



Magnetic Analysis Corporation: A global partner that provides quality NDT solutions

Since being founded in Long Island City, New York, in 1928, Magnetic Analysis Corporation (MAC) has grown to become a worldwide leader in the nondestructive testing industry. The company developed the very first American made nondestructive testing system using electromagnetic principles for the detection of flaws in an assortment of steel products. Since then MAC has been a major global source of nondestructive testing (NDT) services and eddy current, electromagnetic, flux leakage and ultrasonic inspection systems for testing metals. In addition to its headquarters in Elmsford, New York, MAC also has facilities in Ohio and Sweden along with subsidiaries, field engineers and experienced representatives all around the world ready and willing to provide customers with NDT product solutions.

Stainless Steel World recently had the pleasure of speaking with Mr. Dudley Boden, MAC's President, about the benefits of being a global company, MAC's dependable product solutions and the company's goals for the future.

By Candace Allison

Careful and thorough installation of a test system in the customer's plant is one of the most important services MAC provides. Here, Miles Jing, MAC's Field Engineer in China, checks out the operation of a 50mm Echomac® UT rotary test during installation at a new pipe mill in China.



“As a company, the concept at Magnetic Analysis Corporation is that we are more than just an equipment manufacturer. Really to make NDT work you need both equipment and people; combining these two things is our forte and our strength,” explained Mr. Boden. “We have a larger and more experienced worldwide field staff than any other NDT supplier. Our whole focus is to partner with the customer to figure out what their real needs are and what the right equipment is for their application. Then we work with them to configure the test system and make it work in a way that is suitable and beneficial for them. We aren't just selling the customer a piece of equipment.”

A global reach

Boden continued to explain that being a global company really plays an important role in supporting customers. By maintaining a strong global presence, whether by a specific subsidiary location or by having a highly-skilled representative servicing a particular area, MAC is able to assist customers when and where they need it most, no matter their current location. He clarified that in areas where there isn't an actual subsidiary location or affiliated staff, MAC does have a reliable network of independent representatives. These representatives are unique in the field in that they all employ engineers and sales people who are fully capable of installation, service and support, exactly as if they were MAC employees. Many have offices and some even have workshop facilities. Boden maintained there are many advantages to having staff and representatives worldwide. For instance, if one economy in a certain area is down, another could be doing extremely well, helping to balance out the business' overall revenue. This is especially important considering that the current manufacturing industry has already experienced significant consolidation over the past 10 to 15 years and continues to do so more and more every day. Looking specifically at the steel industry, Boden predicts it will consolidate even further and at a much faster pace than ever before. For MAC, this means it is dealing with the same companies time and time again only in different locations around the world. “From the customer's perspective, one of the many advantages is that with MAC they can get a specific product in the United States and then they can easily get that same product in another part of the world, such as Russia or

MAC around the world

Subsidiaries

North America: Magnetic Analysis Corporation (MAC) – Main headquarters
UK & Ireland: Magnetic Analysis Ltd.
Italy: Magnetic Analysis Italia, S.r.l.
Sweden: Magnetic Analysis Nordic AB (MAN)
China: MAC Shanghai Representative Office
Australia: Magnetic Analysis Australia, Pty. Ltd.

Representative locations

<i>South America</i>	<i>Middle East</i>
Argentina & Brazil	Bahrain, Kuwait,
Chile	Oman, Qatar & UAE
<i>Asia</i>	<i>Europe</i>
India	Spain
Indonesia	<i>Eastern Europe</i>
Japan	Czech Republic
Korea	Romania
Taiwan	Russia
Thailand	Turkey
Vietnam	Ukraine

wherever they have other plants. So that's a huge benefit we are proud to offer our customers. In terms of global competitors, a lot of our competition in places like India and China are solely local businesses and they sell their products at a very low price because of their location. But they don't offer the quality of product we do. When a steel company is selling their product locally, often the requirements of testing are not specified. However, a lot of these companies want to sell into international markets and to do that they need to have testing equipment that is recognized internationally. Their customers recognize that if they want to go global themselves, they need a global partner. MAC is that global partner.”



A custom designed helical spinning conveyor system ensures accuracy as tubes are fed into MAC's new APC (Automatic Pitch Control) full body ultrasonic tube tester.

[COVER STORY]

International demand

When asked if there are certain MAC products that are in more demand in different areas of that world he answers that it all really depends on a variety of factors such as national economies, international policies, etc. He detailed that before the drastic drop in oil prices and strict international sanctions were enforced, Russia was a big location for oil country tubular goods (OCTG). Because of this activity, flux leakage and ultrasonic systems were always in demand there. In other areas like China and India, ultrasonic and eddy current systems are always popular because pressure tubing, nuclear tubing for power plants and bar applications for the automotive sector constantly need testing. In fact for MAC, its ultrasonic systems are currently its most active product line worldwide, with the eddy current systems coming in at a close second.

