MISTRAS Group, Inc. | Products & Systems Division

# The main BANG!

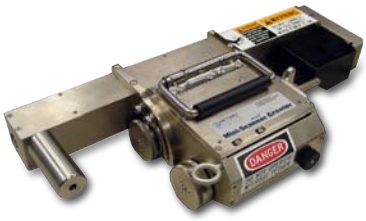
Quarterly Newsletter on Ultrasonic Inspection — Summer 2010

## MISTRAS Teams Up with U.S. Army for Immersion Inspection System

MISTRAS has been requisitioned to design and manufacture a 24' 5-channel 4-axis Ultrasonic C-Scan Immersion Inspection System for Yuma Proving Ground (YPG), a testing facility for the U.S. Army in Yuma, AZ. The testing facility is home to a large variety of weapon systems and munitions including long range artillery, missile firing aircraft, cargo & personnel parachutes, direct fire weapons, unmanned aerial systems, technologies to defeat roadside bombs, and many more. The fully automated immersion inspection system is designed to non-destructively inspect small arms, mortar, artillery, and tank gun barrels for cracks and sub-surface flaws throughout a munitions or weapons research and developmental process.

The immersion system inspects the gun barrels by rotating them at a high speed while indexing the full 22' length. This allows for a complete C-Scan display of various inclusions in one helical scan, thus maximizing throughput and valuable test data. The use of the 24' system will give the Army greater insight into the many failure mechanisms present in new and in-use barrels, allowing them to ensure the safety of test personnel and equipment and save time and money in the future.

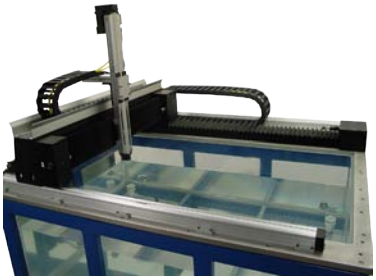
## Automated "MINI Scanner" for Pocket UT



The innovative Pocket UT™ now has a new companion. MISTRAS has developed a fully automated MINI-Scanner to team up with the Pocket UT™ in order to inspect flat plate or pipe down up to 3 inches in diameter with inspection scanning speeds as high as 6 inches per second and an indexing/crawling speed of 2 inches per second.

The MINI Scanner features magnetic wheels and is at home scanning vertically or even upside down. The complete kit includes the MINI Scanner, 2-axis power supply, all umbilical cabling for power and water, and UT connectors to the Pocket UT™, optional transducers, bubblers and TOFD (Time-Of-Flight-Diffraction) wedges.This MINI-Scanner can also be adapted to our UltraPAC™ systems.

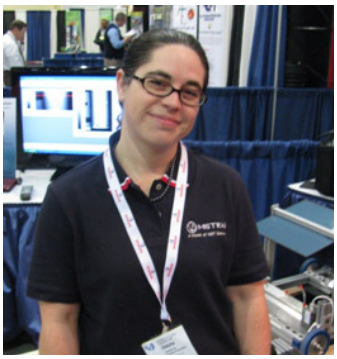
## Ultrasonic Spotlight: Linear Motor Technology on Immersion Tanks



The new linear motor driven ultrasonic C-scan imaging system provides a fast and more accurate, higher resolution scan. The linear motors now give customers the ability to achieve an increased level of UT image quality.

With the mechanical scan precision there is no scan backlash, allowing for faster scan speeds and much quieter scanning as compared to stepper and servo motor driven scanners. Customers will also save on maintenance and wear since the updated technology has less moving parts to handle.

# Obdulia Ley Presents Thermography Technique



Dr. Obdulia Ley, a member of the MISTRAS, Research, Contracts & Application (RC&A) group, has hit the road speaking at several ASNT Sections and conferences about "Line-Scanning Thermography: A Solution for Large Area Non-Destructive/Non-Contact Inspection".

Dr. Ley spoke about the innovative thermography-based NDT method capable of wide area inspection, known as Line-Scanning Thermography (LST). This technique has successfully been applied to determine the thickness of metallic plates and to assess tube thinning. Dr. Ley will present MISTRAS' efforts towards the applications of LST for the analysis of laminate composites, along with having LST protocols on hand to show the detection of sub-surface disbonds (delamination) in composite sandwich parts. The thermal images acquired using LST will be compared with ultrasonic c-scans, along with the fundamentals of IR imaging and the limitations of thermography for NDT inspection being discussed. Dr. Ley will present her findings on the relationships between measured surface temperature profiles and the severity of the defect, as well as the effect of the scanning parameters such as heat deposition intensity, the scanning speed, the face-sheet thickness, and the thermophysical parameters of the layer materials.

Click here to learn more on LST (Line-Scanning Thermography).

# E317 Certification Now Available

Now available from MISTRAS for any ultrasonic measurement boards and systems is the E317 Certification, an ASTM Standard Practice for evaluating performance characteristics of ultrasonic pulse echo testing instruments and systems. Horizontal and Vertical linearity, Sensitivity and Noise, and Gain Control calibration sections of the standard are all covered by this certification and full test data is included in the Certification report. This option may now be requested on all new ultrasonic instrumentation products and quotes from our Sales Department and the Certification may be arranged for existing products and systems through our Customer Service Department.

# Dual UT Immersion Systems Delivered

MISTRAS Group, Inc. announces the delivery of two carbon composite inspection immersion systems to HITCO Carbon Composites, Inc., a provider of aerostructures and material solutions based out of Gardena, Calif.

The identical, 25 foot systems are being used by HITCO for the inspection of composite I-beams essential to the Boeing 787 Dreamliner aircraft. With the incorporation of phased array technology, the five axes, multi-element immersion systems will increase HITCO's productivity by providing increased single-pass coverage of the inspected composites. The systems are integrated with UTwin's complex contour motion control software to conform to the parts compound joggle and noodle sections.

# Single Axis B-Scanner Updated!

The Mini B Scanner, a durable single axis encoded B-Scan that can scan the circumference of pipe diameters over 3", has been updated and improved! The encoder is sealed and water tight to protect against moisture and is gear driven to prevent slippage.

Fitting in the palm of your hand, the mini scanner weighs only 10 ounces! The new body design has the ability to accept a Delay Line transducer, which allows the scanner to be used for aerospace and composite applications. It is equipped with magnetic wheels and includes an irrigation port for water or oil which is used during ultrasonic testing.

The scanner comes standard with a spring loaded .375" diameter dual element 5 MHz dual transducer capable of high temperature applications (up to 500°F intermittently). It also comes complete with a standard 10' encoder cable and two ultrasonic cables (10' of RG174 with 90-degree microdot-to-SMB connectors).

## Upcoming World AE/ NDT Events

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| NDE/NDT for Highways/Bridges | *New York, NY* • ***Aug. 16-17*** |
| ATA NDT Forum | *Albuquerque, NM* • ***Sept. 9-13*** |
| SAMPE Meeting | *El Segundo, CA* • ***Nov. 9*** |
| ASNT Fall Conference 2010 | *Houston, TX* • ***Nov. 15-19*** |



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