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AINDT

INDUSTRIAL EYE

THE OFFICIAL JOURNAL OF THE AUSTRALIAN INSTITUTE FOR NON-DESTRUCTIVE TESTING

RADIOGRAPHY ▪ ULTRASONICS ▪ EDDY CURRENT ▪ PENETRANT ▪ MAGNETIC PARTICLE
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President's Message

Joshua Morris

As I write this message, I am in South Korea attending the 20th World Conference on Non-Destructive Testing (WCNDT). Originally scheduled for 2020, the conference, hosted by the Korean Society for NDT (KSNT), was postponed due to the unprecedented challenges posed by the COVID-19 pandemic. From 27 May 27 to 31 May 31, experts, representatives, technicians, service providers, equipment manufacturers, NDT societies, and asset owners from around the world converged in Incheon. It is particularly encouraging to see a strong contingent of Australian delegates making the journey, demonstrating Australia's active role in the global NDT community.

Among the Australian delegates were Immediate Past President Ian Hogarth, Vice President Angelo Zaccari, along with past presidents Richard Stocker, Pranay Wadyalkar and Nick Eleftheriou among many others. Miro Katouzi from LMATS, recipient of the AINDT conference grant, is attending WCNDT and will be contributing an article about his experiences in the upcoming issue of Industrial Eye. I take this moment to reiterate the opportunities AINDT provides, such as the annual grants to support our members' participation in such international events.

Australia's involvement in the global NDT community is not a recent development. AINDT members have a long-standing reputation for volunteering their time and expertise on international platforms such as the International Committee for Non-destructive Testing (ICNDT), the Asia Pacific Federation for Non-destructive Testing (APFNDT), and the International Atomic Energy Agency (IAEA). Our members also serve as ISO Standards representatives for NDT and Condition Monitoring (CM), further highlighting our proactive role in shaping the industry.

At this year's conference, AINDT will have the following representation:

- ICNDT (International Committee for NDT) voting representative: Pranay Wadyalkar
- APFNDT (Asia Pacific Federation for NDT) voting representative: Pranay Wadyalkar
- Chairman of Standard Australia MT07 Committee and ISO Standards Voting Representative: Angelo Zaccari

The conference featured NDE 4.0 as a key theme, reflecting the alignment of the broader NDT community with industry 4.0. NDE 4.0 encompasses digitisation, machine learning, and artificial intelligence, topics that dominate WCNDT discussions and presentations. The COVID-19 pandemic has accelerated our adoption of these technologies, necessitating remote data analysis and inspection capabilities. Innovations like HaloLens have enabled inspectors to conduct detailed equipment assessments from the safety of their home offices, revolutionising our approach without compromising on quality or safety.

While NDE 4.0 presents immense opportunities, it also brings challenges, particularly in transitioning from traditional to digital data collection methods. Many tests and inspections still rely on non-digital methods, posing barriers to the full integration of AI solutions. However, IT-based solutions are being developed to enhance tools used by NDT practitioners and asset owners. This transformation promises not only immediate efficiencies but also long-term benefits in asset management and operational optimisation through data-driven insights.

Looking ahead, the 3rd International Conference and Exhibition on NDE 4.0 will be hosted by the Indian Society for Non-destructive Testing (ISNT) in Bengaluru from 3 to 6 March 2025.

Adoption of ISO 9712:2021

As many of you are aware, the primary standard governing the AINDT certification scheme for NDT, ISO 9712 Non-destructive testing — Qualification and certification of NDT personnel, underwent an update in 2021. The Board of Directors, Certification Board, and Federal Office are now prioritising the adoption of ISO 9712:2021. This recent revision has been available for some time and introduces several changes that AINDT must integrate into our certification scheme. ISO 9712:2021 outlines the key modifications compared to the 2012 edition:

- Clarification of responsibilities for the Certification Body, Authorised Qualifying Bodies, examination centers, and employers
- Addition and revision of definitions
- Specification of responsibilities for examiners and referees
- Revision of requirements for training duration and industrial experience
- Modification of requirements for visual acuity testing
- Revision of requirements for examinations
- Inclusion of an option for using a psychometric process at the discretion of the Certification Body
- Revision of requirements for certification documents
- Revision of requirements for certification conditions
- Addition of requirements for the certification renewal process
- Revision of the structured credit system for Level 3 recertification
- Inclusion of Annex F for techniques
- Addition of new Annex G for psychometric principles
- Other minor technical and editorial adjustments

The NDT Certification Board is responsible for carrying out a Gap Analysis between the new standard, the previous version of the standard, and the AINDT Guide to Qualification and Certification. Changes to the ISO 9712 standard will be front of mind following recent decisions by the board to engage an external party for our governance review and purchase and implementation of a new database, both of which are currently underway. Once the review is complete and any relevant revisions to the certification scheme have been implemented, all updates will be widely disseminated to ensure that all certificate holders are aware of the changes.

Warm regards, **Joshua Morris, President**
Australian Institute for Non-destructive Testing

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INSTRUCTIONS TO AUTHORS OF TECHNICAL ARTICLES

Manuscripts should be submitted in electronic form:
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2. typed with single spacing
3. with figures as tif or jpeg files at better than 300dpi

Manuscripts should include:
1. symbols and abbreviations conforming to recognised standards; metric units (SI)
2. references listed, after the text, in the order in which they occur in the paper
3. references indicated in the text by arabic numerals in square brackets
4. tables and figures numbered separately but consecutively with Arabic numerals and brief, descriptive titles
5. a reference in the text to all tables and figures
6. graphs and diagrams made with lines of sufficient thickness to reproduce well
7. titles and address of authors

Procedure for submission of manuscripts:
1. articles should be sent to: journal@aindt.com.au
2. manuscripts will be submitted to referees who will remain anonymous
3. reprints of each paper will be supplied free to the author

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CEO Message

It is not my intent to get overly political in my journal pieces, but May was budget month—a month that was full of government announcements that either directly or indirectly affect the NDT and CM industries.

Stuart Norman

The majority of these announcements have been related to the energy and resources sectors, which is no surprise given that past governments have focused on infrastructure and defence spending.

A great deal of debate has been centred on the Federal Government's Future Gas Strategy which was released by the Minter for Resources, the Hon Madeleine King. The strategy maps the Federal Government's plan for how gas will support our economy's transition to net zero.

At the heart of the strategy is the Federal Government's support and recognition of the continued need for gas through 2050 and beyond. This has been criticised by some from within the government and slammed by some state energy ministers, including Victoria's Minister for Energy and Resources, the Hon Lily D'Ambrosio.

However, criticism has come not only from environmental opponents of gas, but also from business leaders who are concerned that the east coast of Australia will face a gas shortage in the coming years. This shortage could force businesses to relocate or even close down.

The chief executive of Kagome Australia, Jason Fritsch (Australia's largest tomato processor) said governments needed to act before businesses had no choice but to move overseas.

As reported in The Age on 24 May, Mr Fritsch said, "It will happen and it is happening. We are losing business in manufacturing now. We're trying to absolutely support the Future Made in Australia (policy), but you've got to be given the tools to do that."

The Future Gas Strategy identifies the following actions:

- Prevent gas shortfalls by working with industry and state and territory governments to encourage more timely development of existing gas discoveries in gas-producing regions.
- Reduce gas related emissions by working with industry and regulators to minimise venting and flaring of methane from operations and consider further emissions reductions measures through the Government's six decarbonisation plans. The Government will also adopt a technology-neutral approach to exploration data acquisition to minimise seismic surveying where possible.
- Support households and businesses through the transition to net zero by working closely with the states and territories to manage pricing impacts and the Gas Market Code.
- Empowering First Nations peoples by clarifying consultation requirements for offshore resources activities and pursue benefit-sharing to ensure First Nations people are partners in the transition to net zero.
- Promote geological storage of CO2 and support our region's transition to net zero by releasing acreage for offshore Carbon Capture and Sequestration (CCS)

and establish a new initiative on regional cooperation on transboundary carbon capture and storage. This will provide options for energy security and carbon management solutions for our regional partners.

In releasing the strategy, Minister King said, "Gas plays a crucial role in supporting our economy, with the sector employing 20,000 people across the country, including remote and regional communities." As we know, many of those employed in the sector are from our industry.

While the Future Gas Strategy was not part of the Federal Government's Budget it is obvious that it is required to support transition to Net Zero 2050 and the Future Made in Australia policy. This policy has seen billions of dollars set aside to support some industries including "green" hydrogen and refining critical minerals.

In fact, the hydrogen industry is one of the biggest winners from the Budget, with $8 billion set aside to support it over the next decade. Most of this money ($6.7 billion) will take the form of production tax credits. Once a company is producing green hydrogen the government will offer them $2 per kilogram for the hydrogen they produce.

The other big winner in the Budget was the critical minerals sector—it was allocated $7.1 billion. Australia is already a major player in this space, being the largest producer of lithium in the world, and home to one of the large deposits of nickel and cobalt. However, a large percentage of these minerals is refined abroad, with China being a large global player in minerals processing.