Currently in the US, MAC is in the process of installing, its very first Ultrasonic spinning tube test. This technology is specifically meant for larger diameter products, like bar or tubing, when it is too difficult to test them with rotary testers. In fact, some customers just prefer the spin tube type systems due to the simpler design. With this spinning tube test system the product itself spins past the transducers, which are in a fixed location. This is the opposite of most rotary ultrasonic systems where the transducers spin around the product. It is an innovative new product that MAC is hoping to install in more plants around the world in the near future. Another company milestone is taking place in Italy where MAC is currently installing, and putting into operation, its first Ultrasonic Phased Array system in a customer's plant. This is a huge achievement, not



Test Head for MAC's first Ultrasonic Phased Array tester, installed at a bar mill in Italy.

only because the product is brand new, but also because it is a very large undertaking where the system has to fit into an already existing product line in the client's facility. So there are a lot of constraints, making this installation a challenge but one that MAC is more than capable of completing successfully.

Dependable product solutions

MAC's product portfolio can be divided into three broad categories: The ultrasonic systems, which as already mentioned are the most popular product offering, the eddy current systems, which are often used to detect surface defects and flux leakage systems, which are used more for carbon steel applications. Boden clarified that under those three broad categories there are literally hundreds of product variations. Under the ultrasonic category, there are the traditional rotary systems but now there are also the phased array and spinning tube test systems. Then there are the billet inspection systems and even simple but powerful electronics that can be retrofitted into old mechanical systems that still work but perhaps need the electronics updated. On the eddy current side, MAC offers approximately a hundred different types

MAC product offerings

Technologies:

- Eddy Current
- Flux Leakage
- Ultrasonic
- Multi-Test Systems

Equipment:

Ultrasonic testers:

- ECHOMAC® ROTARY
- ECHOMAC® FD-5

Eddy current testers:

- MULTIMAC®
- MULTIMAC® SM
- MINIMAC® 50
- MINIMAC® 55
- VARIMAC®
- ROTOMAC®

Flux leakage inspection system:

- ROTOFLUX®

Additional products:

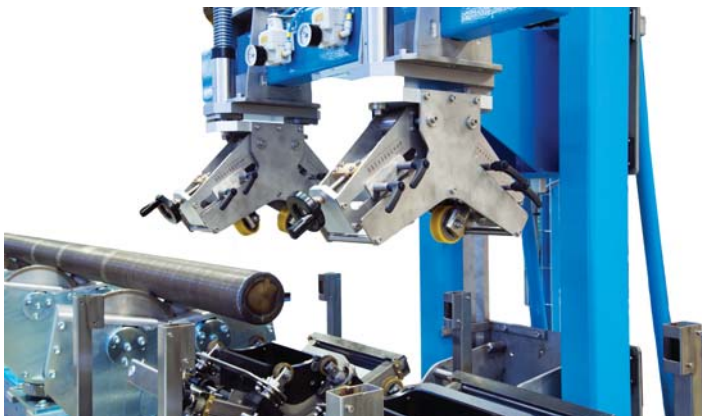
- COIL PLATFORMS for Eddy Current Systems
- CUSTOM SYSTEMS
- DEMAGNETIZERS:
- FEED SYSTEMS & MECHANICAL HANDLING
- MAGNETISM DETECTORS
- ROTARY MECHANICS: For Eddy Current, Ultrasonic and Flux Leakage Systems
- TEST BENCHES AND DRIVES:

After-sales services:

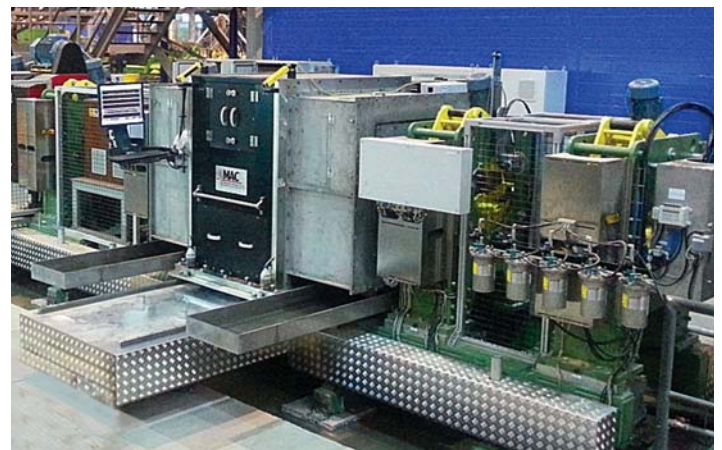
Highly trained global field engineers can assist customers with:

- NDT applications
- NDT and/or MAC product training for employees
- Product service and/or support on or offsite at the customer's facility

of test coils that have been designed over the years for specific applications. Many have been developed as a direct solution to a client's specific problem and are now available to all customers who may need it. MAC prides itself on being able to develop products as a result of a specific client's request. Through this



Ultrasonic APC (Automatic Pitch Control) test heads are raised up beneath a spinning tube as it passes through the test system. The upper elements lower onto the tube to maintain its position during the test.



