

LM SERRATIONS FOR WIND TURBINE NOISE REDUCTION

Windergy 2017

EXHIBITION & CONFERENCE

25-27 APRIL 2017

THE ASHOK | NEW DELHI

THE POWER
TO DELIVER

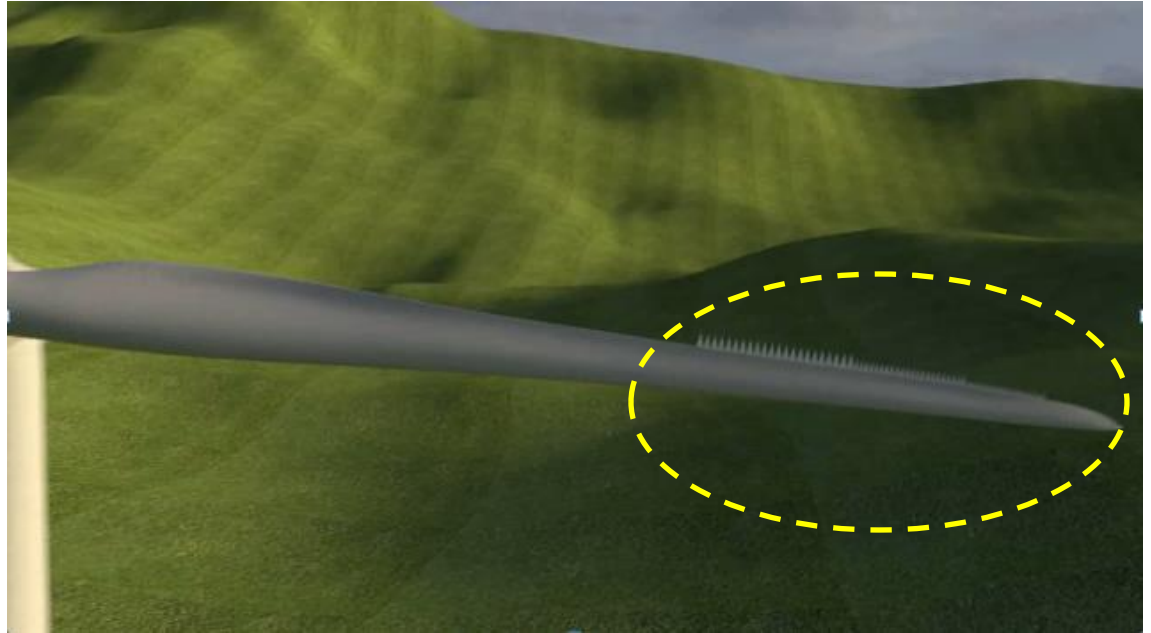
By
Harshal Patankar, Ashish Singh, Carlos Arce
León and Jesper Madsen

lmwindpower.com

LM WIND
POWER

Serrations for wind turbine noise reduction

- » More and more onshore developments are becoming constrained by heavy noise regulations.
- » This leads to fewer turbines per park, or the implementation of expensive curtailment schemes.
- » LM serrations reduce the noise by at least 2 dB(A).



Meeting Conflicting Requirements

Minimum 2 dB(A) noise reduction despite all restrictions

Annual energy production (AEP)