Should the Future Gas Strategy come to fruition, AINDT members should benefit; the resources and energy sectors will need NDT in the construction and maintenance of their assets. Similarly, the Federal Government's plan to increase manufacturing and processing of critical minerals will again require the skills of AINDT members.

The future is also looking bright for NDT in the defence industry. In March, Federal Minister for Defence Industry, the Hon Pat Conroy, announced new initiatives through the Skills and Training Academy designed to develop Australia's workforce to build and sustain our nuclear-powered submarines. One of these initiatives was a Non-Destructive Testing Traineeships to grow the testing technician workforce.

AINDT has reached out to the Minister Conroy, requesting a meeting to discuss how we can assist in establishing the program. We will keep members updated on the progress of our discussions with the government regarding this initiative.

Best Regards

Stuart Norman, CEO
Australian Institute for Non-destructive Testing

Member List

June 2024

The AINDT is the national peak body that promotes the professional practices of non-destructive testing and condition monitoring personnel. Our mission is to provide members, industry and the community with independent and professional service in relation to the science and practice of non-destructive testing.

Through the work of our state branches and federal office, AINDT is committed to fostering a community of professionals and organisations dedicated to the fields of non-destructive testing, engineering, and materials and quality testing.

We offer a tiered membership structure, inviting businesses to enhance their professional standing and industry influence by becoming a Company, Corporate, or Sustaining member. Our memberships unlock a suite of benefits, including marketing opportunities, heightened support, streamlined staff certification management, and much more.

AINDT would like to thank the companies below for their valued support.

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SRG Industrial Pty Ltd
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NDT Instruments Pty Ltd
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Optiflow Pty Ltd
Weld Integrity
Wood - Asset Performance Optimisation

Membership Registrar Report

The Australian Institute for Non-Destructive Testing (AINDT) continues to support its members through the Federal Office, state branches, technical nights, and various social events. However, there appears to be an insufficient emphasis on the importance of technician certification from both individual and company perspectives.

The AINDT's mission statement is to provide members, industry and our community with an independent certification body that supports NDT practitioners. NDT certification ensures the quality, safety and reliability of materials and designs—without which could lead to various failures and catastrophes. NDT evaluation ensures the safe operation of engineering systems.

Without NDT certified technicians the majority of the manufacturing, aerospace, oil and gas and construction industries globally would come to a standstill.

AINDT's membership numbers continue to fluctuate due to various reasons, from members leaving the industry or retiring, through to other certification bodies and low emphasis placed on membership renewals in general.

The AINDT CEO and Branch Presidents continue to meet to review the ongoing running of the institute on behalf of members. Some of these initiatives include:

- Federal Office: Updates to the website and database, recruitment of a new Certification Services Manager and staff resources.
- Major Events: The World Conference held recently in Korea and the National Conference, which will be held in Newcastle in 2025.
- Branch Reports: Including AGM dates and venues, technical and social events.

One of the key AINDT engagement programs is the annual member survey, which is sent to all individual, company, corporate and sustaining members.

This survey is the vehicle through which members can provide feedback to the AINDT Federal Office, Board of Directors and federal committee. This will be distributed in August 2024. I encourage all AINDT members to complete the survey.

Additionally, I encourage all members to attend their upcoming State Branch AGMs as one of the benefits provided to financial members. Let us support our branches as the local committees spend countless hours organising this mandatory event.

Kind regards

Craig Taylor
AINDT Membership registrar

Condition Monitoring Certification Board Update

Shawn Moore

AINDT's Condition Monitoring Certification Board has been very active over the last few months, working on examination papers and reviewing the processes associated with certification. The Board conducted a meeting in March and another meeting is scheduled in June.

Development of examination papers has continued. The examination committee has completed the Category 2 Mechanical Certification examination paper. A trial of the examination paper was conducted by the examination committee over the June long weekend. Category 2 Mechanical Certification applications will be open for candidate shortly after this trial, provided that the examination committee is satisfied with the results of the trial.

The Board is conducting a review of the certification guide, ensuring the currency and accuracy of the document. The Board reviews the guide regularly to ensure the documentation is reflective of current operations and certification processes.

Internal review of procedures and record keeping of certification processes is underway.

The Board will update procedure manuals as required, ensuring proper and accurate processing of certifications and records. These internal audits are certain to identify improvements of procedures and record management.

The Board is working towards the establishment of an online examination process. Online examinations will have benefits such as improved security of examination papers, enabling accurate and fast results. Invigilation of examinations will still be required with online examinations. Online exams will provide better access to candidates in the for certification.

Shawn Moore
Chairman – AINDT CM Certification Board

AINDT Appoints New Certification Services Manager

The Australian Institute for Non-destructive Testing (AINDT) is pleased to announce that Peter Dawson is set to join our Federal Office as our new Certification Services Manager.

Many of you might already know Peter from his time in the non-destructive testing industry. He boasts over three decades of experience, encompassing roles in both commercial practice and accreditation, with significant expertise in managing ISO programs and guiding organisations through the certification process.

Peter's most recent position was as Lead Accreditation Specialist in NATA's non-destructive testing and materials testing division, where he served for over 12 years. During his tenure, Peter managed the ISO/IEC 17025 accreditation programs and conducted periodic assessments of a wide variety of NATA's NDT accreditations. He also guided countless new applicants through the NATA accreditation process.

Prior to his role at NATA, Peter spent more than 25 years in both practitioner and managerial roles within commercial NDT organisations in Melbourne. Peter began his NDT career in the 1980s with Metlabs and Amec Australia, later moving to Pearl Street in the 2000s, and eventually to ALS. In these roles, Peter managed a diverse portfolio of NDT clients, including significant term contracts and major construction projects.

Peter's extensive experience in NDT, combined with his expertise in accreditation and compliance from his time at NATA, will provide AINDT with the enhanced capability needed to effectively oversee the certification management programs critical to AINDT's operations moving forward.

Peter will commence in the role from Monday 22 July after a well-earned holiday.

Condition Monitoring Training Centres

Unlock the future of your career with top-tier condition monitoring training from trusted providers.

These training centres have earned the endorsement of AINDT, aligning perfectly with the national syllabi approved by the AINDT Certification Board. This ensures that you receive the highest standard of education and training.

To maximise your learning experience, AINDT recommends obtaining a copy of the training module—either directly from the training provider or by downloading it from the AINDT website. This will ensure you are well-prepared for your course.

For those seeking certification, it's crucial to successfully complete the specified training program and required training hours outlined in ISO18436. This is essential for achieving certification in your desired conditioning monitoring method, category, and industry sector.

All examinations are conducted by the AINDT.
For exam dates and further details, please contact AINDT via: federaloffice@aindt.com.au.

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Authorised Qualifying Bodies

AQBs are authorised to offer AINDT-approved training and initial and recertification examinations in any Australian state, at any time throughout the year.

The AINDT also conducts scheduled examination rounds twice yearly, with dates advertised in The Industrial Eye and the AINDT e-newsletter.

While the AINDT strives to notify certificate holders of impending certification expirations, it remains the responsibility of the certificate holder to initiate the renewal and recertification process before their certification expires. Please note that late fees apply to overdue certification applications.

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- Radiographic Testing 1,2 Welds
- Magnetic Particle Testing 1,2 Multisector
- Penetrant Testing 1,2 Multisector
- Visual/Optical Testing 2 Multisector
- Phased Array Ultrasonic Testing 2 Multisector
- Eddycurrent Testing 2 Multisector

Victoria

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- Radiographic Testing 2,3 Welds, Casting, Aerospace
- Magnetic Particle Testing 1,2,3 Multisector, Aerospace
- Penetrant Testing 1,2,3 Multisector, Aerospace
- Eddy Current Testing 2,3 Multisector, Aerospace
- Magnetic Flux Leakage 2
- Tank Bottom Testing
- Phased Array levels 2 and 3 Ultrasonics 2 Multisector
- Visual/Optical Testing 2 Multisector
- Time of Flight Diffraction (TOFD) levels 2 and 3 Welds
- Heat Treatment
- ISO 9712 UT Level 2 Corrosion/Erosion Detection and Mapping (CDM)

Western Australia

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E: training@attar.com.au
W: **attar.com.au**

NDT methods, levels, and industry sectors offered:
- Computed and Digital Radiography 2, 3
- Ultrasonic Testing 1, 2,3 Welds, Casting, Wrought,
- Aerospace, Thickness
- Radiographic Testing 2,3 Welds, Casting, Aerospace
- Magnetic Particle Testing 1,2,3 Multisector, Aerospace
- Penetrant Testing 1,2,3 Multisector, Aerospace
- Eddy Current Testing 2,3 Multisector, Aerospace
- Magnetic Flux Leakage 2
- Tank Bottom Testing
- Phased Array 2, 3 Ultrasonics 2 Multisector
- Visual/Optical Testing 2 Multisector
- Time of Flight Diffraction (TOFD) 2, 3 Welds
- Heat Treatment
- ISO 9712 UT Level 2 Corrosion/Erosion Detection and Mapping (CDM)

SRG Training Academy
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NDT methods, levels, and industry sectors offered:
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- Penetrant Testing 1,2 Multisector
- Phased Array Ultrasonic Testing 2 Multisector

Queensland

Machinery Consultation & Service
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NDT methods, levels, and industry sectors offered:
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- Magnectic Particle Testing 1,2 Multisector
- Penetrant Testing 1, 2 Multisector
- Phased Array Ultrasonic Testing 2 Multisector

Protecs Global
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NDT methods, levels, and industry sectors offered:
- Ultrasonic Testing 1 (General Engineering) 2 Welds
- Magnetic Particle Testing, 2 Multisector
- Penetrant Testing, 2 Multisector

AINDT
Australian Institute for Non-destructive Testing

STATE BRANCH AGMS

Join us for a night of food, drinks, awards, prizes and lively conversation

South Australia: Friday 19 July at the Adelaide Rowing Club. Register now.

