the same wind turbine with correct pitch angle.

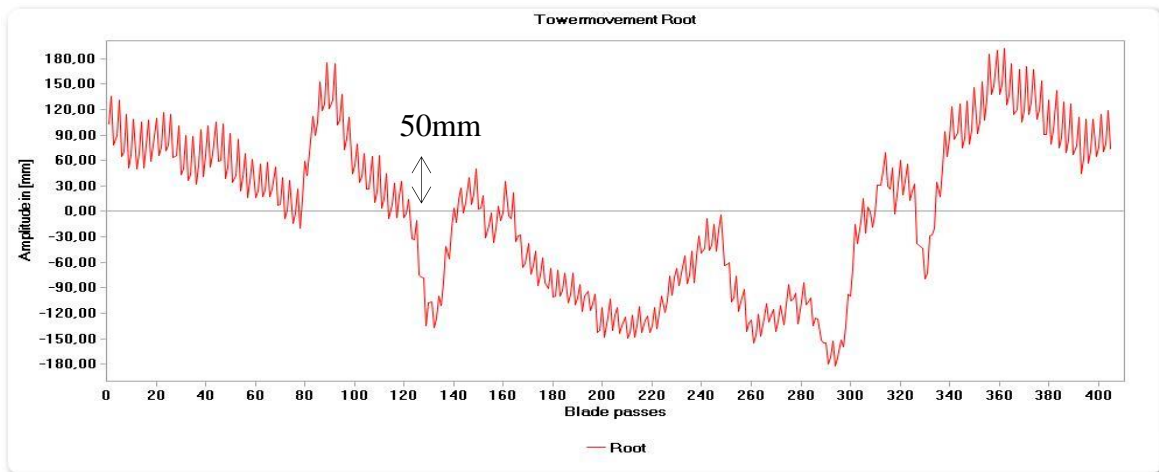
Evaluation of results see page 3

\* Limit for aerodynamic asymmetry please see Directive Germanischer Lloyd 2010 Section 4.3.4.1.

