

Installed System for Testing Cold Drawn Bar

Using Multimac[®] Eddy Current Equipment



Multimac® Electronics

The Multimac® Electronics provides the flexibility of using rotating probe and/or encircling test modes. Using both techniques can ensure detecting a range of defect types. In this installation, 4 test channels are used for the rotary and 1 channel for the encircling coil. Up to 8 channels may be provided, all in one tester.

Industries:

- Automotive
- Agricultural
- Construction

End Uses:

- Shock Absorber Shafts, MacPherson Strut Shafts, Motor Shafts and other Parts

Defects:

- Surface & Subsurface Longitudinal & Transverse Defects
- Cracks
- Scabs
- Pits
- Seams

Bar Specifications*:

- Carbon Steel Cold Drawn Bar
- Cut lengths - 10' - 28' (3m - 9m)
- Diameter ¼" - 1" (6mm - 25mm)

Equipment:

- Multimac® Electronics
- EC Rotary - 9R 150 4 Channels
- 352 Coil Platform - 1 Channel
- 475 Demagnetizer
- "V" Roll Test Bench
- Inlet/Outlet Conveyors

*MAC has systems to test larger diameter bar, and can also supply ultrasonic test systems.

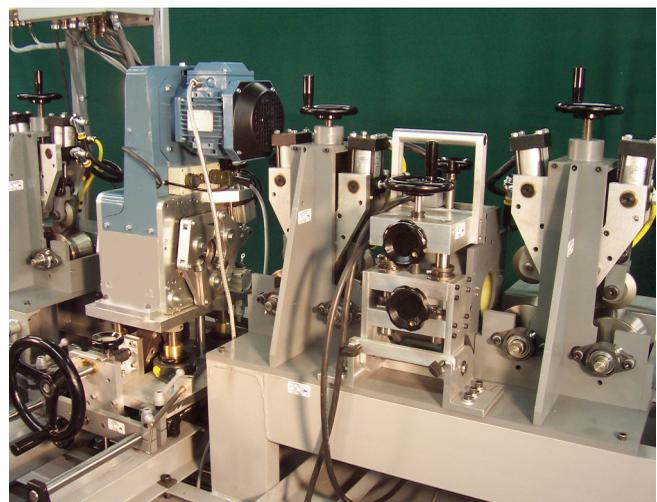
The Test System

The eddy current (EC) rotary system utilizes probes that spin around the circumference of the bar as the bar is passed through the center of the machine. This portion of the system is set up with 4 channels to detect longer longitudinally oriented surface defects such as seams, laps, scabs, and cracks. A dynamic calibration, using a 0.005" deep x 0.5" long longitudinal notch, is performed.

The single channel EC coil system utilizes an encircling test coil on a CP 352 (Coil Platform) to detect shorter, transversely oriented defects such as short cracks, seams, scabs, and pits. Dynamic calibration is performed using a ¼" round file notch, transversely oriented, at a depth of 0.005".

The encircling coil unit compliments the rotary unit with the detection of short and/or transversely oriented defects. In addition, an EC coil test will penetrate further into the material and, depending on the test parameters chosen, can detect some sub-surface anomalies as well.

When testing magnetic materials for defects, a magnetic saturation system must be used. CP 352 uses direct current (DC) saturation to provide adequate magnetization. Without magnetic saturation, the eddy currents would travel in random directions around the bar resulting in a signal for noise that is often larger than the defect signal. A demagnetizer is then used to remove any residual magnetization left in the bar.



An installed eddy current system using a Rotomac® Rotary, at left, and an encircling test coil, in the center. Pinch stands at either end ensure the bar is positioned firmly and accurately for the test.

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