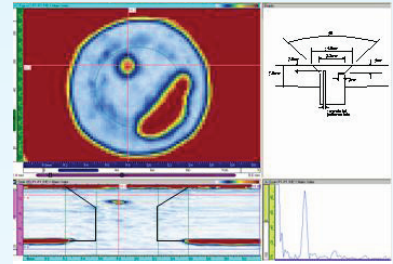


## Cooling fan rivets



Generator fan rivets are highly stressed and have considerable potential for causing widespread damage if they fail in-service. The critical crack size is relatively small which can make inspection difficult.

### The Problem

Rivets securing generator cooling fan sheets are highly stressed and can be subject to fatigue failure in service. Small cracks growing from the juncture between the rivet head and shank can develop rapidly leading to parting of the rivet head. This in turn can lead to loose rivet heads being propelled through the generator rotor causing extensive damage and potential lost generation.

### The Challenge

To improve on existing manual ultrasonic inspection techniques designed to detect and size small fatigue cracks in changes of section between fan rivet heads and shanks. High sensitivities required for detection of small defects can result in false calls from geometric responses. Critical positioning of responses is required to differentiate defect responses from geometric responses.

### Our Solution

A high resolution raster scan over the rivets is carried out using high frequency delay line compression probes. Ultrasonic C and B scan imaging is used to interpret the ultrasonic responses enabling precise positioning and differentiation between geometric and defect responses.

### Products

- high resolution B and C scan imaging of ultrasonic responses from generator rotor cooling fan vane rivets
- use of high frequency delay-line transducers combined with computerised data storage
- easy differentiation between natural geometric reflectors and fatigue cracks.

### Benefits

- high integrity inspection
- elimination of false calls
- clear and unambiguous presentation of inspection results using C and B scan imaging.