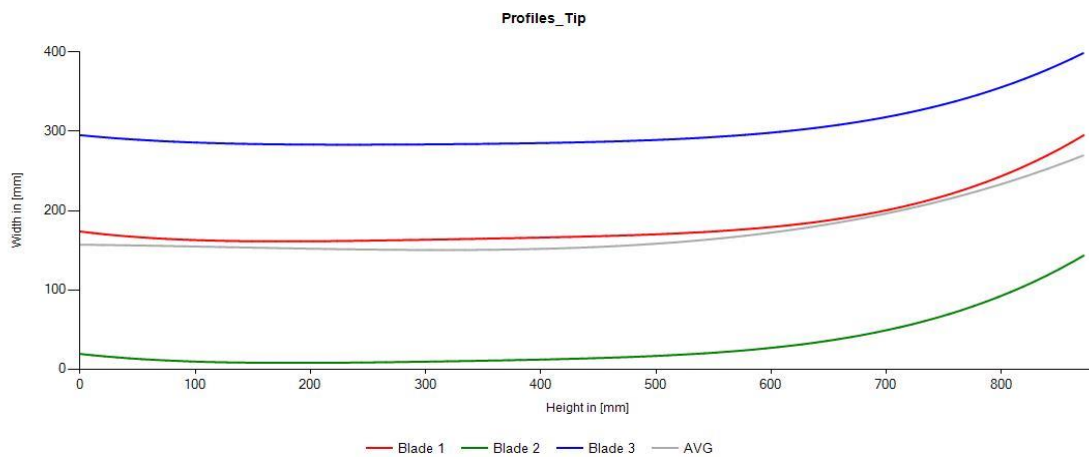
Towermovement\_root vs. Rotation Speed



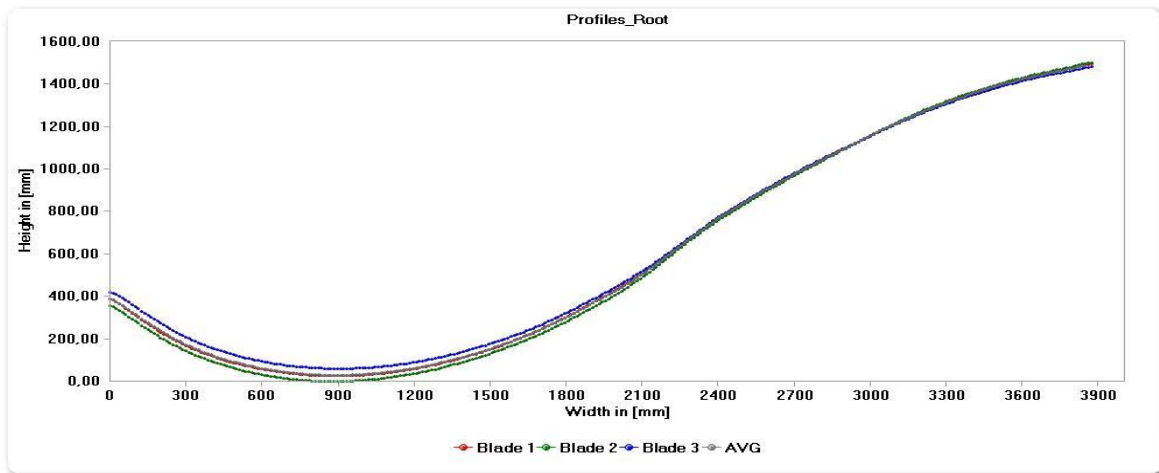
Towermovement Root



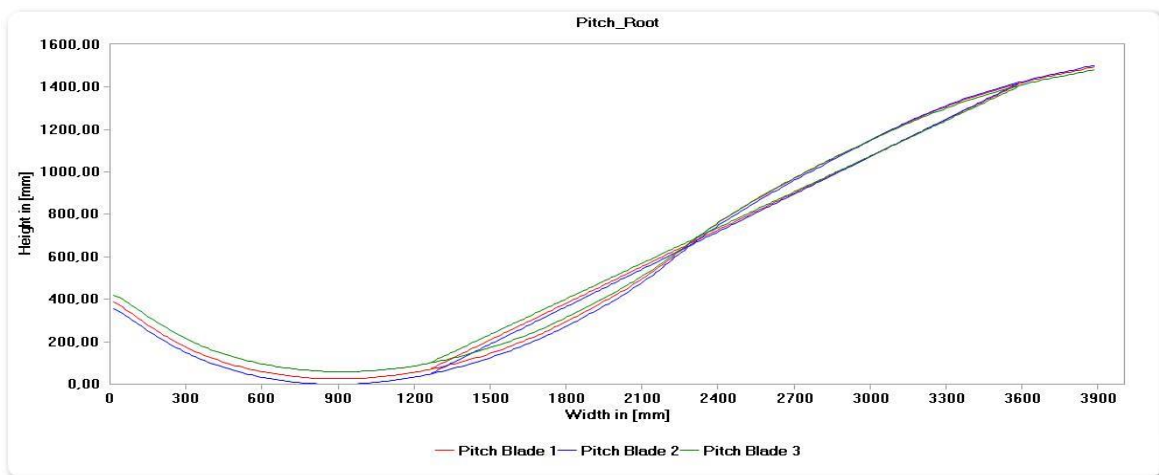
Profiles\_Tip



Profiles\_Root



Pitch\_Root



- The protocol is prepared electronically and valid without signature -

Legend of defects	
	<b>Severe defect</b> requiring to stop the turbine and to repair it immediately.
	<b>Moderate defect</b> requiring to adjust the turbine within 1 to 3 months.
	<b>Minor defect</b> needing a regular control in time.
	No defect noticed
	Suggestion, observation, for information or axis of possible improvement.
	Not inspected (too high or too low wind speed * / Topography did not allow the control ** / Rain ***).