GE
Measurement & Control

Wind Blade Inspection with Low Frequency Phased Array

Ultrasonic Application Solutions

Application

Wind blades are the crucial part a wind turbines gathering the momentum from which power is generated. Wind blades have to be inspected before installation on the wind turbine for any defects like, undulations, delamination or shear-web bonding. It is important to check their condition on a regular basis also in-service to prevent unplanned shut-downs. During planned downtime the blades can be inspected, which helps in making a decisions on whether to repair or replace a blade.

Figure 1: Wind blades on a wind turbine

Solution

Due to the high ultrasound attenuation of the materials from which the wind blades are manufactured, an operating frequency of 500 kHz is preferable to obtain a good depth penetration. For a large inspection coverage the GE RotoArray concept has been realized in a 500 kHz version. Its ease of use allows a comprehensive inspection of large areas with a reliable interpretation and documentation of the inspection results. Due to its low weight it is also suited for in – service inspection tasks.

Figure 2: 500 kHz RotoArray probe

GE
Measurement & Control

The 500 kHz RotoArray

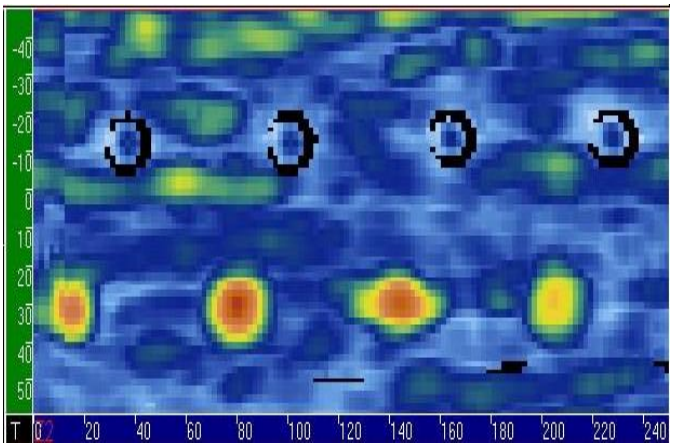

Figure 3: C-scan displaying the position of the four FBH.

C-scan of a test-piece made of GFRP in which four ø 13 mm FBH in different depths have been machined. The position of the FBHs (as seen from the top of the test piece) can directly be identified in the areas with a high reflection amplitude (red to yellow color).

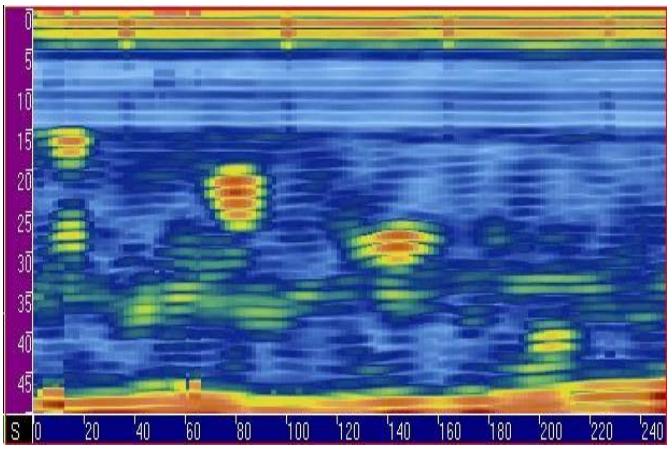

Figure 4: B-scan displaying the depth of the four FBH.

B-scan of the same test-piece displaying the different depths of the FBHs. The machined depths of the FBH are 15 mm, 21 mm , 25mm and 41 mm respectively. The back-wall at 50 mm can also be seen. Detection of ø 12 mm FBH down to a depth of 65 mm have been verified .

General solution information

- Low Frequency RotoArray
- Ultrasonic phased array flaw detectors: USM VISION+
- Also operational on other commercially available phased array instruments

Solution Package

App-Solution-Thick Composites (incl. RotoArray) 0680004

- USM Vision+ PA 16/128 with probe specific setup file
- 500 kHz RotoArray

Probes

- 500 kHz RotoArray 115-910-525

GE imagination at work

Your benefit

- High quality inspection with large area coverage and high probability of detection
- Lightweight and ergonomic design suited also for in-service inspection
- Reduce unplanned downtime and critical failures of your assets

Contact the GE NDT Solution Center for your individual inspection problems:

GE Measurement & Control
European Solution Center
www.utprobes.com
Portable.utsolutions@ge.com