Victoria: Friday 26 July at Frontside Food & Wine. Register now.

Queensland: Saturday 27 July at Persone, Brisbane. Save the date.

Western Australia: Friday 2 August at The Lucky Shag Waterfront Bar, Perth. Save the date.

New South Wales: Saturday 3 August at Watersedge at Campbell's Stores, The Rocks. Save the date.

LEARN MORE

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NSW Branch Update

Industry Innovation Night at the Quinspek Technical

In mid-May the New South Wales branch hosted an Industry Innovation Night at the Quinspek Technical laboratory in the THALES Marine Precinct in Newcastle.

With 60 attendees, the night was a convergence of cutting-edge technology, insightful presentations, and fruitful networking opportunities. The event showcased the latest advancements in non-destructive testing (NDT), from advanced ultrasonic testing devices through to precision electromagnetic instruments, highlighting their critical role in ensuring structural integrity across industries.

Networking sessions were a key feature of the event, allowing professionals from various sectors—engineers, researchers, technicians, and business leaders—to connect, exchange ideas, and explore potential collaborations. These interactions fostered meaningful partnerships and laid the groundwork for future initiatives aimed at driving innovation and excellence in the NDT industry.

The intimate setting of the THALES Marine Precinct by the water's edge provided a unique backdrop for these discussions, creating a relaxed yet stimulating environment where ideas could flow freely. The event not only showcased technological advancements but also facilitated the exchange of knowledge and expertise, reinforcing the industry's commitment to continuous improvement and collaboration.

The AINDT Industry Innovation Night was a dynamic and impactful gathering that brought together industry leaders, innovators, and stakeholders to explore, discuss, and celebrate the advancements shaping the future of non-destructive testing.

AINDT would like to thank everyone who contributed to the success of the event:

- Quinspek Technical
- Donna Day from AXT
- Tristan Davison and Kyle Stead from SRG Global
- Stuart Smart, David Smart and Russell Smart from SmartChem Industries
- Russell Fraser from Russell Fraser Sales
- Derek Burns and Joel Shenoy from PCTE
- Tony Anissa and Nick Eletheriou from Evident
- John Duenzl and Noah Edwards from Simplifi NII
- Adam Walsh and Neil Burleigh from EN DE TEK Australia

Queensland Branch Update

A Range of Dynamic Technical Events

The AINDT Queensland branch has been busy with activity, continuing to deliver enriching events that underscore our dedication to professional growth and networking within the NDT community.

Our recent events have showcased the dynamic nature of our branch and the active participation of our members.

Robotics Gas Sphere Inspection Webinar

On 18 April 18, we hosted a compelling webinar on Robotics Gas Sphere Inspection, led by Sean Peters from Waygate Technologies.

Sean has provided an in-depth case study of an exemplary collaboration and integration project conducted in Asia. The session highlighted the cutting-edge robotics technology employed to achieve unparalleled precision and efficiency in inspection tasks.

Attendees benefited greatly from Sean's extensive expertise in leveraging technology for complex inspection tasks, gaining valuable insights into the latest advancements in NDT technology.

We thank Sean Peters for his informative and engaging presentation and appreciate the active participation of our members.

Drone-Based UT Measurements: A Tech Showcase in Gladstone

On 1 May, we hosted an exclusive event Innovations in Drone-Based UT Measurements: A Tech Showcase in Gladstone. The event was presented by Nexxis and hosted by QAL.

The event featured the Flyability Elios 3 drone, showcasing breakthroughs in ultrasonic thickness measurement. Attendees had the opportunity to witness firsthand the capabilities of the Elios 3, equipped with the UT payload developed in partnership with Cygnus Instruments. This state-of-the-art drone represents a significant advancement in industrial inspections, offering safer and more precise measurements in challenging environments.

A special thanks to Joel Chan (Regional Sales Manager, Flyability), Sarah Le (Drone Pilot and Specialist, Nexxis), and Thomas Simpson (Key Account Manager, Nexxis) for the tremendous effort in running this informative night.

Looking Ahead

As we plan for the rest of the year, the Queensland branch remains committed to delivering sessions that cater to the diverse interests and professional needs of our members. Your involvement and feedback are crucial to our success, and we invite you to share your ideas for future sessions or workshops.

Stay tuned for our AGM dinner in July. It promises to be more exciting and different than ever before.

South Australia and Northern Territory Branch Update

An Introduction into Guided Ultrasonics: Current Inspection Techniques

On 16 May, the South Australia and Northern Territory Branch held their first technical evening of the year, An Introduction into Guided Ultrasonics: Current Inspection Techniques. The presentation was focused on three aspects, Long Range UT (LRUT), Corrosion Under Pipe Supports (CUPS) and Permanently Installed Monitoring Systems (PIMS). The talk was presented by Ben Noteboom from Guided Ultrasonics LTD.

Ben explained the basic concepts of guided ultrasonics, some of its applications, data acquisition, and data analysis. He provided some real-life case studies, as well as a live demonstration. The attendees were riveted during the presentation; the Q&A session was very interactive with questions posed, answered and often explained with practical examples.

The evening was hosted and sponsored by NDE Solutions at their Adelaide headquarters in Hindmarsh. NDE Solutions supplied not only the venue, but a sausage sizzle and a range of cold refreshments. The NDE Solutions team were fantastic hosts and very welcoming to everyone who attended. A big thank you to NDE Solutions for their effort in making the evening a success and to Ben for his time, patience and shared knowledge.

A further thank you to all those who attended the evening, and for the way everyone participated with questions and comments. The participation added to how well the evening developed.

Overall it was a brilliant night. Further technical evenings are being planned and we hope members will continue to support these events as well as they can.

Regards

Simon Wilding

AINDT South Australia and Northern Territory Branch President

Victoria and Tasmania Branch Update

Specimen Testing Night

The Victoria and Tasmania branch recently hosted a specimen testing night. The event took place at the Golden Gate Hotel in South Melbourne on Tuesday 7 May.

Attendees were given the opportunity to test their skills on certified samples with a range of NDT methods, including ultrasonic, eddy current, magnetic particle and liquid penetrant. This hands-on experience allowed participants to gain practical knowledge and enhance their understanding of ultrasonic corrosion detection.

By the end of the evening, attendees gained a deeper appreciation for ultrasonic corrosion detection, and practical insights into various techniques, and learned how to make informed decisions when selecting the most appropriate method for corrosion assessment in the field.

Members competed against one another to identify discontinuities. Our congratulations go to Mahdi Kiani Dehkain for taking out the best overall performance award on night. Mahdi won a **LMATS** sponsored gift voucher and **Evident Scientific** Award.

Western Australia Branch Update

Energy and Mining Collaboration Speed-Networking

Members of AINDT Western Australia branch were proud to be one of 13 organisations to co-host the annual Energy and Mining Collaboration Speed-Networking event held at Cottesloe Hotel on 7 May 2024. The Western Australia branch secured 10 tickets to the event and was able to offer half of these tickets to the members, encouraging engagement and greater member participation.

AINDT members were among 250 people who attended the event, which featured both structured speed-networking (each person had opportunity to meet with 70+ people across energy and mining industries) and unstructured free-flowing networking.

The event successfully brought together the professional networks of 13 organisations across the energy and mining sectors.

Organisations represented on the evening included: Energy Club WA, WA Mining Club, Austmine, AINDT, Women in Energy - Perth, NAWO, SPE Western Australia, Energy and Resources Law Association, Subsea Energy Australia, Young Mining Professionals Perth, Young Energy Professionals Perth, Women in Subsea and Energy, and the IADC Australasia Young Professional Subcommittee.

L to R: WA Branch Councillors Josh Wilkinson, Nathan Lenane, Richard Stocker and Michael Needham attended the event to represent AINDT.

Georgina Maslen, Chair of the Professional Networking Institute and host for the evening introducing the AINDT during the networking event.

