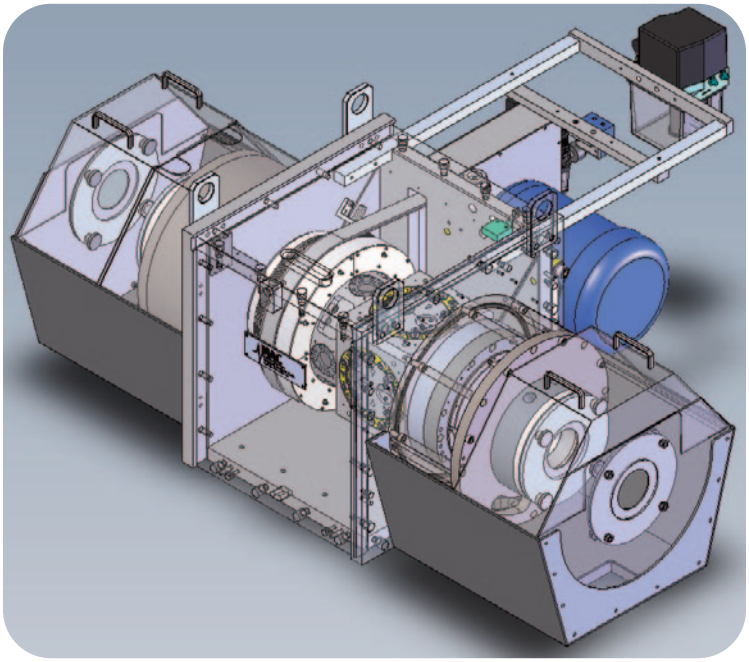
MAC®
Magnetic Analysis Corp.

Echomac® II Rotaries

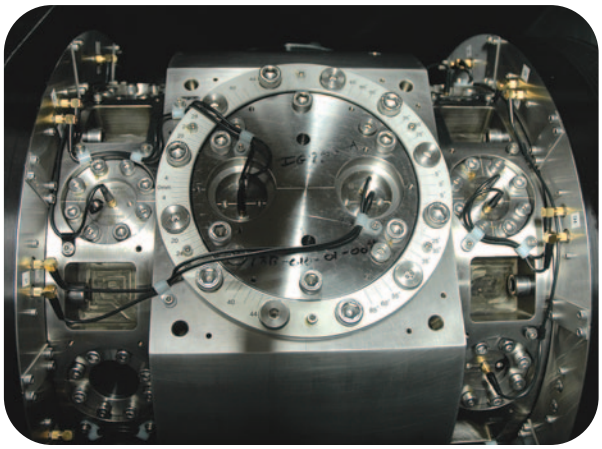
Ultrasonic Rotary Mechanism for High Speed Testing of Round Bar and Tubular Products



Inspection Features

Superior Performance

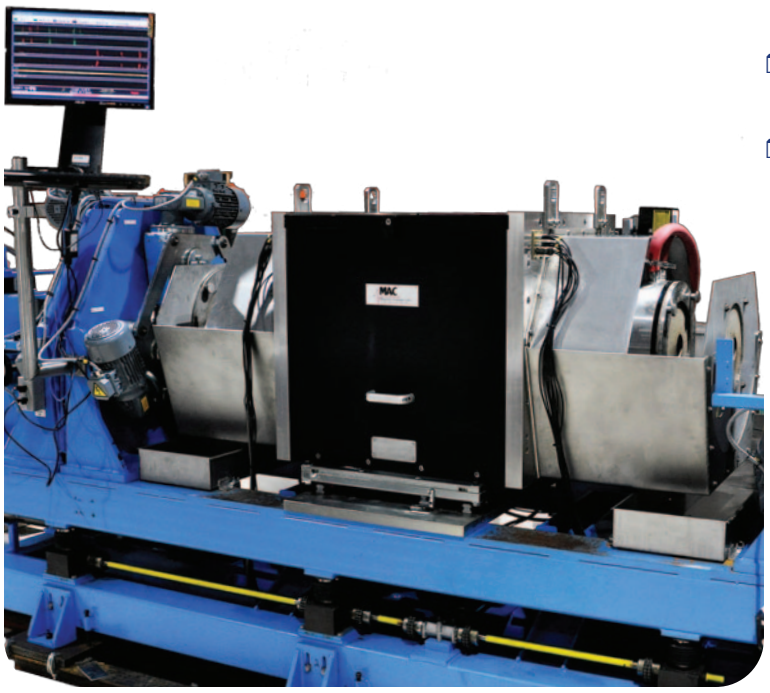
- ❒ 100% Coverage at high throughput rates.
- ❒ 5mm to 220mm diameter models available.
- ❒ Multiplex transducer design allows lower noise signals and up to 48 transducer elements.
- ❒ Unique rotary mounted transformer and pulser/ receivers provide maximum sensitivity and minimum noise.
- ❒ Multiple transducer elements can simultaneously test in different directions such as CW, CCW, FWD, REV, as well as measure wall thickness and detect laminations.
- ❒ Acid resistant stainless steel is used for all components that come in contact with water.
- ❒ Precision test blocks and transducer holders ensure accurate positioning to detect small defects, even at high throughput speeds.
- ❒ Seal-less rotaries reduce likelihood of damage from grit and other mill contaminants.



