

**We wish
our readers
a very happy
festival season!**

With this issue we would like to revive our efforts of sharing information through regular mailers/news letters. We have also launched a new website where we intend to regularly update about upcoming technologies/products.

In this issue...

Products & Technology

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- Aircoupled Ultrasonic
- Handheld EMAT Flaw Detector-temate PowerBox H
- Digital Radiography & Associated Products
- Handheld Videoscope-iRis
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What's new in Inspection

Services

- Thermography
- Pipe Inspection with Crawler
- Inspection of Large Vessels

Company News

Forthcoming

Trade Shows



Through Paint/Multiple Echo Thickness Gauges

The through paint/multiple echo thickness gauges from Tritex NDT, UK work on the unique multi / triple echo principal, multiple ultrasonic echoes are sent through the material which ensures a complete elimination of the coatings during measurement.

All Tritex ultrasonic thickness gauges have IPR (Intelligent Probe Recognition), which automatically adjusts settings in the gauge the result is a perfectly matched probe & gauge for enhanced performance. That's not all; the AMVS (Automatic Measurement Verification System) ensures only true measurements are displayed, even on the most heavily corroded



metals. Tritex triple echo also significantly reduces preparation time by ensuring that coatings are entirely ignored and no zeroing is required. Coating plus feature allows measurements to be taken through coatings up to 20 mm thick, depending on the coating type.

The Multigaug 5500 has been designed for hands free use when climbing on staging, scaffolding, & ladders or when accessing by rope, the 5500 will measure the thickness with ease.

The Multigaug 5600 is a simple, robust ultrasonic thickness gauge designed for most common thickness gauging applications. The easy to use keypad allows operator interface whilst the bright LCD display can be used in all light conditions. The moulded soft rubber surround feels comfortable, looks good & provides extra protection against knocks and scrapes.

Simulation Software for Non Destructive Testing

Many components & equipments are subjected to inspection requirements, during both manufacturing and in-service. The inspection challenge increases for:

- Components and equipment with complex geometries.
- Parts composed of new materials.
- Parts with limited accessibility.

It is therefore essential to inspect parts at the earliest possible stage of the manufacturing process. Doing so minimizes the cost & waste associated with down time & value added to defective parts.

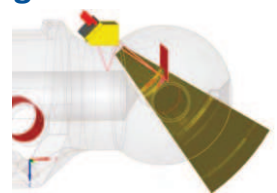
The CIVA simulation tool allows you to evaluate & validate your inspection methods early on in the design process.

The CIVA software is an expertise platform

dedicated to non destructive testing. It is composed of simulation, imaging & analysis modules, which allow conceiving or optimizing inspection techniques & predicting their performances in realistic NDT configurations.

Today, CIVA includes Ultrasonic (UT), Radiographic (RT) & Eddy Current techniques (ET).

UT simulation tools include beam propagation and its interaction with flaws or specimens (Backwall echo, surface echo, corner effects and shadowing). They allow simulating a whole inspection process (pulse echo, tandem or TOFD) with a wide range of probes, components, and flaws.



ET simulation tools allow to predict the electro-magnetic field induced in the component, to compute the normalized impedance diagram of an ET sensor, & to simulate the defect response.

The RT simulation module allows calculating the direct or scattered radiation produced by an X-ray or a Gamma-ray source in a component that can includes one or several flaws.

In Radiography specifying the primary parameters for a radiographic inspection to ensure an interpretable image is often difficult.

- Before taking X-rays, it is necessary to:
- Select the appropriate X-ray source.
- Determine the best position & orientation of the source with respect to the test specimen.

- Specify the correct exposure time to ensure a usable image.

An incorrect setting for any of these parameters almost always requires additional shots. Using CIVA for radiographic inspections, you can identify the key parameters and specify their values for each source.

For example, it is possible to predict the optical density of the image obtained on the radiographic film, and thus defect visibility. CIVA allows you to reduce the number of experimental trials, thereby reducing operator exposure to radiation.

Today more than 130 Companies in over 30 different countries use CIVA...

Air Coupled Ultrasonic

Air coupled ultrasonic technique is a non contact air coupled ultrasonic inspection method which differs from other conventional techniques by using air as the acoustic coupling media between transducer and test specimen. Airscan is a through-transmission technique that monitors the degree to which an ultrasonic signal is modified by the part under inspection.

It consists of two transducers, one transmitter and one receiver. They are located in a fixed location to one another with the test specimen between them. A powerful burst of ultrasonic waves are emitted at the transmitter & focused on the specimen. Some of this energy is radiated out the other side which is detected by the receiver. The degree to which the energy is modified

depends on the internal structure of the specimen & readings are recorded accordingly.

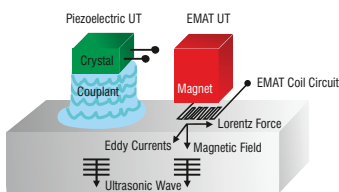
For example, one may scan honeycomb-core material for nonbonds, disbonds, crushed core, delaminations and inclusions.