Loads

Reliability

Safety

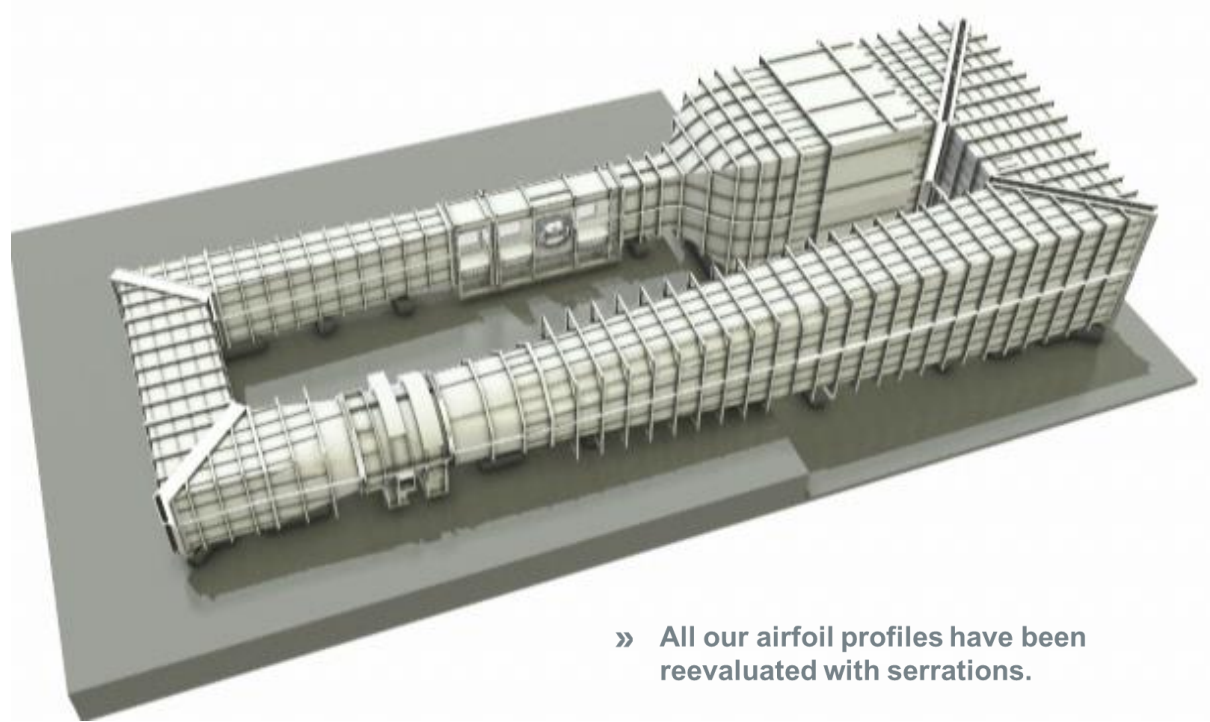
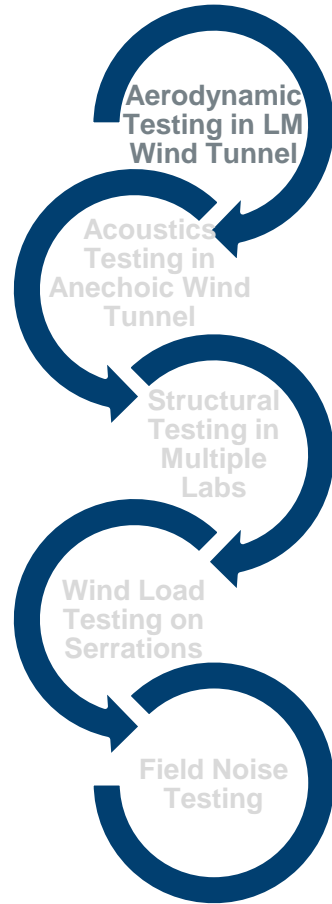
Susceptibility to field condition