Standards Update

ISO Committee Membership

In the last quarter, the proposal submitted by Standards Australia Committee MT-007 Non-Destructive Testing Of Metals And Materials seeking inclusion on ISO Committees was granted Observer status. This Observer status applies to the ISO Committees TC-135 SC/3 Ultrasonic Testing and TC-135 SC/4 Eddy Current Testing.

Observer status is the first step in becoming a Participating member on both ISO Committees. Joining these two ISO Committees would see Standards Australia become a member of a total of five committees, including the NDT Main Committee, Acoustic Emission and Thermography.

Proposals for other ISO Committee membership have been submitted and it is expected that these will be endorsed prior to the next full strings of ISO TC-135 meetings, increasing our participation.

ISO Standards Ballots

Several ISO Standards ballots were recently held. Standards that are currently in draft or being reviewed include:

- Non-destructive testing — Acoustic emission testing (AT) — Leak detection by means of acoustic emission
- Non-destructive testing — Acoustic emission testing — Measurement method for acoustic emission signals in concrete
- Non-destructive testing — Acoustic emission testing — Test method for damage qualification of reinforced concrete beams
- Non-destructive testing — Acoustic emission testing — Test method for classification of active cracks in concrete structures
- Non-destructive testing — Acoustic emission inspection — Vocabulary
- Non-destructive testing — Discontinuities in specimens for use in qualification examinations

It is expected that MT-007 will meet in June, following the conclusion of the ISO meetings, to discuss the outcomes. Several ISO Standards may be issued this year. If MT-007 accepts these ISO Standards, they will be circulated for public comment before final acceptance.

As evidenced by the ballots, Standards in the area of acoustic emission testing are very active. This activity will help ensure that Standards are available in the many areas in which acoustic emission testing is used. MT-007 will be closely reviewing these Standards, with the potential for their inclusion in Australian Standards.

We look forward to reporting on the new ISO Committee meetings, which will be attended by Standards Australia committee members.

Please contact me using the details below if you have any questions or require further information.

Angelo Zaccari

MT-007 Standards Chairperson
azaccari@aben-tech.com.au

AICIP Update

Enrolments have opened for the September 2024 AICIP examinations.

Recognised nationally, AICIP certification can expand your career options and job opportunities. Examinations assess the level of skill, knowledge and capability of professionals working in the pressure equipment sector to ensure the integrity and safety of plant and pressure equipment inspection.

Dates and fees

Exam Papers	National Locations	Dates (September)	Time
Exam Enrolment Deadline	Nationally**	16th Aug 2024	No Enrolments after this date APPLY HERE.
Exam Onboarding Deadline	Nationally**	11th Sep 2024	No Onboarding on day of exam
ISI paper A & B - Theory	Nationally**	12th Sep 2024	AM - PM
ISI paper E – Practical*	Nationally**	13th Sep 2024	AM
SISI Paper C & D - Theory	Nationally**	13th Sep 2024	AM - PM

Additional dates for the exams may be added/deleted depending upon the applicant interest.
** Nationally – Sydney, Adelaide, Brisbane, Melbourne, Perth and *Darwin.
* Darwin applicants, please note, for the exams to run, there needs to be a minimum amount of enrolments, therefore candidates may need to opt for a different region to sit their exams. Candidates will be notified accordingly.

In-Service Inspector (ISI) – Pressure Equipment : Sit Papers A, B & E

$885.00

Senior In-Service Inspector (SISI) – Pressure Equipment : Sit Papers C & D

$495.00

Suggested Prior Attributes Of Candidates

There are no prerequisites, prior qualifications, training or experience required for ACIP in-service inspectors' examinations. However, candidates with insufficient industry experience will have difficulty passing the theoretical Paper B and practical Paper E.

To have a reasonable likelihood of demonstrating the required competency and passing the exams, it is strongly recommended that applicants have at least the following:

- Qualifications:
  - Year 12 High School, a trade certificate or equivalent knowledge.
  - Knowledge of common pressure equipment types and terminology used in Australian Standards.
  - Basic mathematics ability (for example, to calculate the volume, thickness and hoopsters of a cylinder).
- Training: 100 hours of either self or on-job training in pressure equipment inspection and the application of AS/NZ 3788.
- Experience: five years (full time equivalent) including two years in inspection. Experience should be sufficient to develop basic technical skills and good communication skills.
- Pressure equipment knowledge: an understanding of the main technical inspection terms relating to pressure equipment.
- Personal skills:
  - Ability to read, write and communicate orally in English.
  - Maturity and reliability.
  - Good eyesight and hearing (with or without correction).

For SISI applicants, more in-depth experience, calculation and technical ability is desirable.

To enrol in an AICIP examination, visit: **inspectors.aicip.org.au**

Thermography in Action

Infrared Analysis Extends Life of Bulldozers

In this case study, Infrared Inspections and Technologies (IIAT) showcases the effectiveness of their infrared analysis solutions on bulldozers. The case study demonstrates IIAT's success in supporting a fleet of bulldozers, with 46% of the tracks and track frames exceeding the Original Equipment Manufacturer (OEM) budgeted lifespan.

Overview

Over the past 10 years, IIAT has regularly inspected a fleet of 21 bulldozers at six different locations for their client. IIAT has played a crucial role in enhancing the maintenance and operational efficiency of these machines.

IIAT focused on wear measurement monitoring, inventory spares management, and the identification and timing of component change-outs. By conducting fortnightly inspections, maintenance, and re-lubrication activities, IIAT successfully extended the undercarriage life of the bulldozers.

The case study examines:

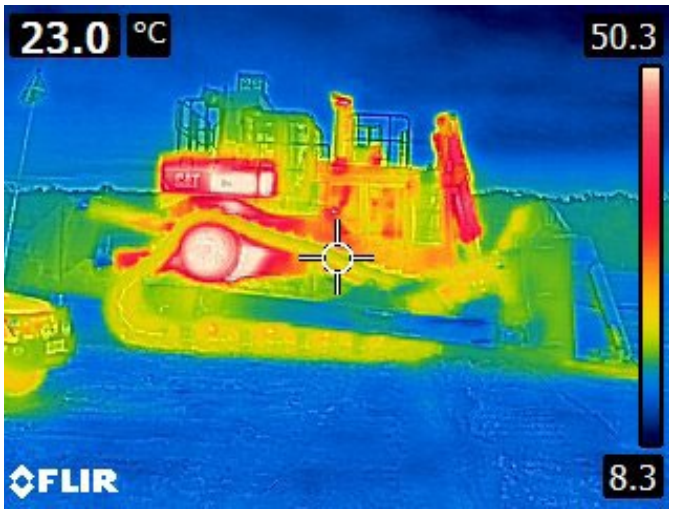
- The number and percentage of tracks that achieved greater than:
    - 4,000 hours without a Pin and Bush turn
    - budgeted life
    - budgeted life without a Pin and Bush Turn
- The number and percentage of track frames that have achieved greater than:
    - budgeted life
    - double the budgeted life

By utilising these metrics, IIAT was able to collaborate with their client to measure Return on Investment (ROI) based on their in-house financial data, including parts replacement costs and planned and unplanned maintenance hours.

Due to the confidential nature of this financial information, specific ROI figures are not detailed in this case study.

The Workflow Approach

The IIAT system effectively addresses the two fundamental failure modes in undercarriage components: external wear and internal friction. Many miners focus solely on achieving the budgeted lifespan of their equipment, often neglecting to monitor the frequency of track pin repairs or track frame component replacements during the budgeted life. This oversight can significantly increase the hourly cost of maintaining the undercarriage.



IIAT offers a structured approach that integrates data collection and analysis to pinpoint areas needing re-lubrication and basic maintenance, such as track tension adjustments and wear management.

For the bulldozers, approximately 200,000 images of around 110 components per inspection were captured over 10 years of continuous monitoring.

This comprehensive process ensures that problematic components are consistently addressed, leading to more efficient and cost-effective maintenance practices.

The Results

Figure 1 (below) illustrates the current hours achieved as at the end of April 2024 for track and track frame life over 10 years, with the fleet inspected every fortnight. It highlight:

- Tracks that have achieved greater than 4,000 hours where no Pin and Bush turn has been completed
- Tacks that have achieved more than the 8,000 hours budgeted life
- Tracks that have achieved more than the 8,000 hours budgeted life where no Pin and Bush turn has been completed

IIAT found that 37 out of 80 tracks—equivalent to 46%—have achieved more than the budgeted life. In addition, 29 out of 80 tracks—equivalent to 36%—of those have not yet required a pin and bush turn.

Figure 2 illustrates the incremental hour brackets for the 52 track frames from less than 12,000 hours up to and including greater than 24,000 hours. IIAT found that 24 out of 52 track frames—equivalent to 46%—have exceeded budgeted life.

