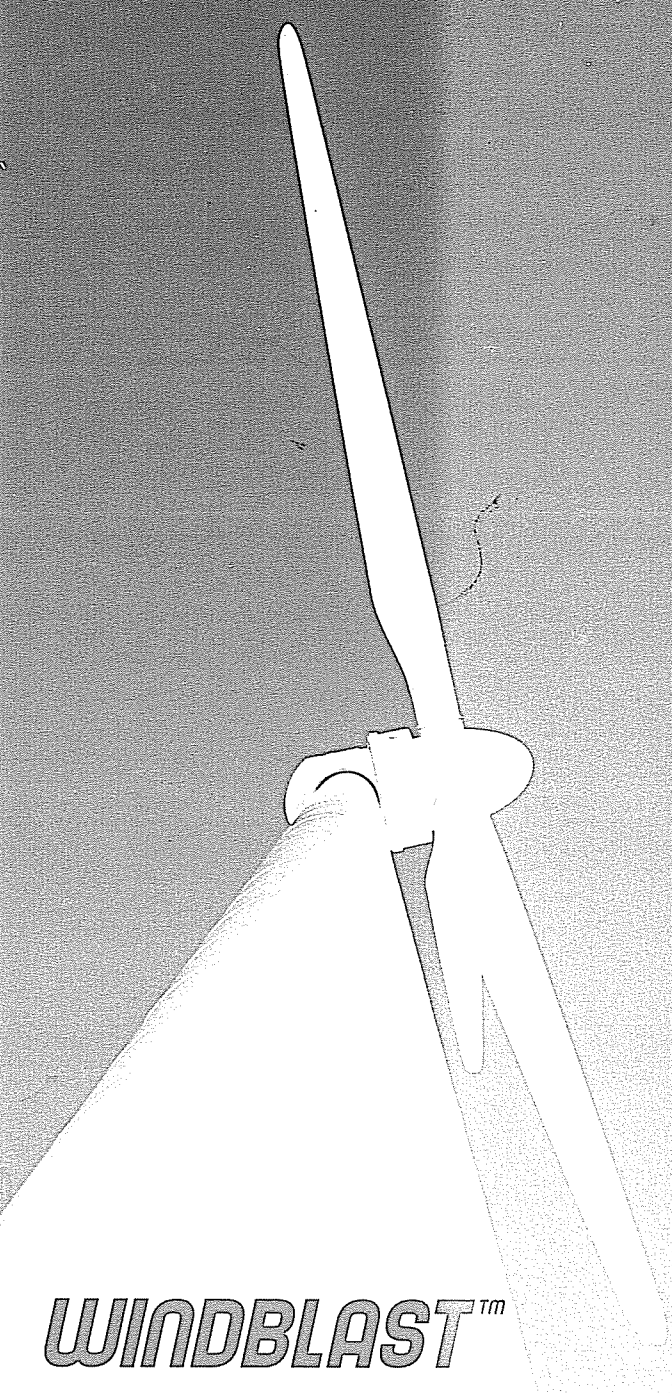


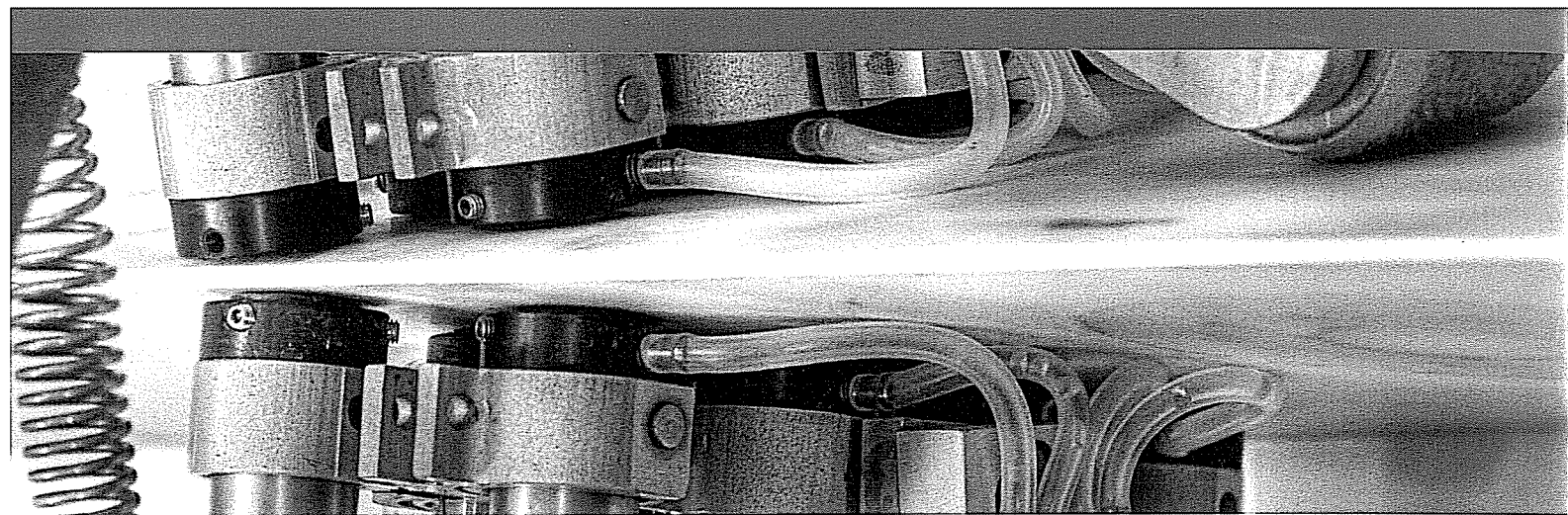


SAFE REVOLUTION

Ultrasonic inspection of wind turbine blades

WINDBLAST™

Bodycote



Windblast™ – detects porosity, delamination and lack of adhesion in rotor blades

A unique method designed for ultrasonic inspection of wind turbine blades manufactured in composite material.

- Fast inspection and evaluation of large flat or non flat areas
- Flexible configuration for different blade areas and blade configuration
- Efficient software support for fast evaluation of inspection
- Complete record of inspection results and fast generation of inspection report

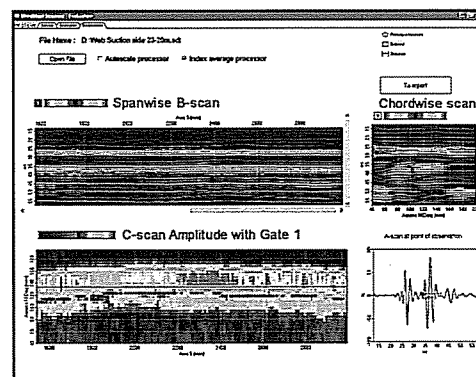
Windblast is used for detection of porosity and delaminations in the skin of the blade as well as lack of adhesion in the bonded parts of wind power blades. These types of defects are relatively well detected with ultrasonic waves in the MHz range using pulse-echo or through transmission configurations.

