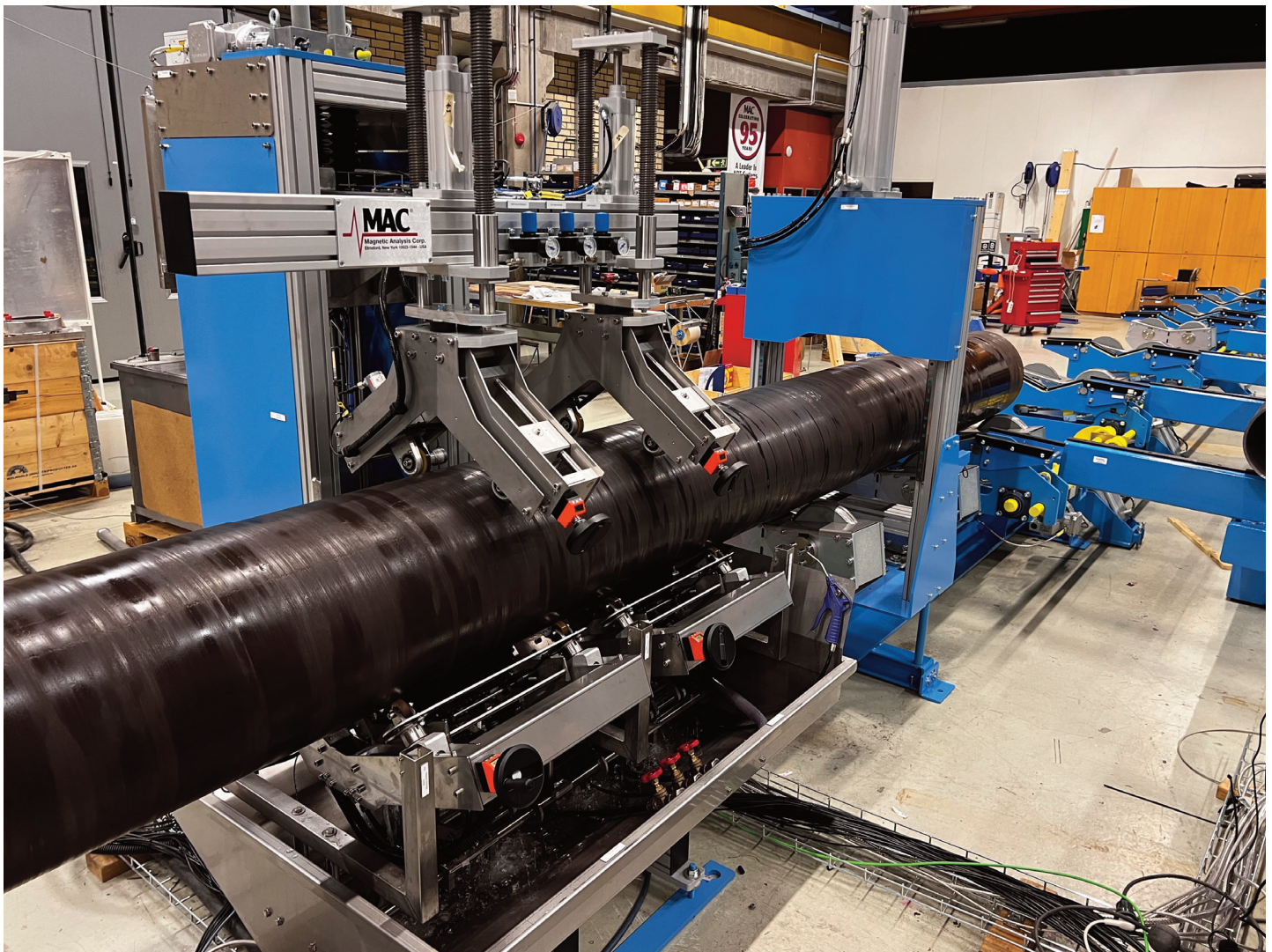


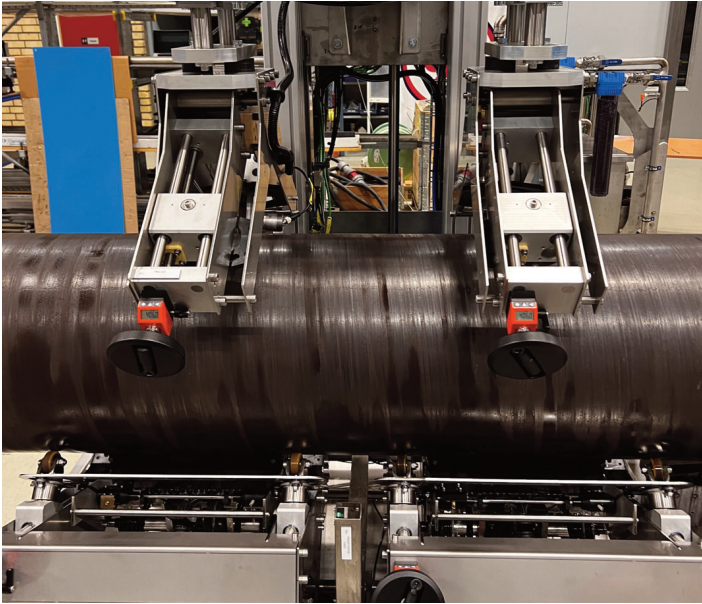
Cost Effective Testing of Large Diameter Tube & Pipe

A close look at Spin-The-Tube systems for testing product used for transporting gases and fluids in oil, gas and mining operations.



Inspecting seamless carbon steel pipe, 219 - 500mm diameter, with 6mm - 36mm wall thickness

MAC's spinning tube and pipe test systems offer high levels of performance and repeatability for inspecting large diameter tube and pipe. Two recent MAC systems demonstrate advantages of this lower cost alternative to large UT rotaries.



At Magnetic Analysis Corporation®, we understand the importance of precision and reliability in testing tube and pipe products. Our Spin-the-Tube testing systems, integrated with ultrasonic and/or magnetic flux leakage technologies, are one of our comprehensive solutions for detecting a wide range of defects and conditions in tube and pipe products.

Whether it's for detecting longitudinal and transverse flaws, measuring wall thickness, identifying lamination, or testing through-drilled holes, our systems deliver reliable performance for the integrity of your products.

Transducer test head holders, shown at left, are beneath the pipe being tested.

Testing 219-500mm Diameter Seamless Carbon Steel Pipe

When designing this custom system, it was essential for the customer that the solution accommodate varying tube sizes, maintain high throughput speeds, and effectively detect a range of defects. Specifications required finding OD/ID longitudinal and transverse flaws as small as 25mm long and 0.3mm deep; wall thickness variations with an accuracy of +/- 0.1mm; lamination and 50% deep flat bottom drilled holes.

To meet these demanding requirements, the system includes an Echomac® FD-6 instrument with 60 test channels connected to 50 individual ultrasonic transducers, enabling the detection of up to 10 different defect types.