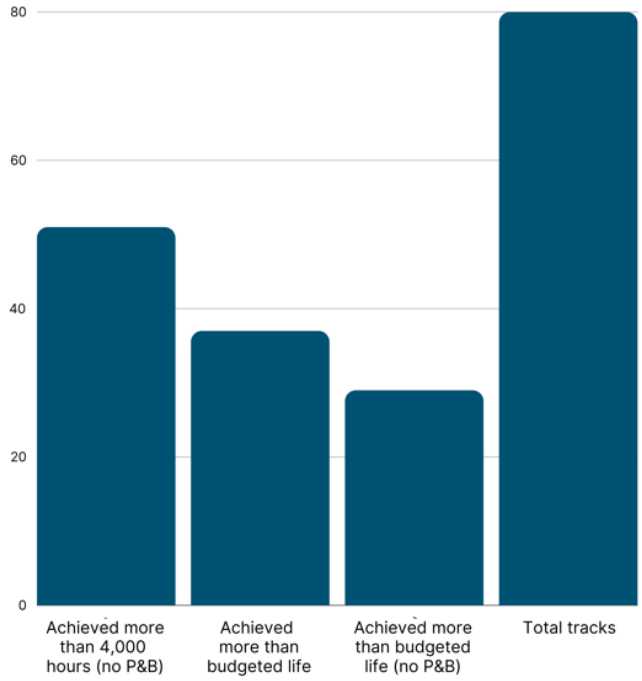


Figure 1. Track Hours Achieved

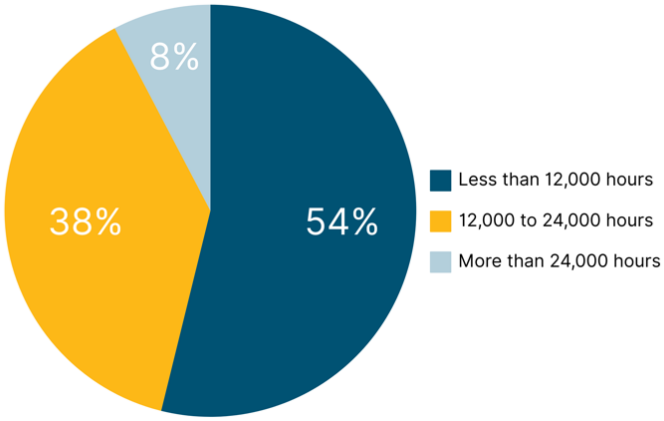


Figure 2. Track Frame Hours Achieved

Summary

IIAT assisted with wear measurement monitoring, inventory spares management, and the identification and timing of component change-outs. Over the past 10 years, IIAT has regularly inspected bulldozer fleets across six different sites.

As a result of the program, IIAT demonstrated that the increase in component life, and therefore ROI, varies with the frequency of inspections; a minimum track life increase of 30% was achieved via monthly inspections.

The focus of IIAT's program extended beyond fault prediction; it aimed to transition the clients' overall maintenance approach from reactive to predictive. This shift was accomplished through the early identification of issues and the prompt execution of remedial actions.

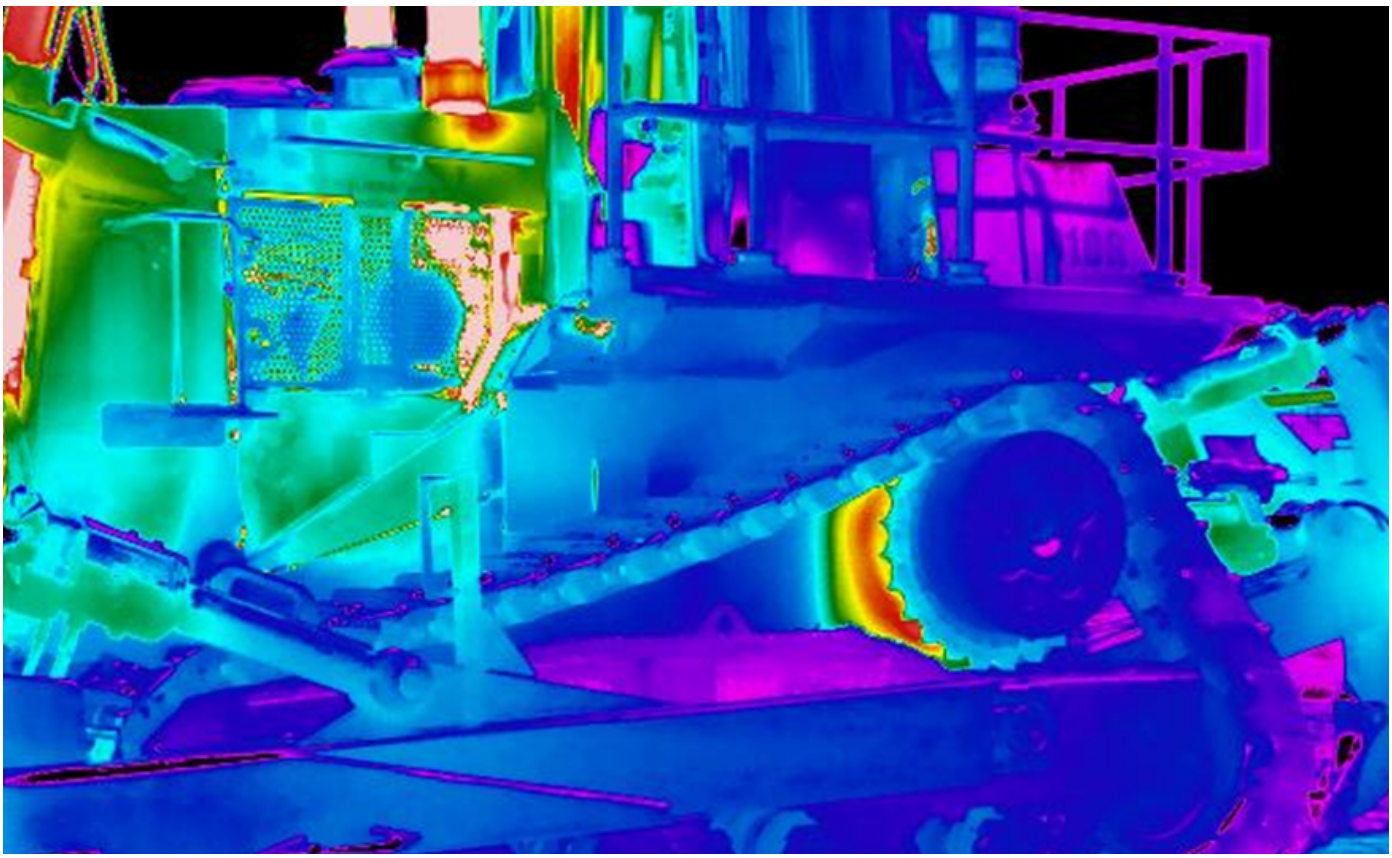
About Infrared Inspections And Technologies (IIAT)

Infrared Inspections and Technologies (IIAT) is one of Australia's leading mechanical infrared inspection and condition monitoring providers. They specialise in heavy mobile equipment and fixed plant in the mining and quarrying industries.

IIAT utilises only the highest quality infrared cameras, coupled with powerful, telephoto lens, enabling their expert team to accurately diagnose mobile and fixed plant from outside the operating circuit. IIAT's capabilities extend to draglines, excavators, all mobile earthmoving equipment, fixed plant, wash plants and more.

IIAT has a library of greater than one million data points. This extensive library enables them to develop and implement bespoke statistical based predictive maintenance programs for many miners.

For further information, visit:
infraredinspectionsandtechnologies.com



NDT World Event Calendar

7th Malaysia International NDT Conference and Exhibition (MINDTCE)

20 to 21 August 2024 | Petaling Jaya, Malaysia

The 7th Malaysia International NDT Conference and Exhibition is a journey to next-generation NDT Solutions. It will be held from 20 to 21 August, at the Grand Lagoon Ballroom, Sunway Resort Hotel. Explore the latest advancements from leading providers, distributors, and researchers. Learn from world-renowned speakers who present impactful discoveries and applications. Connect with peers, forge collaborations, and discover new opportunities. Share your ideas, challenge the status quo, and contribute to shaping the future of this dynamic field. Contribute to the future of NDT by sharing ideas and contributing to the testing and inspection revolution.

For further information, visit: **mindtce.com.my**

4th International Conference & Exhibition on Non-destructive Evaluation (ICENDE 2024)

22 to 24 August 2024 | Hyderabad, India

ICENDE 2024 offers a prime opportunity for regional and international operators, owners, along with technology, product, and service providers to come together, foster connections, and engage in discussions focused on developing innovative ideas and practical solutions. These conversations aim to address the increasing needs of the oil, gas, and petrochemical industries, aerospace, and defence. The cutting-edge technologies in non-destructive testing, automation and sustainability will be unveiled and discussed, paving the way for efficient operations, enhanced safety and reduced environmental impact. Join us as we collaboratively tackle industry challenges.

