

Ultrasonic Billet Inspection System

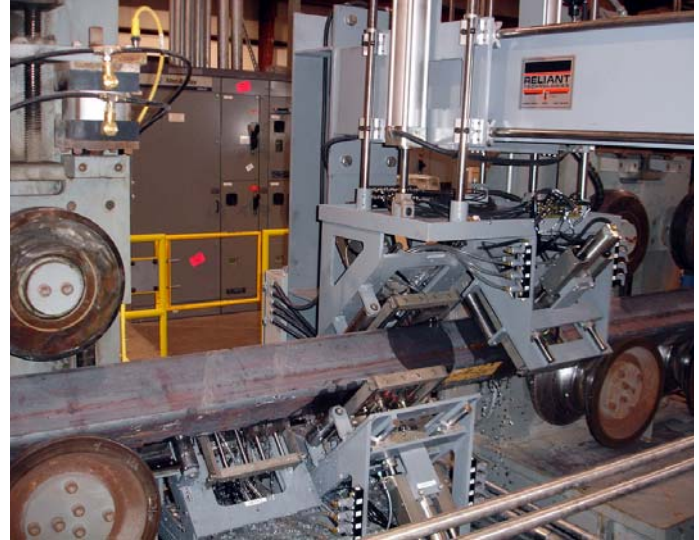
Application Bulletin # 01.07

Magnetic Analysis Corporation

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- Ultrasonic inspection of hot rolled square billets and round bars up to 9" (225 mm) diameter.
- Echomac® FD-4 UT test electronics with 48 channels, expandable to 64
- Mechanics consist of 4 transducer test heads, each with 3 surface ride shoes containing 3 or 4 transducers, and 1 bubbler for coupling purposes.
- Tracking and marking system available to identify indications
- Offline calibration station
- Integrated water circulating and cooling system



MAC Ultrasonic Billet Test System Inspecting 7" Diameter Square Billets

The Magnetic Analysis ultrasonic billet inspection system makes it possible to ultrasonically inspect large bar product at production speeds. Each of the four test heads covers a quadrant of the bar or billet. Touch panel controls make controlling the pneumatically actuated mechanics user friendly. In automatic mode, test heads extend and retract as the billet or bar passes through the system.

Coupling water is supplied to each testing head through an independent cooler/circulator to ensure consistent pressure and temperature. Individual flow controls regulate water supplied to the test heads.

The system includes Echomac® FD-4 ultrasonic instrumentation integrated with mechanics, transducers, bubblers and controls manufactured for Magnetic Analysis Corp. by Reliant Technologies Inc. The windows XP based FD-4 provides ease of use with a point and click interface. Setups are easily stored and recalled for all round and billet sizes. Up to 64 channels are available to meet the most demanding speed and inspection coverage requirements.



Echomac® FD-4 Display of 32 Channels

Square Billet Inspection

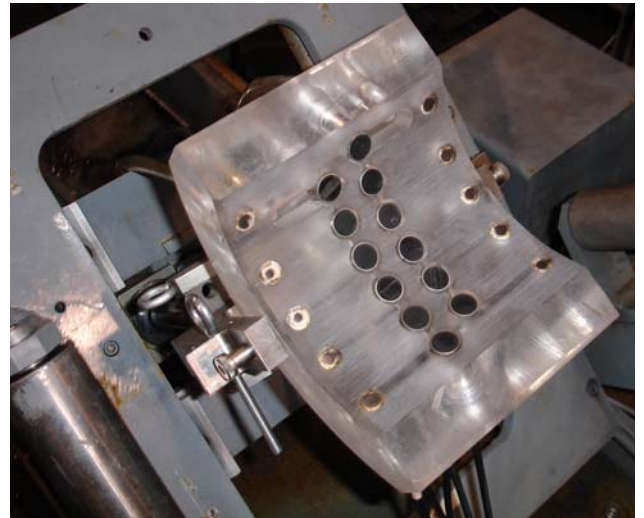
- The system contains four test heads, one for each flat of the square billet
- Each test head has three (expandable to four) transducer shoes
- Each transducer shoe has a single transducer containing four 2.25 MHz elements (one transmitter and three receivers)
- Transducer shoes move to allow a single head to inspect all sizes up to 9" (225 mm)
- Test head is flexible in all directions to allow coupling to be maintained on billets that are not straight
- Billet rides on the surface of hardened steel wear plates



Test Head in Billet Testing Configuration

Round Bar Inspection

- Each of the four heads contains a lexan transducer shoe
- Each transducer shoe contains twelve (12) 5 MHz transducers
- Testing head contains carbide inserts to prevent wear
- Test head is flexible in all directions to allow coupling to be maintained on bars that are not totally straight.



Test Head in Round Testing Configuration



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