500mm Echomac® Ultrasonic Tester, part of a large system to test OCTG tube at a mill in Russia.

collaboration, customers get the best product, such as exactly the right coil, for what they need to do.

Out of the hundreds of quality products that MAC offers, Boden wanted to highlight a few in particular. "We have a huge range of ultrasonic rotaries that we offer, starting with those that can test small tubing or bar up to 50mm diameter and ranging on up to others that can handle large diameters up to 500mm. Then we have dozens of versions in between those two extremes. No one else offers that wide range of ultrasonic rotaries anymore. Many have moved mostly into phased array ultrasonics, but that isn't always the best technology. Sure it's exciting, but in practical terms the ultrasonic rotaries can test products at higher speeds and detect more types of defects than a typical phased array system can, so we've really focused on the rotaries." He continued, "With that being said, we do now offer a phased array testing system for some of our clients who want that technology. We are flexible and that's the big thing our competitors do not have. They have a set product offering and you buy strictly from that. Sure MAC would like to sell you something we've designed before but it's not the requirement. If what we have doesn't fit we'll look at how we can modify it to make it fit for your specific needs." All of MAC's products are made in one of their ISO 9001 certified facilities. Many of the specific products, especially the ultrasonic rotaries, require a large number of custom-made parts, so MAC has a network of high quality machine shops that can precisely manufacture these parts. Once those are completed, MAC employees assemble the final products. Boden detailed that there is no assembly line as such because most of the products are so customized and there are so many options available for each model that the same exact products aren't rebuilt over and over again. What works better is a 'team built' concept where a group is assigned to work together to build a particular tester for a certain client.

Supporting customers

Along with these customizable and reliable product offerings, MAC also provides superior customer service, which is another key to satisfying customer needs. Boden explained that even though not everyone around the world knows MAC well, once the company does get a new client they keep them for a long time. In a fair number of instances, MAC has had the



Magnetic Analysis Nordic's plant in Östersund, Sweden is one of MAC's three manufacturing plants.

same customer for 30 to 40 years; many companies haven't even been in business for that long! Similarly, the company has even had some equipment on lease at a client's facility for 30 years. Because of MAC's field support system, they are able to keep the product running because the customer likes it and it works well for them and their needs.

"MAC focuses on supporting our customers," stated Boden. "That means providing them with the right equipment, providing them with the right support to keep that equipment running and providing them with the right knowledge to know how to best use the product and get the most out of it so it runs for as long as possible. Where I see the real value of MAC is our willingness to work with the clients and come up with the right solution for them and our ability to do that anywhere in the world. That's our value proposition really, providing NDT capability to our clients and that involves both equipment and support."



Field Personnel often attend demonstrations and training at MAC's Elmsford, NY headquarters. Engineering Manager, Troy Libby explains a new eddy current rotary, under development.

Future goals

Boden explained that for 2016 and beyond, MAC is working on expansion. He maintained that it is still in the very early stages, but the company is expanding its presence in areas such as Southeast Asia and Russia for example. MAC already has a presence in both areas, especially Russia, but the aim is to solidify that presence. For Southeast Asia the company is expanding the support staff for that location in order to better serve customers.

"What's key is that in places like the United States, Western Europe, etc. the steel business isn't really growing too much. It's been surprisingly good the last few years, and we still do an awful lot of business in those locations, but it's not where the major growth is. The bigger markets are now in China, India, Russia and Southeast Asia. Due to that, we are turning even more heavily in those directions even though we've been there for a long time. We want to be able to offer customers in those areas even more support."

Facts & Figures

Company name:	Magnetic Analysis Corporation
Years in business:	88 years (Since 1928)
Global headquarters:	103 Fairview Park Drive, Elmsford, New York, 10523 USA
Employees at headquarters:	Approximately 60 people
Products:	ECHOMAC®, MULTIMAC®, MINIMAC 50®, MINIMAC 55®, ROTOFLUX®, VARIMAC®, DEMAGNETIZERS, etc.
Website:	www.mac-ndt.com