Trade off b/w standardized & blade specific product

Quick time to market

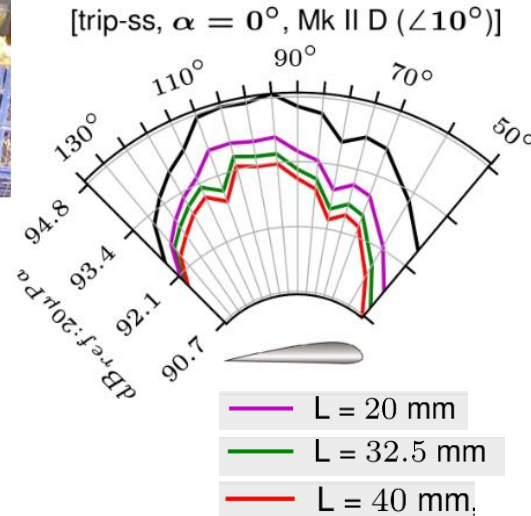
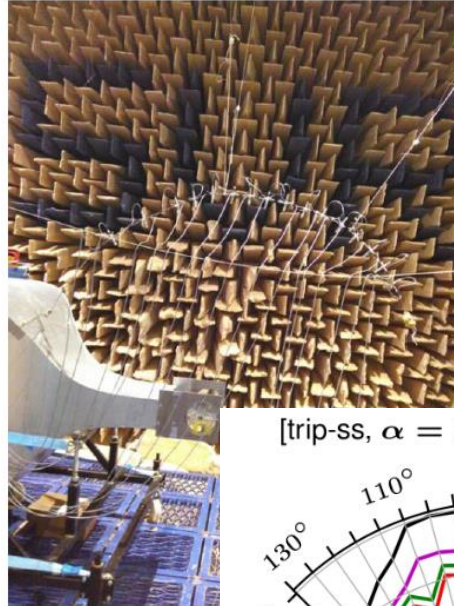
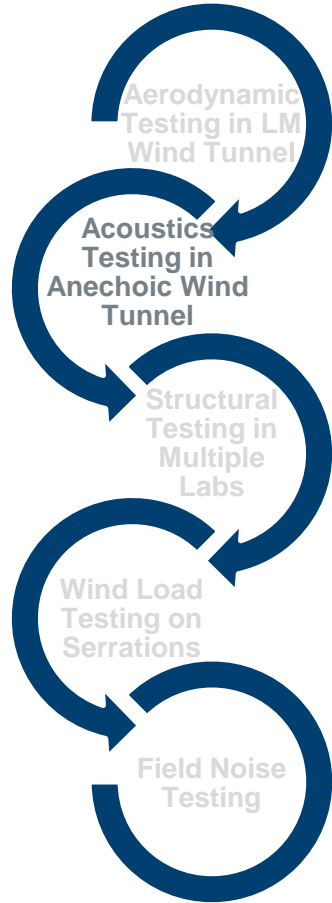