For further information, visit: **icende.in**

36th EWGAE 2024

18 to 20 September 2024 | Potsdam, Germany

The EWGAE conference is a prestigious international forum for researchers, engineers, and practitioners who are interested in the field of acoustic emission. The conference aims to provide an opportunity for participants to exchange ideas and share the latest advances in the field of acoustic emission, including theoretical and experimental investigations, instrumentation, data analysis, and applications. The conference will feature keynote lectures from renowned experts in the field, as well as technical sessions, poster presentations, and panel discussions. Plus, it includes social events that will provide opportunities for networking and building new collaborations.

For further information, visit: **ewgae2024.com**

The 3rd World Congress on Condition Monitoring

15 to 18 October 2024 | Beijing, China

The primary objective of the World Congress on Condition Monitoring (WCCM) is to exchange worldwide research and application achievements on condition monitoring and related areas, with particular emphasis on scientific and technical development, industrial applications and cooperation worldwide. The Congress is aimed at providing a worldwide platform to scientists and practitioners in both academia and industry. Sessions will focus on: signal detection and processing; CM and NDT instrumentation and methods; diagnosis, assessment and prediction; CM of core components, systems and facilities; and advanced CM technology.

For further information, visit: **intiscm.org**

ASNT 2024

21 to 24 October 2024 | Las Vegas, USA

ASNT's annual conference invites professionals from across the industry to actively participate, connect and collaborate. The theme of Engage reflects ASNT's commitment to fostering meaningful interactions, sharing knowledge, and pushing the boundaries of non-destructive testing. In the vibrant setting of Las Vegas, attendees can expect over 100 technical sessions, 100 exhibitors and 2,220 delegates. From innovative technologies to insightful discussions, ASNT 2024 promises an experience where individuals can come together, exchange ideas, and contribute to the advancement of non-destructive testing practices.

For further information, visit: **asnt.eventsair.com/asnt-2024**

NDE 2024

12 to 14 December | Chennai, India

The 34th Annual Conference and Exhibition on Non Destructive Evaluation will be hosted by the Indian Society for Non-destructive Testing (ISNT) in Chennai in December. With over 50 keynote talks, 40 technical sessions and over 120 exhibitors, it is shaping up to be an engaging event. It is set to attract over 2,000 delegates. Chennai is one of India's largest and most vibrant cities, known for its rich cultural heritage, historical landmarks, and thriving economy. The city is a major economic hub in India, with a diverse economy that includes industries such as automobile manufacturing, information technology, healthcare, and the film industry, contributing significantly to India growth.

For further information, visit: **isnt.in**

Member Profile: Chris Howson, NDT Region Lead, SRG Global

With almost 20 years' NDT experience, Chris Howson has worked across a diverse range of sectors in both the United Kingdom (UK) and Australia including fossil fuel power generation, petrochemical refinement and offshore wind.

Chris Howson, NDT Region Lead, SRG Global

Chris is currently the State Technical Lead for NDT at SRG Global. Prior to this, Chris was a Senior NDT Technician at ALS. He started his career as an NDT technician at RWE npower in the UK. He is qualified to globally recognised PCN level 2 standard in all major NDT techniques and holds a Bachelor of Science (NDT).

Where do you work? Describe your job.

I work in the asset care division for SRG Global.

It's a large business which require Level 3 support in each state. I am the Region Lead for New South Wales and perform the duties expected of a L3.

Can you share your journey into the NDT industry? What motivated you to take on a career in NDT?

I was a late starter in NDT, and really had no idea what NDT was. After seeing it for the first time during a rail construction job I held in my early 20s, by complete luck and chance, a position came up working in the power sector in the United Kingdom. I jumped at the chance to embark on a three-year apprenticeship, somewhere in the mid-2000s.

Since moving to Australia around 2012, I have only worked for one company—SRG Global, but it is my third job with the company. SRG Global has been bought out an equal number of times!

Who or what has influenced you most professionally?

I've worked with some great people and strange characters over the years, most NDT techs can probably relate to that! Every experience has valuable, I'd like to shout out everyone, but it's a long list!

If there was one person that springs to mind, I'd have to say Alan Wright. He is a legend in the UK power industry, and a person I got a great deal out of working with.

What has been the most interesting project you've worked on and why?

There have been a lot…

Possibly offshore wind strikes up the best conversations. Although, it wasn't the best job, and the conditions were pretty harsh at times.

Things have probably changed now (not sure) but just to get on and off one of those things was a real mission! Not to mention getting stuck on them when the swells pick up, preventing you from getting back on the boat.

What advice would you give to someone just starting their career in the NDT industry?

This job can take you anywhere and everywhere.

You can be hands on. You can be academic. You can be both.

NDT isn't just a job, it's a great career.

Absorb all the information you can and who knows where you'll end up.

What has been your greatest professional achievement?

I was never really the academic type, and at school was probably considered 'pretty average'—perhaps even a bit of a of a tear away.

It didn't get much better after leaving either!

While working with National Power, me and some others were ‘lucky’ enough to be selected as part of the first intake of pupils for the Bachelor of Science NDT degree with Northampton University.

With my classroom days fresh in mind, I can’t say I was too thrilled at the prospect of going back to school. And to complete it (and pass!) was probably a miracle.

How has being a member of AINDT benefited you professionally or personally?

For anyone who wants to make an impact, you’ve got to have a go.

I have worked my way into several industry committees including the New South Wales branch, AINDT CB and NATA AAC.

Being a member of these institutions is a privilege and I consider myself lucky to belong to them.

What are the top three things on your bucket list?

Everest Base Camp and Machu Pichu have been on the list for a while. I hope I get to both one day.

As a bit of a recreational triathlete, I’d like to do the Lanzarote Iron Man, which is a 3.9km swim, followed by a mountainous 180km bike ride, and finishing with a full 42.2km marathon.

Rapid Fire

What is your favourite:

- Food: Don’t put chocolate down in front of me.
- Song: Greece 2000 by Three Drives on a Vinyl. Reminds me of my party days.
- Sport: Took me all my life to find… Triathlon.

If you could be famous, what would it be for?
Time travel.

If you could meet anyone—alive or dead—who would it be?
I’d like to party with the early day Rolling Stones.

What is your pet peeve?
Lateness. Even though I am late myself, all the time.

What is your top tip for NDT excellence?
A great man I used to work with once said to me: “don’t lose your integrity”. It has stayed with me forever.

Testing Inspection Certification Round Table Conference

In association with RSM Australia, Red Swan Partners recently hosted Round Table Conference over three days in early May at the Intercontinental hotel in Sydney.

BY PRANAY WADYALKAR
(MANAGING DIRECTOR, OMS SOFTWARE)

The conference program focused on the following themes:

- Day one: Building a Safer Future: Innovations in Building Compliance
- Day two: Technological Advancements and Strategic Growth in NDT and Inspection, followed by a networking dinner at the Lana in Sydney.
- Day three: Empowering Growth and Innovation in the TIC Sector, followed by a networking beverage event at the Aster, rooftop of the Intercontinental Sydney.

I must admit that this conference was one of the best I have ever attended. All attendees from the NDT fraternity discussed a variety of topics in relation to their profession.

The conference attendees were from a variety of industries, including:

- NDT and inspection services providers
- Laboratories for materials, metallurgy, mechanical testing, civil construction materials testing, environmental, biological and chemical testing
- Building compliance consultants, surveying companies and cladding inspection companies
- Quality systems certification providers
- Insurance brokers in the TIC sector
- M&A advisors and accounting firms experienced in the TIC Sector
- Private equity, investors and entrepreneurs interested in the TIC Sector
- NDT equipment manufacturers
- NDT training providers
- Enterprise Singapore, a government body assisting TIC companies with productivity and digitalisation programs
- Journalists from the digitalisation and AI field
- Automation, digitalisation and software providers in operations, managements and systems

Attendees varied from NDT technicians and inspectors, lab testers, chemists, micro-biologists, geologists and surveyors, through to managers, directors, owners, trainers, and other related professionals. The highlight of this conference was that there was not a single VIP or a plenary speaker. In fact, all attendees were equally important, ensuring that everyone had the opportunity to speak at the conference.

In addition, the conference moderators Roger Digby (Operating Partner, Red Swann Partners) and Susan Putters (Advisory Board Member, Red Swan Partners) consistently engaged all participants to contribute to discussions related to their field.

On an average, 120-150 people usually attend the local NDT conferences. This event had approximately 80 attendees including 13 from Singapore.

The numbers indicate its success. Most importantly, it was a complimentary event for the participants to learn about several topics from their industry peers while sharing their own experience in managing their enterprise operations, management and systems. I must take this opportunity to express my gratitude and congratulate the sponsors for executing such a great Round Table Conference, without charging participants.