The challenge

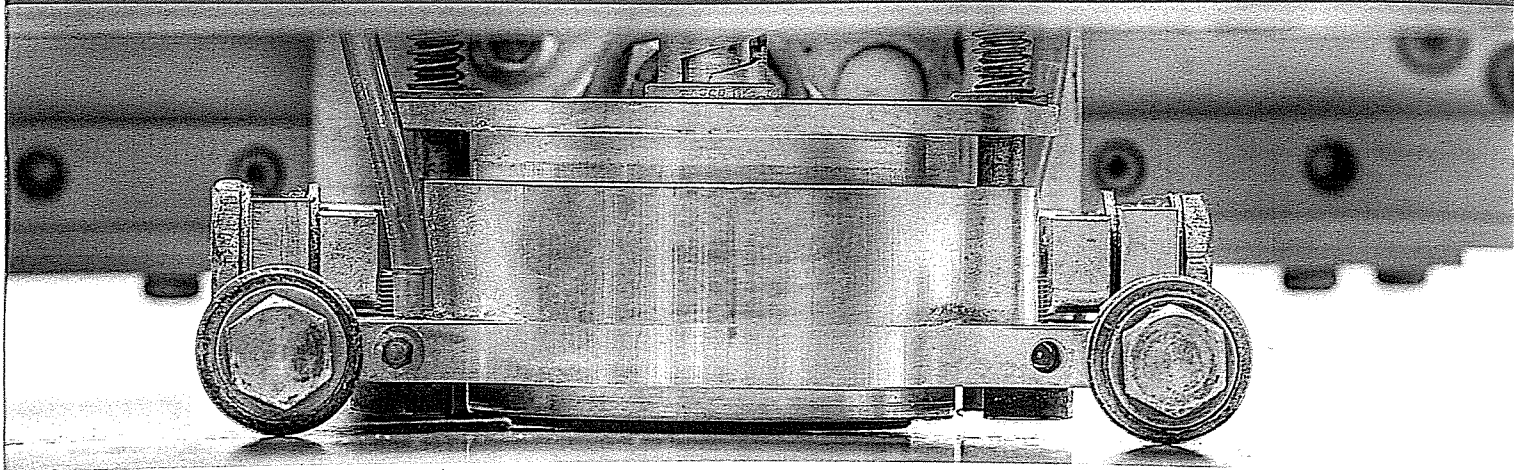
The total area to be inspected is very large and the geometry of the area to be inspected is not flat. This implies often that the inspection has to be performed manually, leading to long inspection time, limited reliability and no possibility to document the inspection.

The solution

Windblast is a fast and reliable system for inspection of non flat areas in the wind power blade including the leading and trailing edges.



The Windblast system generates a 3D representation of the part of the blade under inspection. Chordwise and spanwise B-scans allow a fast detection of potential defects and the determination of laminate thickness and bondlines. C-scan are useful for defect and feature sizing.



The Windblast™ system – designed for rational scanning of curved surfaces

- Motorized scanner trolley with an ultrasonic transducer fast moving over the inspection surface. The trolley is adapted for inspection through thick composite laminate.
- For surfaces with smaller radius a multi-element configuration is used in the sensor head. Each element is a single piezo-electric transducer mounted in a fixture.
- The sensor head can be adapted to both through transmission and pulse echo technique making it a perfect tool for leading and trailing edge inspection.
- Both the scanner and the multi-element sensor head can be carried by one person.
- The scanner and the sensor head are both equipped with a display which makes it possible for the operator to control the inspection work.
- The scanner and the sensor head are connected to a control unit, which includes the ultrasonic puls and receiver equipment and a computer for control, inspection data evaluation and data storage.

TECHNICAL DATA

General

Water consumption	<1 l/min
Voltage	115/230 V, 50/60Hz
Environment	To be used in dry conditions at temperatures above 0°C

Length of cable between inspection tools and control unit	25 m
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Inspection tool	Scanner	Array pulse echo	Array through transmission
Inspection surface radius	1500-∞ mm	200-∞ mm	200-∞ mm
Weight	10 kg	1 kg	2 kg
Inspection speed	2 m/min	5 m/min	5 m/min
Single line inspection width	200 mm	150 mm	150 mm
Size of detectable defect	25 mm fbh	25 mm fbh	25 mm fbh



Bodycote Testing

Bodycote plc. comprises more than 300 companies in 30 different countries. Bodycote Testing Group constitutes an important part of this world-wide company with more than 100 laboratories undertaking independent consultancy and materials testing. The BMT laboratories in Sweden belong to the Bodycote Testing Aerospace Group.

Our one stop shop approach is discovered and used by many of the prime aerospace manufacturers. It is also recognized by other industries, like wind energy and ship building.

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