Extensive testing of serrations

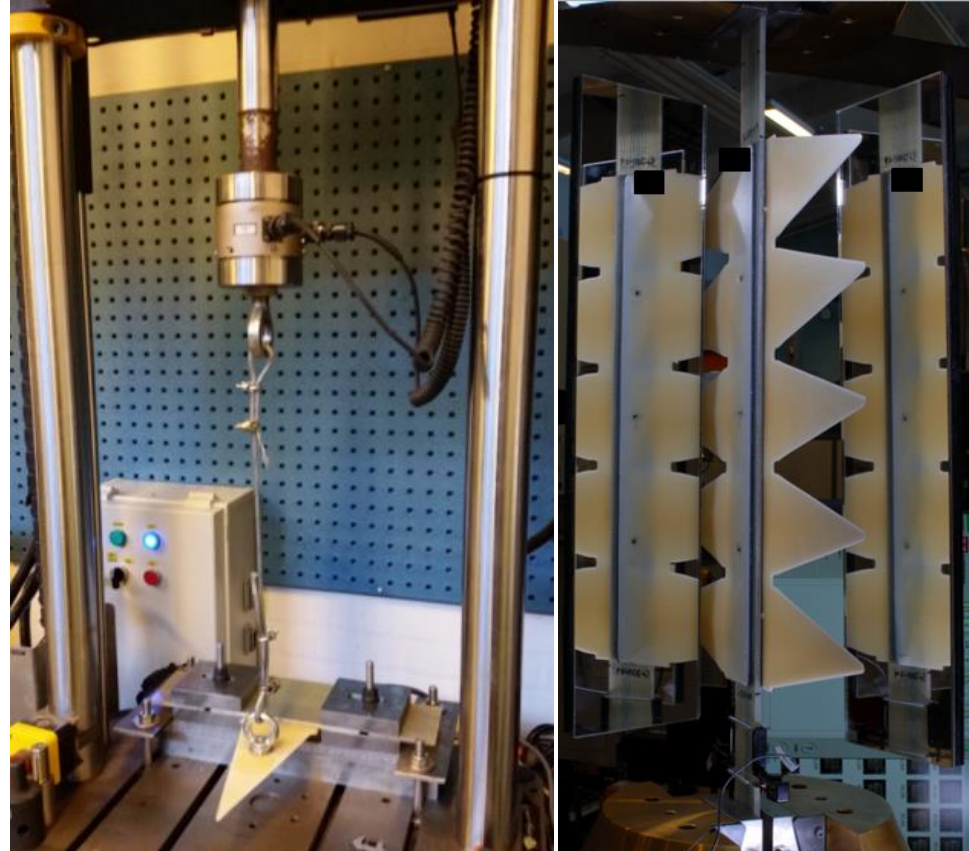
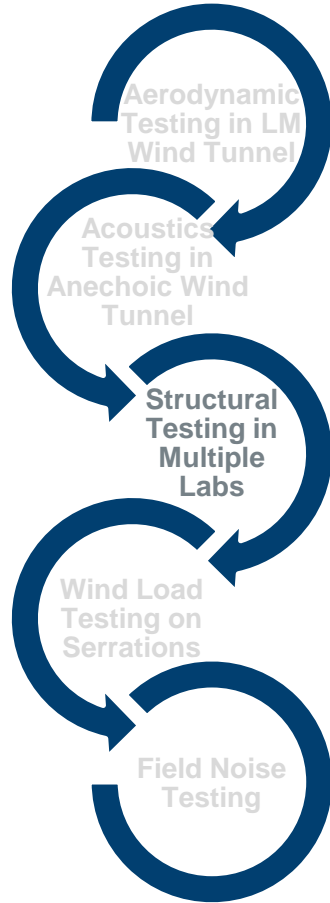


- » All our airfoil profiles have been reevaluated with serrations.
- » Blade design is now tailored to the new aerodynamics of the serrations.
- » The effect of the serrations on existing blades is also fully known.

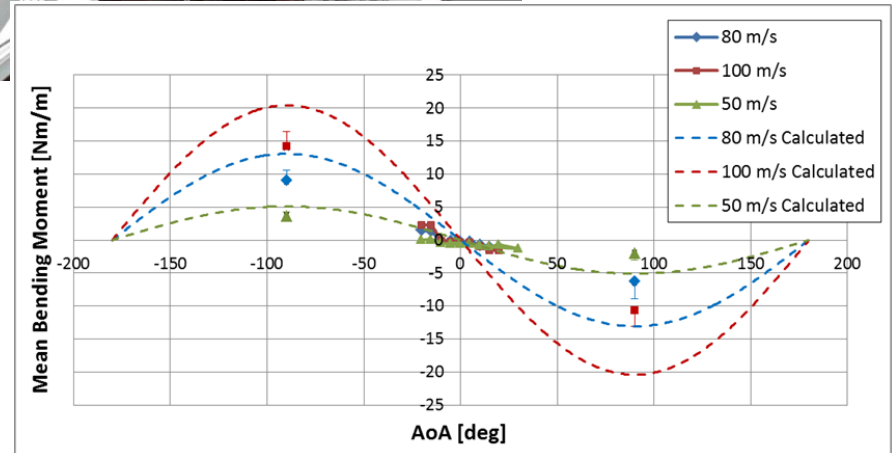
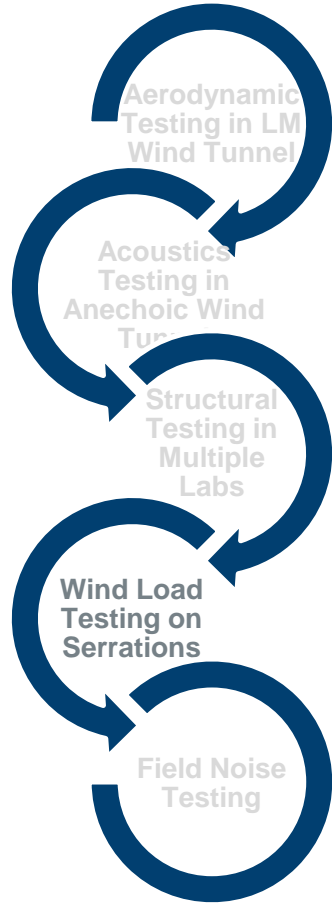
Extensive testing of serrations contd...



