

**Blade**

Inspection Report

#SITE# I

Turbine #TURBINENO#

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# **Introduction**

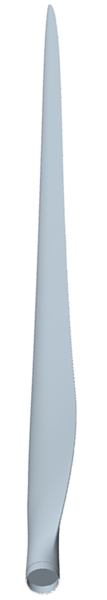
On #CREATED# blade inspection was performed on turbine no. #TURBINENO# installed in #SITE# I wind farm.

The inspection has been performed from ground with scope and camera.

The aim of this report is to detail the results of the inspection activities held at wind turbine #TURBINENO#, provide assessment of the damages, repair solutions and recommendations, if any.

|  |  |
| --- | --- |
| Site | #SITE# I |
| Wind Turbine Type | #WTGNO# |
| Wind Turbine Number | #TURBINENO# |
| Wind Turbine Local ID | #WTGLOCALID# |
| Blade Rotor | #BLADEROTOR# |
| Inspection Date (dd.mm.yyyy) | #CREATED# |
| Report Creator | #CREATEDBY# |

# **Naming and Definitions**



|  |  |
| --- | --- |
| Shell | The function is to give an aerodynamic profile. |
| Laminate Sandwich | The function of the sandwich – laminate/core material/laminate - is to give the shell stiffness in unsupported areas between spar and TE/LE. A sandwich construction provides geometrical stability to the shape of the blade. |
| LW | Leeward - also known as suction side. LW shell is upper side during production. This side faces towards the tower. |
| WW | Windward - also known as pressure side. WW shell is under side during production. This side is facing the wind. |
| LE | The leading edge of the blade, i.e. the “nose” that is heading into the wind during operation. |
| TE | The trailing edge of the blade is the thin edge where the airflow leaves the blade during operation. |
| PPT | Pre-Preg Technology. This term is used for blades where the main structure is the spar |
| Spar | This is the main structural component of PPT blades. It is positioned between the shells and resists loads and forces. |
| SST | Structural Shell Technology. This term is used for blades where the main structure is in the shells. |
| Web | It is positioned between the shells and has to transfer loads and forces. |
| Flap Wise | The flap wise load is the motion of the blade caused by the wind. These loads are normal to the WW and LW shell surfaces of the blade |
| Edge Wise | The edge wise loads are caused by a combination of the rotation of the rotor and the mass of the blade itself. Edgewise loads are in the direction from LE to TE or vice versa. |
| SMT | Solid Metal Tip is a part of lightning protection. |
| AAOs | Aerodynamic Add-Ons |
| GF | Gurney Flap is an Add-On used for production increase. |
| TVG | Tip Vortex Generator is an Add-On for noise reduction |
| RVG | Root Vortex Generator is an Add-On used for production increase. |
| STE | Serrated Trailing Edge is an Add-On for noise reduction |

# **Overview**

Blades have been inspected according to the relevant work instructions and any damage detected has been classified in accordance with *Condition Monitoring of Vestas Blades*. Based on this guideline, detected damages are categorized in accordance with the following categories:

Damage Categorization

|  |  |  |  |
| --- | --- | --- | --- |
| Category | Description | Damage Description | Recommended Action |
| 1 | Cosmetic | No intervention required | No Action |
| 2 | Similar to cosmetic | Intervention is done only if there are other damages on the blade | No Action  Monitor at next inspection |
| 3 | Not Serious | Intervention is done during planned  Inspection of the wind turbine. | Repair within 6 months  Monitor every 3 months |
| 4 | Serious | Blade must be repaired within 3 months or during next planned wind turbine inspection, whichever occurs first. | Repair within 3 months  Monitor monthly |
| 5 | Very Serious | Immediate intervention required to prevent further damage to blade, wind turbine or surrounding area. | Turbine Pause recommended  Immediate repair |

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| A modified time frame may be defined by blade specialist. |

Blade #BLSL1#

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Damage Types | Radius | Blade Edge | Category |
| 1 | #BLSL1DamageType1# | #BLSL1Radius1# | #BLSL1BladeEdge1# |  |
| 2 | #BLSL1DamageType2# | #BLSL1Radius2# | #BLSL1BladeEdge2# |  |
| 3 | #BLSL1DamageType3# | #BLSL1Radius3# | #BLSL1BladeEdge3# |  |
|  | Overall Condition Of The Blade |  |  | **#BLSL1Cate1#** |

Blade #BLSL2#

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Damage Types | Radius | Blade Edge | Category |
| 1 | #BLSL2DamageType1# | #BLSL2Radius1# | #BLSL2BladeEdge1# |  |
| 2 | #BLSL2DamageType2# | #BLSL2Radius2# | #BLSL2BladeEdge2# |  |
| 3 | #BLSL2DamageType3# | #BLSL2Radius3# | #BLSL2BladeEdge3# |  |
|  | Overall Condition Of The Blade |  |  | **#**BLSL2Cate1**#** |

Blade #BLSL3#

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Damage Types | Radius | Blade Edge | Category |
| 1 | #BLSL3DamageType1# | #BLSL3Radius1# | #BLSL3BladeEdge1# |  |
| 2 | #BLSL3DamageType2# | #BLSL3Radius2# | #BLSL3BladeEdge2# |  |
| 3 | #BLSL3DamageType3# | #BLSL3Radius3# | #BLSL3BladeEdge3# |  |
|  | Overall Condition Of The Blade |  |  | **#**BLSL3Cate1**#** |

# **Blade Inspection**

## Blade #BLSL1#

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| --- |
| #TABLE1# |

## Blade #BLSL2#

|  |
| --- |
| #TABLE2# |

## Blade #BLSL3#

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| #TABLE3# |

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