Engaging Topics

During the three day conference, the participants discussed the following topics

- Innovation in TIC
- The evolving landscape of building regulations in Australia
- Addressing the manpower challenge and strategies for attracting talent to the industry
- Technological transformation, including the impact of technology and AI on building compliance
- The role of insurance challenges and enhancing building compliance processes (cost, claim management, contractual requirements, and so on)
- Insights, market trends and an NDT industry overview in Australia, Singapore and the UK
- Productivity and efficiency in the NDT and inspection space and the impacts of non-contact encoding

- Technological advancements and integration of new technologies and innovation in NDT and inspection
- The role of digitalisation, digital tools, software and AI in transforming the NDT sector for the future, enhancing TIC processes, along with integration challenges and solutions
- The adoption of automation technologies, implementation challenges, and strategic approaches in TIC
- Examining the options of adopting AI in TIC, with a focus on ethical considerations, trust issues, and the regulatory landscape
- Practical AI applications in the TIC sector

On the business management learning side, the following was very well explained by Stephen Donnelly (Director Corporate Development, Eurofins) and Roger Digby:

- Value optimisation for a business, including buy and build strategies
- Understanding buyer valuation, including insights into how different buyers approach valuation focusing on sustainable earnings and the factors affecting EBITDA multiples
- Strategies for driving value and post positioning business to achieve premium valuation
- Private equity versus strategic buyers, including differences in valuation approaches, investment time horizons, and the strategic benefits each buyer type can offer
- Identifying common pitfalls in the sales process and best practises for maintaining value integrity
- Streamlining the exit process and the role of exit readiness assessments in preparing for a business sale

Based on the interest from several participants in the above topics, I believe that we could include such themes during our local conferences to increase participation from other professionals involved in the NDT inspection.

Learning Outcomes

The NDT industry is well-established in terms of accreditation, certification of personnel, and specification standards required during fabrication or in-service operations. In contrast, the construction industry lacks the necessary infrastructure to manage these aspects effectively. One participant noted that their surveying industry has been progressing gradually over the last 10-12 years, thanks to regulatory involvement. Unlike the NDT sector, the construction industry does not have certification courses like those provided by the BCA, leading to a critical skills shortage. The NDT industry benefits from national peak bodies like NATA and AINDT, whereas the building industry is fragmented with state-based associations.

Participants expressed concerns about their inability to increase chargeable rates despite rising costs, which is reducing their profit margins. Challenges such as union pressures, skills shortages, and increasing competition further complicate the situation.

One participant highlighted the importance of staff retention through better work tools, programs, automation, and work-life balance. Many companies still rely on paper-based or basic digital systems like MS Word and Excel, and some are unsure where to start with innovation and digitalization, unaware of the ISO 56000 series standard for innovation management. One company struggles with consolidating multiple spreadsheets for reporting, while another participant mentioned having 87.5% additional staff to support technical operations due to a lack of automation.

The TIC sector faces issues with integrating LIMS and ERP systems, with no perfect solution available. The cost and time required for automation and digitalization are significant factors, and participants often lack the time to apply innovative solutions. However, incremental

innovation can save time on mundane tasks, which can then be used to implement further improvements. A successful environmental lab owner emphasized the need for innovation and incentivized it through annual awards for employees. Consultative management was identified as key to successful innovation and implementation.

Some companies are adopting technological innovations like online tank inspections. One SME in the environmental chemical testing sector developed their own LIMS over 14 years, significantly improving their processes and handling over 10,000 specimens per day with digital reporting and invoicing. While comprehensive LIMS solutions were scarce at the time, many providers are now available.

A Singaporean laboratory's use of robots for sample preparation and AI for bacteria measurements exemplifies the step-by-step evolution toward innovation. Some participants use ChatGPT-like programs to compile text-based documents, such as policies and contracts.

Discussions covered the disadvantages of outright software purchases, custom-built programs, and SaaS solutions. Efficiency improvements and cost savings are ongoing processes, requiring the entire enterprise to integrate various programs, apps, or ERP systems.

Few companies are aware of penetration and vulnerability testing as per ISO 27001, highlighting a gap in cybersecurity awareness. While larger businesses can afford automation, smaller businesses often adopt it more quickly, making them industry leaders in innovation.

On the management side, some of the key learning outcomes were related to:

- Planning, advisory support and risk mitigation for business valuation and optimisation
- How buyers value businesses, key value drivers and how to optimise these
- Factors that lead to a lower valuation (even though other similar companies might receive higher valuations)
- Types of buyers, their investment rationale and how they calculate target value
- What an EBITDA is and how to determine a target's EDITDA
- Growth dynamics, trajectory, profitability, addressable market and trends
- Common pitfalls to avoid, such as pausing recruitment, delaying restructures, bad news and exit resources
- Management and staff, leadership succession, governance, strategy, business controls, separation and exit issues
- Operational technical expertise, accreditations, customer concentration and capacity

I encourage everyone in the NDT industry to attend such forums in the future to gain greater industry insights from their peers, especially from some of the successful forerunners in the TIC segment.

It is difficult to cover three days of discussions in one small article. If I have missed anything, or you'd like further information, feel free to email me via systems@omssoftware.com.au

AINDT
Australian Institute for Non-destructive Testing

RENEW YOUR MEMBERSHIP

RENEW FOR REWARDS: STAY A STEP AHEAD WITH 2024-2025 AINDT MEMBERSHIP

AINDT MEMBERSHIP RENEWAL IS DUE FROM 1 JULY

Whether you're looking to enhance your knowledge, expand your network, or influence industry standards, AINDT is your gateway to success. Connect with top professionals and thought leaders in an environment that celebrates innovation and progress. Just some of the member benefits are outlined below.

- Regular editions of the AINDT Journal (6 per year)
- Substantial discounts on certification fees and expenses
- Access to our online portal and resources
- Eligibility for exam and industry service awards
- A host of networking opportunities, including branch events, workshops, seminars, and our conference
- Exclusive Corporate Member benefits like free and discounted advertising rates, and technical advice

RENEW NOW >>>

aindt.com.au

Bolt Inspection Solutions Using Phased Array Probes

In the context of bolt inspection, especially for critical applications like wind power where safety and reliability are paramount, using advanced technology such as Phased Array (PA) probes can significantly enhance detection capabilities.

BY JOHN DUENZL (DIRECTOR, SIMPLIFI-NII)

Here's how PA probes address the challenges and provide effective solutions.

Common Challenges with Conventional Ultrasonic Inspection

In the world of ultrasonic inspection, professionals often encounter several persistent challenges that can hinder efficiency and accuracy. These include the need for multiple probes during testing and the complexity of interpreting overlapping A-scan echoes in intricate bolt arrangements.

Limited Testing Efficiency

Conventional ultrasonic inspection methods require multiple probes at different angles, leading to time-consuming scanning processes.

Complex Echo Interpretation

Tight thread arrangements in bolts can create overlapping A-scan echoes, making it difficult for inspectors to accurately identify defects.

Advantages of Phased Array Probes

Phased array probes offer significant advancements in ultrasonic inspection, streamlining processes and enhancing accuracy. Key benefits include improved efficiency through beam steering and focusing, superior sensitivity and signal-to-noise ratio for precise defect detection, and adaptability to various bolt types with specialised probe configurations.

Beam Steering and Focusing

Efficiency Improvement: PA probes allow for the deflection and focusing of sound beams, enabling faster and more precise scanning of bolts.

Single Probe Coverage: Unlike conventional methods, PA probes can cover a range of angles with a single scan, reducing inspection time and enhancing efficiency.

Enhanced Sensitivity and Signal-to-Noise Ratio (SNR)

Accurate Detection: PA probes offer higher sensitivity and SNR, resulting in clearer and more reliable defect identification. This is crucial for detecting small cracks or flaws, especially in critical bolt areas.

Adaptability to Different Bolt Types

Various Probe Configurations: Different types of PA probes (normal PA, low-profile PA, membrane PA, and PA ring probes) cater to different bolt configurations and inspection requirements.

Phased Array Probe Types and Applications

Different types of phased array probes cater to specific bolt inspection needs, enhancing precision and efficiency, including:

1. Normal PA Probe

Suitable for general bolt inspections, providing flexibility in scanning and detection capabilities.

2. PA Low-profile Probe

Ideal for new production bolts or those that can be fully disassembled, focusing on the bolt shank area.

3. PA Membrane Probe

Offers specific advantages for certain bolt configurations, enhancing accuracy and reliability in detection.

4. PA Ring Probe

Specifically designed for bolts with center holes, utilising special focusing effects to cover all angles in a single scan.

Application in Wind Power Bolts

Phased array probes are particularly effective in inspecting wind power bolts, concentrating on critical areas such as the root of the threads near the fastening region. These probes enhance inspection efficiency by reducing the need for multiple probe angles and improving defect visibility, ensuring thorough and accurate detection.

Critical Areas: Focuses on detecting cracks, particularly in the root area of one to three threads near the fastening area of the bolt and nut.

Efficiency in Inspection: By minimising the need for multiple probe angles and enhancing defect visibility, PA probes streamline the inspection process for wind turbine bolts.

