

What's It All About?

At Carbon Steel Inspection Inc. we are often asked to provide a general background description of our Guided Current Testing (GCT) technology. This tech brief is intended to explain the basic concepts of this emerging technique and inspection method. This technical brief only addresses our technology from our perspective and bias and does not imply the capabilities or limitations of other technologies or service providers.

DEFINITION

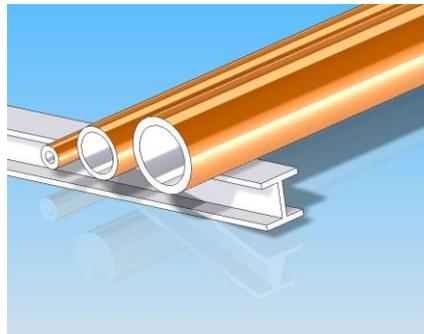
Guided Current Testing is a non-destructive technique that utilizes the basic laws of electricity to inundate the conductive material being inspected with AC or DC current. Any changes in the geometry or material will disrupt the current and produce a signal.

GCT GENERAL DESCRIPTION

When a current is passed through a conductive material the basic laws of physics apply and changes to the flow of current can be measured through sensors attached to the test piece. Thicker materials require lower frequencies to penetrate the depth while thinner materials or less conductive materials require higher frequencies.

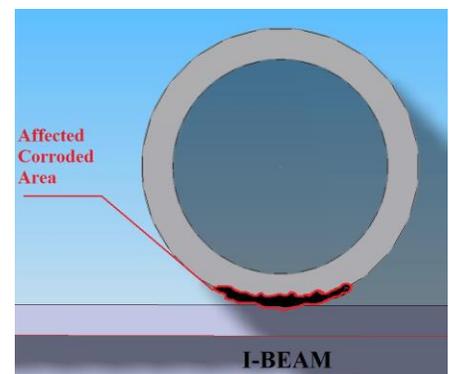
Test materials can consist of flat plate or tubular products such as tubing and piping. The scanning direction can either be

longitudinal or circumferential depending on the application. Depending on the access the sensors can consist of several different styles or configurations ranging from ID probes to OD clamps.



Sensitivity is based on the bandwidth of the test probe or leads. Depending on the application this can consist of measuring a short or long distance between sensors. This bandwidth affects the amount of material or volume the test system is measuring; therefore, as in any non-destructive test a reference standard is desirable to determine minimum sensitivity levels.

Temperature is a variable that affects the test set-up and therefore needs to be compensated in the data acquisition or interpretation. The sensor output is amplitude based providing depth estimation curves based on distance or bandwidth. Repeatability and accuracy are within normal ranges of other NDT methods such as ET and RFT electromagnetic techniques.



For More information on the GCT system, please contact your local CSI office.