Airscan offers the advantage of the elimination of water contamination of the item under test, the elimination of water handling & purification systems (pumps, tanks or collection basins, filters, etc.), and the elimination of contaminated water disposal issues.

Applications: Airscan is intended for use with engineered materials such as: Laminated Materials, Core Materials, Aluminum Laminates, Honeycomb Core, CFRP Lay-ups, Foam Core, FRP Lay-ups, Balsa, Bonded Assemblies



About EMAT



EMAT technology is an ultrasonic non destructive testing method that differs from the traditional piezoelectric transducers in the way the sound is generated. In traditional ultrasound technology a piezoelectric crystal is used to convert electrical energy into mechanical vibration. The vibration makes its way into the test piece via the couplant.

An EMAT consists of a magnet & a coil of wire and relies on electromagnetic acoustic interaction for elastic wave generation. Using Lorentz forces & magnetostriction, the EMAT & the metal test surface interact and generate an acoustic wave within the material. The material being inspected is its own transducer, eliminating the need for liquid couplant.

temate PowerBox H

temate PowerBox H is a hand-held, battery operated instrument capable of generating up to 1200V or 8kW of peak power at speeds of upto 100Hz. The instrument incorporates integrated digitizer & broadband pulsers/receivers to perform a variety of flaw inspection, thickness, & material property measurements in factory or field environments.

Spike & tone-burst pulses at frequencies from 100 kHz to 6MHz can be generated to excite a full range of ultrasonic wave modes, including guided waves, in pulse-echo & pitch-catch arrangements.

The instrument can be used with EMAT sensors from Innerspec Technologies or other manufacturers. Embedded software PowerUT-H permits the user to modify triggering & receiving patterns, use advanced filters to enhance signal-to-noise, & present the information on A, B, C & Line Scan formats. Screen captures, device settings & data can be downloaded to a PC using additional software provided with the instrument.

Applications

- Corrosion and erosion measurement.
- Thickness measurement.
- Flaw detection, such as, inclusions, de-laminations & disbond.
- Acoustic velocity measurement.
- Rolling direction recognition.
- Anisotropy and stress measurement.
- Nodularity measurement.
- Bolt-Load measurement.
- Detection of hydrogen damage and pitting.
- Austenitic weld inspection in heavy walls (> 13mm).
- Inspection of welds while welding (e.g. submerged arc welding).
- Weld inspection in thin plates (< 13mm).

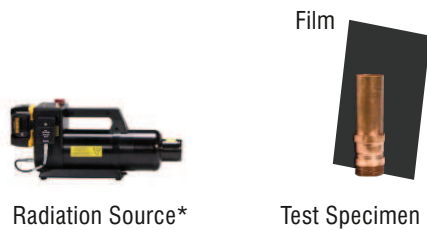


Digital Radiography

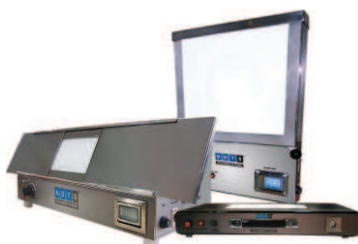
Digital Radiography is the future of industrial radiography. In digital radiography we either use an amorphous silicon based flat panel in place of film which is commonly known as direct radiography (DR) or a phosphorus based imaging plate in place of film commonly known as computed radiography (CR) to create a digital x-ray image of the test specimen. In both the technologies the digital image can be viewed on a computer, saved, transferred or shared easily. Other advantages of digital radiography includes:

- reduced exposure time → less radiation dose → increase source life
- elimination of hazardous chemicals & consumables
- instant results which facilitates decisions to be made on-site

Conventional Radiography



Film Development Process



Film Viewers



Film Digitizer



Work Station

Computed Radiography (CR)

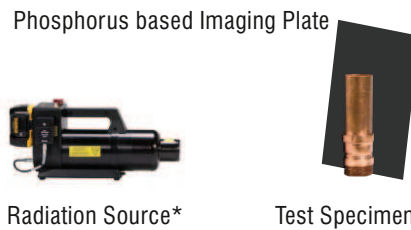
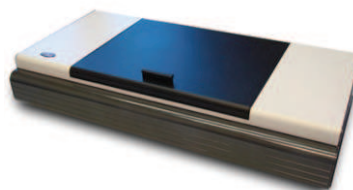


Image plate being taken to scanner



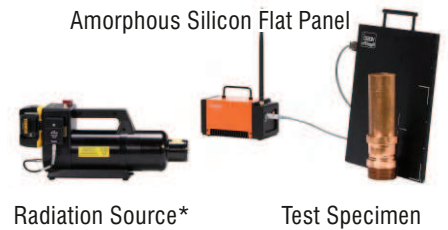
CR Scanner



Work Station

CR only replaces the traditional film, with a flexible reusable phosphorus imaging plate (IP). Similar in appearance to a conventional film, a single imaging plate can be used for 10,000 shots and do not require chemical or a dark room for development. Instead a CR Scanner is used to scan and digitize the captured image from the IP.

Direct Radiography (DR)



Work Station with transport case

DR again replaces the traditional film used in conventional radiography, with an amorphous silicon flat panel to capture the x-ray images. Any type of radiation source can be used from low energy selenium up to high energy linear accelerators. Images are generated in mere seconds, can be immediately viewed on a computer, saved easily and also be shared via emails.