UT-180mm Echomac Rotary with multiplex transducer holders

Versatile, Intuitive Operation

- ❒ Set up multiple tests quickly and accurately for:
  - shear waves for transverse, longitudinal surface and subsurface defects.
  - compression waves to detect internal defects and measure wall thickness, OD and ID.
- ❒ Reconfigure transducers for different diameter material with simple rotational adjustment of the transducer offset.
- ❒ Quick access knobs for bushing and diaphragm changes.
- ❒ Store and recall an unlimited number of setups.



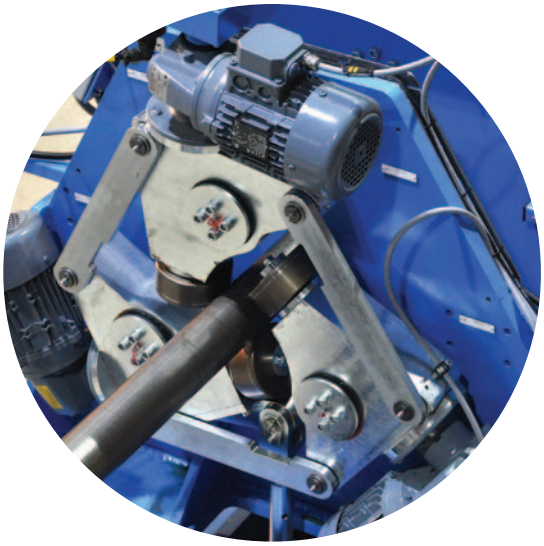
UT-220mm Echomac Rotary mounted on triple drive roll bench

Echomac Rotary Test Systems

Echomac® Electronics

MAC's Echomac FD series & the new ECHOMAC II instruments operating with a UT rotary provide optimum performance. Together, they make up a complete system to test, analyze and control the inspection operation.





150mm triple guide rolls

Precision Handling Mechanics

To achieve consistently accurate test results, precision mechanics are needed for proper centering, stability, and consistent speed of the tube or bar passing through the rotary. MAC can provide the right mechanics for the best system to fit your needs and budget:

- Triple guide roll benches with one point adjustment of the table height and diameter of the 3 point drive and centering guides, for the ultimate in automation and rapid size changeovers.
- V-Roll drive benches with AC frequency controlled drive moter and top pinch rolls, plumbing for water supply and drain, and provision for vertical alignment of the UT rotary.

Controls

Sophisticated controls manage the water system, variable frequency drive speed of the UT rotary and the drive bench, defect marking, sorting, and data archiving.

Optional Conductor provides comprehensive control of the entire test system, including unified tube status reporting for installations with multiple test stations.

Water Packages

Ultrasonic testing using a rotary requires clean, temperature controlled water to provide the couplant for transmission of the ultrasonic waves between the transducers and the product under test. MAC offers a range of recirculating water packages, sized for the rotary that is being used.



Recirculating Water Package

Rotary UT Applications

- Oil country tubular goods - test to API 5CT and 5L standards
- Seamless and welded tube
- Heat exchanger tube
- Hydraulic boiler tube
- Umbilical tube for off shore installations
- Large round billets during early stages of production
- Hot rolled bar
- Small diameter highly finished bar and wire
- Specialty steel bars



UT-25mm Echomac Rotary

ECHOMAC ROTARY MECHANISM SPECIFICATIONS

Series	Size Range		Maximum RPM	Maximum Active Transducers
25mm	5 - 25mm	(.197" - .984")	8000	8
50mm	10 - 50mm	(.375" - 2")	3600	8 -16 or 16 -32
75mm	15 - 75mm	(.625" - 3")	2400	8 -16 or 16 -32
100mm	20 - 100mm	(.875" - 4")	2400	8 -16 or 16 -32
125mm	25 - 125mm	(1" - 5")	1800	8 -16 or 16 -32
150mm	30 - 150mm	(1.18" - 6")	1800	8 -16 or 16 -32
180mm	35 - 180mm	(1.4" - 7")	1200	16 - 32
220mm	40 - 220mm	(1.5" - 8.6")	850	16 - 32

Maximum RPM & Transducer numbers are suggested ranges. The max number in the Transducer range is achieved using multiplex. Additional options are available for specific applications, upon request.

Utility Requirements

Electrical	240/480V, 60 Hz, 3 phase alternating current, 20 - 150 amps; and 120V, 60 Hz, single phase, 20 amps (International voltages and frequencies are available if specified at time of order)
Water	45 psi, quantity of gpm is dependent on the series selected.
Air	100 psi, 690 kPa, 6.9Bar
Drain	3" capacity gravity feed for 15 gpm, up to 6" capacity gravity feed for 100 gpm, depending on series selected.