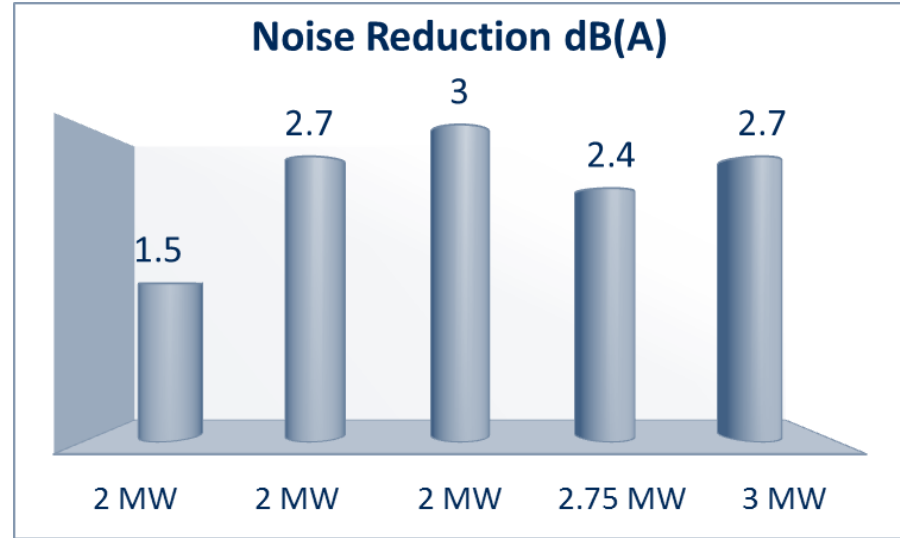
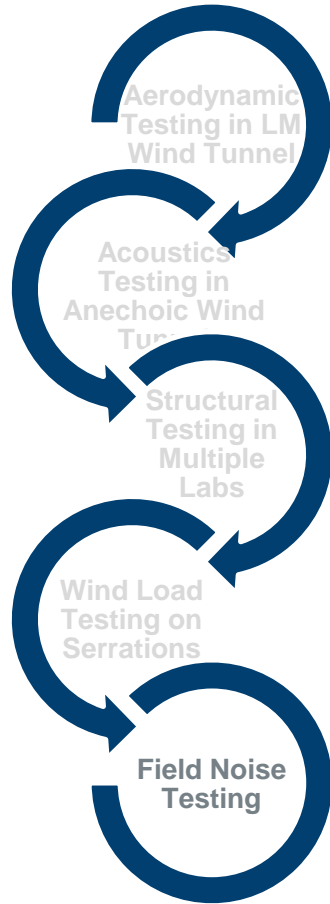
Extensive testing of serrations contd...



Extensive testing of serrations contd...



Extensive testing of serrations contd...



Concluding remarks

Market ready LM serrations

2 dB(A) reduction in noise enable to install 7% longer blades or increase the RPM by 10% or decrease the distance to residential housing by 20%

Certified for 20 yrs. Of operations

Questions?

Ashish Singh
asi@lmwindpower.com