High levels of automation are achieved through MAC electronics and a spinning tube conveyor system, which features Automatic Pitch Control (APC). The APC mechanism uses four rolls mounted on the transducer holders, which ride along the pipe surface. These rolls are linked to adjust to the correct angle based on the rotational speed and forward motion of the tube. This precise control of the rotational angle ensures repeatable and high-quality test results as the pipe moves through the system.

Technical Specifications

Tube Diameter: 80mm - 239.64mm

Wall Thickness: 5mm - 16.5mm

Testing Speed: Up to 16.5m/min

(depending on tube size and pitch)

Defect Detection: Longitudinal, transverse, lamination, wall thickness

Channels/Transducers: 60 channels, 50 transducers



Spin-the-tube conveyor line is shown at left, incoming feed racks in center.

Testing 80 - 250mm Diameter ERW Cold Drawn Carbon Steel



MAC's Spin-the-Tube system operating in a tube mill.

For the second spinning tube system, the task was to inspect ERW pipes and detect typical ID/OD weld defects, lamination and measure wall thickness. An additional specification that had to be met was to find through drilled holes. MAC's solution was to design a magnetic flux leakage tester that could ensure detection of the drilled holes. Recently installed at a tube mill in India, this system incorporates the Echomac® ultrasonic unit and flux leakage test heads.



Magnetic Flux Leakage tester to detect through drilled holes.



Multicollector software displays results from all tests.

The spinning tube conveyor system, utilizing MAC's unique Automatic Pitch Control (APC), adjusts the surface ride rolls to the proper pitch for this specific test. This system allows for the efficient identification of defects in EWR pipes that could otherwise compromise the structural integrity of the mill's products. By integrating this testing solution into their operations, the mill

can ensure that only pipes meeting optimal quality standards proceed through the production line. The ability to adjust sensitivity in real-time also provides the flexibility for testing and enhancing the effectiveness of in-line quality control.