Due to the high radiation sensitivity of the panel, a comparatively very low dose is required, reducing the exposure time drastically and thereby increasing the safety of the operator.

* Radiation Sources
X-Ray, Selenium, Gamma, Cobalt-60 & Linear Accelerators

Handheld Videoscope



iRis is a new generation videoscope from IT Concepts; with iRis you can store either still images or videos of the inspection on a SD card (up to 32 GB). It uses 3-stage adjustable high intensity LEDs as its light source & images can be viewed on 3.5" VGA screen. For quicker decision making the image can be zoomed upto 3.5 times.

A CCD image sensor is the core element of the iRis system and provides an exceptional image quality. It also has dynamic camera modes, (automatic, short exposure, long exposure, manual) to provide even in extreme situations optimal, well balanced inspection images. Extremely compact dimensions (1.35 kg), ergonomic design & robust construction make iRis a true industrial videoscope for every day usage. Additional features include 4-way tip articulation, rechargeable Li-Ion battery which provides 2 hours of portable use, backup AC power adapter and video output to an external monitor. iRis is available in 4, 6, & 8 mm diameter & length from 1.5 - 7.5 meters.

What is new in Inspection Services

Thermography

We provide thermography services for predictive and preventive analysis in all types of industries. Our trained technician brings the right thermography camera to conduct a comprehensive thermographic survey quickly & accurately. They report the concern areas and vulnerable spots immediately so that you can take corrective actions based on the severity of the problem.



Pipe Inspection with Crawler

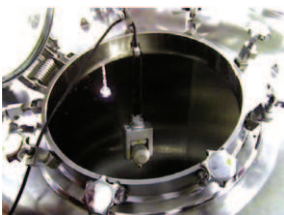
We use steerable crawler to inspect pipes of various diameters. These crawlers are well suited for carrying out inspections on pipe systems, especially those that have a lot of bends and pipe branches. From the control panel you can easily steer the crawler around multiple elbows & solid obstructions & controls the crawler's focus, lighting, speed, pan & tilt functions. This is the most common inspection technique to inspect sewer, drain, water, electrical conduit and process lines.



Inspection of large vessels

Remote Visual Inspection of large surface vessels requires an industrial Pan, Tilt, and Zoom camera. The 4.62 inch diameter of the PTZ camera is capable of fitting into openings 5-inches or larger. It can also be submersed underwater up to 100-feet. The auxiliary lamp module provides extra lighting for extremely dark inspection environments.

Applications Include : • Large Pipe Inspections • Tanks and Vessels Inspections • Coke Drum Lining Inspection • Floating Roof Inspection • Refractory Linings • Contamination detection • Storage Tanks • Crude Units, Catalytic Cracker • Fractionation Towers • Spheres • Tower Trays • Reactors • Piping & Valves • Nuclear fuel bundle serial number verification



Portable Hardness Testers for Thin Materials

Stationary hardness testers can only accommodate test pieces of limited size. Moreover, transportation of the test pieces is often impractical. On the other end of the spectrum, Leeb rebound tests have limitations in terms of minimum sample mass & thickness.



The Equostat 3 works well in out-door, factory & lab environments, & has only very few requirements on test piece geometries. The Equostat 3 probe can be connected directly to a PC. Alternatively, the probe plugs into the Equotip 3 indicating device to combine the Rockwell principle with the Leeb rebound principle of Equotip to become the most versatile hardness tester.

The hardness testing principle follows the Rockwell stationary test. During measurement, a diamond indenter is forced into the test piece to be measured & then released back out of the material. The indentation depth of the diamond is continuously measured while the load is applied & released.

Company News...

Early this year we organized couple of workshops & evening lectures on **Digital Radiography** with the help of ISNT & BARC. During the workshops at Mumbai, Bangalore, Chennai and Kalpakkam, live demonstrations were also performed which truly displayed the potential of Digital Radiography...



New Member in the NDTs India Team



Avinash Rahrurkar

A technical graduate with over 20 years of experience in sales out of which 12 years are of NDT equipment sales. Avinash will be leading the equipment sales activities.

Upcoming Events

NDTS India will be participating in forth coming trade shows and look forward to welcome you at our booth...

Nuclear Energy - 2011

Bombay Exhibition Centre, Mumbai, September 29-October 1, 2011

International exhibition and conference focusing on nuclear power generation & associated technologies.

TECHYARD - 2011

World Trade Centre, Mumbai, October 4 - 5, 2011

Technical Exhibition organised by Naval Dockyard.

NDESAI - 2011

SNTI Auditorium, Jamshedpur, December 2-3, 2011

International Conference & Exhibition on Non Destructive Evaluation for Steel & Allied Industries jointly being organized by Tata Steel & the Indian Institute of Metals - Jamshedpur Chapter

NDE 2011

Chennai Trade Centre, December 8-10, 2011

The annual National Seminar and Exhibition on Non destructive Evaluation organized by ISNT (Indian Society of Non Destructive Testing)

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