

# WideScan

Detecting Surface Breaking Cracks in Rail and Rolling Stock



- High Speed - up to 50mph (80kph) for crack location in rail using WideScan Probe
- Reliable Crack Detection - find cracks before they are visible to the naked eye
- Simple - no surface preparation required, simple to set up and operate
- Proven Technology - used in aerospace for 30 years
- Sensitive - detects cracks shorter than 1mm at the surface
- Repeatable - works through water, oil and grease

GE imagination at work



## A New Solution:

### The Inspection Problem

The early detection of conditions in rail that may lead to a break is now a critical activity in the maintenance of rail worldwide. Understanding of these mechanisms is constantly improving and the evolution of a range of complementary NDT techniques now means that the engineer has a better choice than ever of tools for the task.

In addition to the maintenance of the rail itself, there is a growing requirement for inspection techniques on the rolling stock itself. The rapid inspection of axles, wheels and bogies is essential for the safe operation of the rail network.

Inspection and subsequent maintenance procedures are now building a fuller picture of rail and rolling stock conditions. These include Head Checking, Tongue Lipping and Squats and Cyclic Fatigue, all of which have indications that could be detected by the use of the Eddy Current Technique.

### The Eddy Current Solution

GE Inspection Technologies Ltd can offer a low cost system that can rapidly identify the location of cracks before they are visible, as well as providing a technique for comparative sizing of the surface breaking cracks.

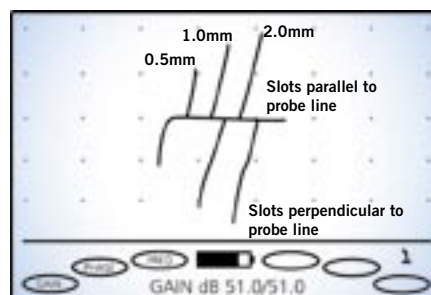
Cracks that are less than 2mm long and 1mm deep can be easily detected, well before conventional Ultrasonic techniques would be able to detect them.

Once set up, the unit is extremely easy to operate, and can even be configured so that it is not possible for operators to alter key functional settings, thereby guaranteeing a robust inspection procedure.

The unit can also record on screen traces and output them to Supervisor PC Lite, the dedicated software reporting package for Locator 2s. The unit also has an internal dynamic memory storage area. This allows an operator to save 30 seconds of inspection, and modify settings such as alarm and filters and see the effects on screen.

### The Inspection Technique

Once the unit has been set up for the test, all the operator needs to do is scan the probe along the surface of the rail at the required speed. Once an indication has been found it can be verified by cross reference with the WeldScan type probe. This test is set up on a steel test block and the display can be configured to show a sequence of cracks as seen below.



Sequence of cracks on steel test block

The procedure can then be used for a comparative indication of crack depth (especially useful if Ultrasonic verification shows no defect). This can then be used for the minimum required grinding action. After grinding the area can be rapidly reinspected to verify a successful action.

## Specifications:

### Product Reference

900P003

### Probe Type

Reflection Probe with differential pick ups

### Body Style

Acetal Case, 4 way Lemo socket O series

### Connection

Reflection, ungrounded body

### Inductance

Driver 40µH, Pickup 13µH

### Centre Frequency

100kHz

### Operating Frequency Range

50kHz to 500kHz

### Scan Width

80mm with 12dB drop

### Operating Information

Gap set at 0.5mm, Gain decreases 3dB every 1mm of gap

### Core Type

Special

### Core Dimensions

80mm wide

### Cable Required

Jaeger 6 way - 5A189 2m  
12 way Lemo - 33A171 oil resistant

### Scan Direction

At right angles to the profile

### Similar Probes Available

900P001 - flat with 80mm scan width for plates and experimental purposes  
900P002 - rail probe 60mm wide  
900P004 - same geometry as 900P003 but with two coils for enhanced detection in gauge corner



WeldScan Probes