Technical Specifications

Tube Diameter: 80 - 250mm

Wall Thickness 5 - 16.5mm

(some heavy wall with D/t ratio < 5)

Testing Speed: High speed operation

(exact speed varies by application)

Flaw Detection: Weld defects & through-drilled holes

Channels/Transducers: 24 detectors in each array



Rotating disks drive and spin the tubes through the test, maintaining the correct pitch.

Spinning Tube Ultrasonic Test System Advantages:

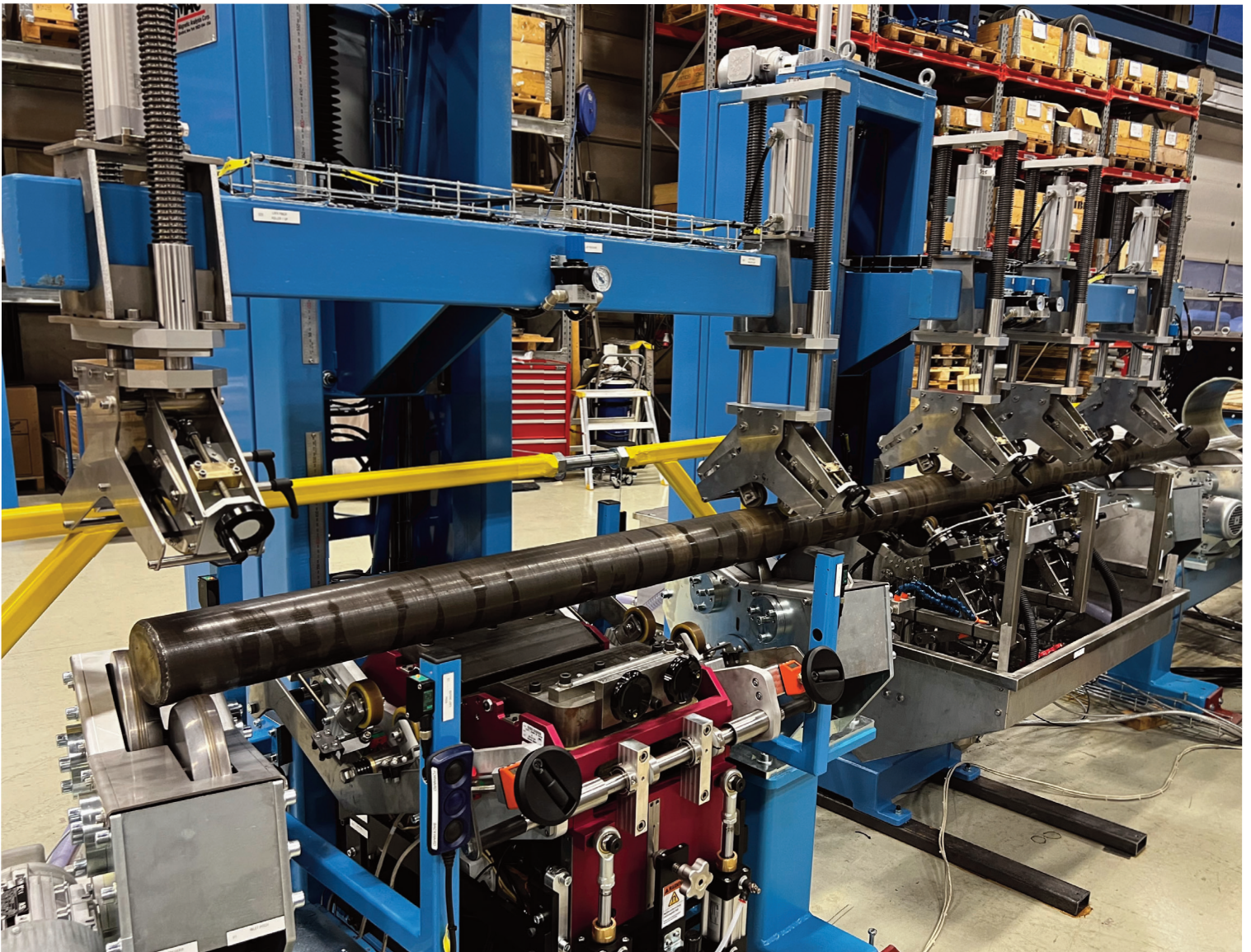
Well suited for large diameter material

High performance repeatability

No wear parts such as bushings and glands to maintain or change

Lower costs, compared to ultrasonic rotary systems

Changing and adjusting transducers for different diameters is quick and easy



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