Features of the Phased Array Ring Probe

The PA Ring Probe introduces advanced features designed to enhance ultrasonic bolt inspection with exceptional clarity and efficiency. Its special focusing effect ensures thorough penetration and inspection of bolts with center holes, while its all-angle coverage in a single scan streamlines the inspection process. Additionally, the PA Ring Probe's enhanced sensitivity and superior signal-to-noise ratio enable precise detection of even the smallest defects.

Special Focusing Effect

- The PA Ring Probe is designed with a unique capability to focus the ultrasonic beam effectively. This allows it to penetrate and inspect bolts with center holes comprehensively.
- Unlike conventional probes that may struggle with center holes due to beam scattering, the PA Ring Probe maintains clarity and accuracy throughout the inspection process.

Coverage of All Angles in One Scan

- One of the standout advantages of the PA Ring Probe is its ability to cover defects located at all angles in a single scan. This eliminates the need for multiple scans or adjustments of probe angles, significantly enhancing inspection efficiency.
- In bolt inspection scenarios, where accessing and inspecting all angles can be challenging, this capability ensures thorough examination without compromising on accuracy or speed.

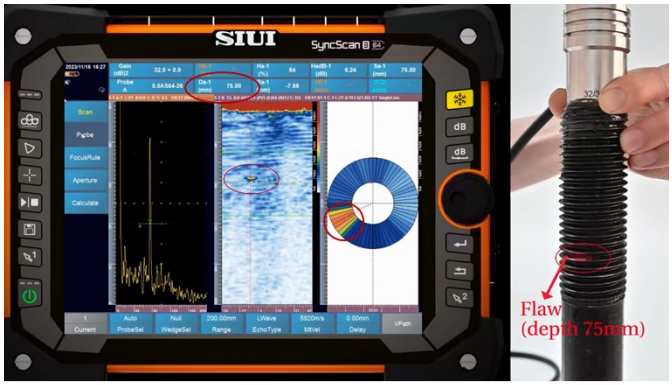
Enhanced Sensitivity and SNR (Signal-to-Noise Ratio)

- PA Ring Probes are equipped with advanced electronics that provide higher sensitivity to detect even the smallest defects such as cracks or flaws in bolts.
- The improved SNR ensures that the signals received from the inspection are clear and distinct, making it easier for inspectors to identify and characterise defects accurately.

Application in Bolt Inspection

- **Bolts with Center Holes:** In industries like wind power, where bolts with center holes are commonly used due to specific design requirements, the PA Ring Probe offers a tailored solution.
- **Efficiency and Reliability:** By covering all angles in one scan and providing detailed imaging of defects, the PA Ring Probe reduces inspection time and enhances reliability. This is crucial for maintaining the integrity and safety of critical components in wind turbines.
- **Adaptability:** The PA Ring Probe's ability to adapt to various bolt sizes (diameter typically ranging from 20mm to 60mm and lengths from 150mm to 500mm) ensures it can be effectively used across different types of bolts used in wind turbine construction and maintenance.

The normal probe, which highlights the issue.



The Ring Probe, which demonstrates the enhanced image.

Conclusion

Implementing a PA Ring Probe in bolt inspection processes not only addresses the specific challenges associated with bolts with center holes but also enhances overall inspection efficiency and reliability.

By leveraging its unique focusing capabilities, comprehensive angle coverage in one scan, and superior sensitivity, the PA Ring Probe contributes significantly to improving machinery and equipment safety, extending component service life, and minimising operational downtime in industries such as wind power.

This advanced technology underscores the importance of innovation in ensuring the continued reliability and sustainability of modern industrial infrastructure.

Chemetall

Chemetall wants to contribute to a world that provides a viable future with enhanced quality of life for everyone. They do so by creating chemistry for their customers and society and by making the best use of available resources. Sustainability is at the core of what they do, a driver for growth, as well as an element of their risk management.

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Chemetall offers a comprehensive portfolio of Ardrox products for magnetic and penetrant non-destructive testing (NDT) on materials used in oil and gas, energy, aerospace and general industries.

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Chemetall' s manufacturing facility in Melbourne is certified to ISO 9001 and ISO 14001 and is supported by distribution networks throughout Australia including JG Thomas in Perth.

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For further information: **chemetall.com.au**

International Tube Testing

Active in the NDT industry since 1978, Charlie Panos has over 40 years of experience. He provides International Tube Testing (ITT) was established by Charlie Panos in 2000. With over 40 years of industry experience, Charlie has in-depth expertise and qualifications in the engineering, testing and inspection industry.

ITT was formed to fill a growing need for accurate, dependable specialised engineering testing services. ITT provides specialised IRIS and RFT tube testing and has tested almost every boiler design in the process, petrochemical and power industries in Australia, the Pacific Islands, Papua New Guinea, Indonesia, Malaysia, Philippines and India.

The company can test tube sizes from 16mm up to 200mm, including straight tubes and tubes with bends for industries as diverse as pulp and paper, fabrication, maritime and aerospace.

ITT prides itself on delivering personalised, ethical service every time and has the field proven experience, technology and determination to ensure all your requirements are exceeded.

For further information: **tubetesting.com.au**

OMS Software

OMS is a vulnerability and security tested business management software. It is a LIMS+ERP boosted with AI (Augmented Intelligence) to manage Laboratories Operations Management Systems as per ISO 17025,
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- NDT, inspection, metallurgy, mechanical and chemical testing data capture modules
- Single click, automatic report generation, secured signing and emailing
- Document share point management
- Certification and induction management which flags approval to prevent NCR
- Assets program which blocks non-calibrated assets in the test data capture program
- CRM (Business Relationship Management) and quotation module
- Timesheet and payroll module
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For further information: **omssoftware.com.au**

SafeRad™

SafeRad™ South East Asia has been operating in Australia since 2009, delivering a full range of non-destructive testing (NDT) services. Their head office is based in Kwinana, Western Australia.

SafeRad™ is a NATA accredited company and offers a full range of NATA accredited NDT services, including:

- Radiography
- Ultrasonic inspection
- Phased array ultrasonic testing (PAUT)
- Magnetic particle inspection
- Dye penetrant inspection
- Hardness testing
- Post weld heat treatment
- Positive material identification
- Laser induced breakdown spectroscopy
- Ferrite testing
- Visual camera inspection

SafeRad™ is the only company in the world with a purpose built multi-functional radiography system that offers both close proximity and conventional radiography (one system all methods). SafeRad™ are the world leaders in close proximity radiography where no one has to be evacuated for what is normally a hazardous operation.

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- No impact on work schedules or productivity
- Assists in expediting work programs
- Massive cost savings to client

This means no disruption to any work programs by compromising safety, quality or production.

For further information: **saferad.com.au**

Shimadzu

Since its inception in 1875, Shimadzu's philosophy has been to apply its thinking 'for the wellbeing of humankind and the Earth'. That means real world solutions that benefit scientists, doctors and—ultimately—everybody.

Shimadzu's diverse range of products and solutions caters to the research community and analysts across various fields, including chemistry, molecular biology, medical science, environmental analysis, and industry.

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Since 1991, Shimadzu has maintained a direct presence in Australia and New Zealand, with offices and service centres in major cities. Their commitment to innovation and thoughtful problem-solving continues to drive their mission for the betterment of humanity and our planet

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For further information: **simplifi-nii.com.au**

Vertech Group

Vertech Australia, NZ, and USA deliver a comprehensive array of inspection, Non-Destructive Testing (NDT) and maintenance packages all underpinned by innovative specialist access systems.

Vertech has over a decade of experience supplying specialist services to a wide variety of sectors. In that time, Vertech has come to understand all of the frequently encountered challenges, how they can provide the most value to their clients, and how to perform every job they undertake safely.

Vertech's services include but are not limited to in-service inspection, project and program management, rope access services and marine class inspection.

Their group is made up of complementary and specialist service providers that help Vertech innovate in project delivery across multiple market verticals. These providers include: Geo Oceans an industry leader in Mini-ROV IRM and subsea inspection services; Sonomatic who are recognised as a global leader in specialised NDT; AUAV a specialist UAV, Drone and data analytics company; and REMO Technical Services a specialist supplier of turbine installation, turbine maintenance, and turbine inspection services.

For further information: **vertechgroup.com.au**

ARI

ARI delivers professional services in pressure equipment inspection, weld inspection, and non-destructive testing. Their team of experienced professionals are committed to providing high-quality, reliable inspection services to ensure the safety and compliance of client assets. ARI uses state-of-the-art equipment and adhere to industry standards and regulations to deliver accurate, actionable results. View their Capability Brochure.

ARI's goal is to help clients reduce downtime and improve the reliability of their assets while maintaining the highest safety standards.

ARI has a proven track record of supporting planned shutdown services, new construction projects, and delivering routine in-service inspections of the highest quality. When your operations cannot stop, their team will execute 24 hours a day, 7 days a week to meet your inspection needs.

With offices in Bunbury, Perth, and Adelaide, ARI is available to partner with asset owners and operators to ensure safety and efficiency.

For further information:
Email: info@ari.com.au
Phone: 08 9725 7550
Website: **ari.com.au**

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