

**BLADEDEFENCE®**

# **Rotor blade repairs in cold climate using advanced UV curing resin system**

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# Agenda

- Bladefence in short
- Blades are maintenance free, aren't they?!
- Damage mechanisms
- Repair methods
- Cold climate repairs
- Summary

# Bladefence in short

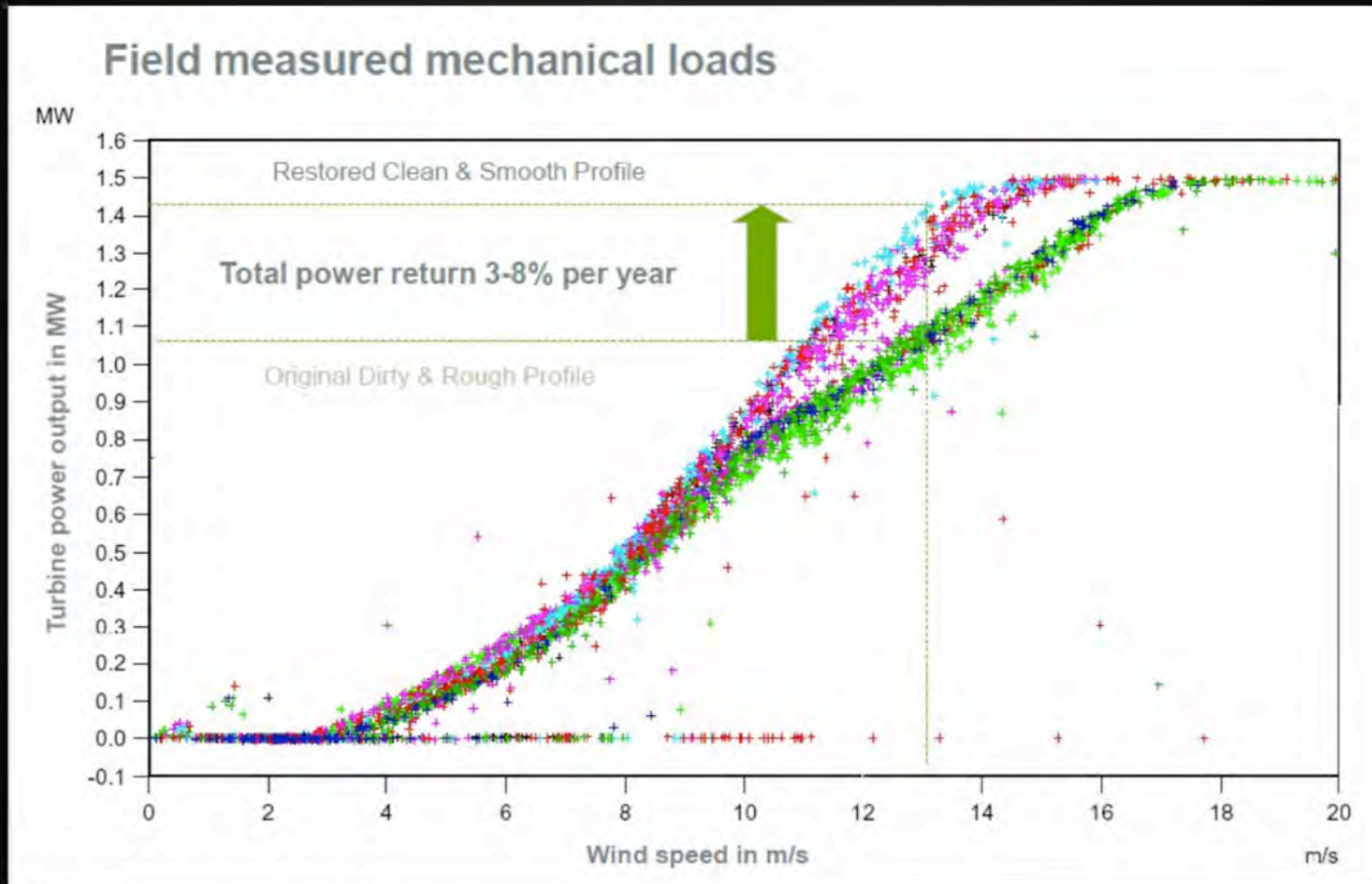
- Established in January 2011
- History in wind industry from sister companies Pekkaniska and Janneniska
- Our mission is to be the leading provider of wind turbine blade inspection, maintenance, repair and life cycle management services in Northern Europe.

# Great Expectations

“Consider that a modern wind turbine operates for about 13 years in a design life of 20 and is almost always unattended. A motor vehicle, by comparison, is manned, frequently maintained and its design life of about 150,000 kilometers is equivalent to just 4 months of continuous operation.”

European Wind Energy Assoc., Wind Energy - The Facts, 2005 (Ribrant, 2006)

# International research



Source: LM Glass Fiber, 2011

# Damage mechanisms



Source: <http://www.lightningdiversion.com/>



Source: <http://www.lr-online.de>



Source: Bladefence



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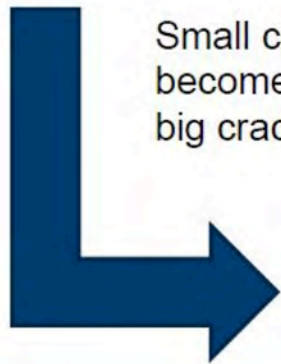


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# Damage progression



Small cracks  
become  
big cracks



Lähde: LM Glass Fiber, 2011



Information and  
knowledge is  
**the key**  
to prevent smaller  
issues becoming big  
ones.



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# Repair methods

- Traditional methods usually require an ambient temperature of +15 or more and controlled humidity.
- Can be messy and measurements inaccurate
- The curing times are measured in hours
- Work season is limited to summer months



# Cold climate repairs

- Modified epoxy based resin system with UV cure
- Mono-component resin and prepreg fabrics
- GL certified
- Works in +5 temperature and up to 95% humidity
- Cure in minutes using UVA light



# Cold climate repairs



# Summary



Regular inspections



Early repairs



..even in cold climate

Thank you!

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