



NABL

SCOPE OF ACCREDITATION

Laboratory	Wind Turbine Test Station, National Institute of Wind Energy, Kayathar Devarkulam Road, Kolipatti Taluk, Kayathar, Tuticorin, Tamil Nadu		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	03.02.2015
Certificate Number	T-1145	Valid Until	02.02.2017
Last Amended on	-	Page	1 of 1

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
1.	Wind turbine	Power performance measurement (PPM) Wind speed (Hub height) Wind speed (Reference height) Wind direction Relative humidity Air temperature Air pressure Rotor speed (Generator speed) Pitch angle Rain status (on/off) Active power Reactive power Grid frequency Generator status (on/off) Brake status (on/off)	IEC 61400-12: 1, Year 2005-12	0 to 70 m/s; 0 to 113 Hz 0 to 70 m/s; 0 to 113 Hz 0° to 360° mechanical angle (vector type) 0.8 to 100%RH (-)39.2°C to 60°C 600 hPa to 1060 hPa 0 to 3000 RPM (-)6 ° to 90 ° Status 1 or 0 Logic P (-)1250 to 1250 W (430 V type) P (-)2000 to 2000 W (660 V type) Q (-)1250 to 1250 VAR (430 V type) Q (-)2000 to 2000 VAR (660 V type) 45 Hz to 55 Hz Status 1 or 0 Logic Status 1 or 0 Logic

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Laboratory	Wind Turbine Test Station, National Institute of Wind Energy, Kayathar Devarkulam Road, Kolipatti Taluk, Kayathar, Tuticorin, Tamil Nadu		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	03.02.2015
Certificate Number	T-1144	Valid Until	02.02.2017
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
1.	Wind turbine	Yaw efficiency test (YET)	Danish recommendations for basic tests Year 1997 (guiding document) IEC 61400: 1, Year 2005-08	0 to 70 m/s; 0 to 113 Hz
		Wind speed (Hub height)		0 to 70 m/s; 0 to 113 Hz
		Wind speed (Reference height)		0 to 70 m/s; 0 to 113 Hz
		Wind direction		0° to 360° mechanical angle (vector type)
		Yaw direction		2° to 346°
		Safety and function testing (SFT)	IEC 61400: 1, Year 2005-08 IEC TS 61400: 13, Year 2001-06	
		Wind speed (Hub height)	Danish recommendations for basic tests Year 1997 (guiding document)	0 to 70 m/s; 0 to 113 Hz
		Wind direction		0° to 360° mechanical angle (vector type)
		Rotor speed (Generator speed)		0 to 3000 RPM
		Rotor azimuth position		0° to 360°
		Yaw direction		2° to 346°
		Edgewise bending moment		0 to 6000 kNm
		Flapwise bending moment		0 to 6000 kNm
		Shaft torsion		0 to 6000 kNm


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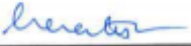
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Discipline	Mechanical Testing	Issue Date	03.02.2015
Certificate Number	T-1144	Valid Until	02.02.2017
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Wind turbine	Active power	IEC 61400: 1, Year 2005-08 IEC TS 61400: 13, Year 2001-06 Danish recommendations for basic tests Year 1997 (guiding document)	P (-)1250 to 1250 W (430 V type) P(-)2000 to 2000 W (660 V type)
		Reactive power		Q (-)1250 to 1250 VAR (430 V type) Q (-)2000 to 2000 VAR (660 V type)
		Grid frequency		45 Hz to 55 Hz
		Generator status (on/off)		Status 1 or 0 Logic
		Brake status (on/off)		Status 1 or 0 Logic
		Load measurements (LM)		
		Wind speed (Hub height)	IEC TS 61400: 13, Year 2001-06	0 to 70 m/s; 0 to 113 Hz
		Wind speed (Reference height)		0 to 70 m/s; 0 to 113 Hz
		Wind direction		0° to 360° mechanical angle (vector type)
		Relative humidity		0.8 to 100 % RH
		Air temperature		-39.2 °C to 60 °C
		Air pressure		600 hPa to 1060 hPa
		Rain status (on/off)		Status 1 or 0 Logic


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Accreditation Standard ISO/IEC 17025: 2005

Discipline Mechanical Testing **Issue Date** 03.02.2015


Certificate Number T-1144 **Valid Until** 02.02.2017

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Wind Turbine	Rotor speed (Generator speed)	IEC TS 61400: 13, Year 2001-06	0 to 3000 RPM
		Rotor azimuth position		0 to 360 deg
		Yaw direction		2 ° to 346 °
		Active power		P (-)1250 to 1250 W (430 V type) P(-)2000 to 2000 W (660 V type)
		Grid frequency		45 Hz to 55 Hz
		Generator status (on/off)		Status 1 or 0 Logic
		Brake status (on/off)		Status 1 or 0 Logic
		Nacelle acceleration		-54.49 to 54.49 m/sec ²
		Edgewise bending moment		0 to 6000 kNm
		Flapwise bending moment		0 to 6000 kNm
		Shaft bending moments		0 to 6000 kNm
		Shaft torsion		0 to 6000 kNm
		Tower top bending moment		0 to 20000 kNm
		Tower top torsion (kNm)		0 to 20000 kNm

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