Malaysian Society for NDT (MSNT) Official Newsletter

94th Edition March, 2023 <u>www.msnt.org.my</u> <u>contacts@msnt.org.my</u>



Message from the President

Greetings to all MSNT members, colleagues and friends.

I hope 2022 was a great year to remember. May the new year 2023 bring us more happiness, success, love and blessings. Last year, we have seen the success of the 6th Malaysia International NDT Conference and

Exhibition (6th MINDTCE), with an attendance of more than 1000 people to the conference and exhibition. We cannot thank everyone enough for their support in making this event such a success and we hope to continue with the 7th MINDTCE planned for next year.

In this issue of the MSNT e-Newsletter, we proudly report the recognitions MSNT received from the Asia Pacific Federation for Non-Destructive Testing (APFNDT) during the 16th Asia Pacific Conference for Non-Destructive Testing (16th APCNDT) in Melbourne, Australia. We are also excited to announce that MSNT has successfully won the bid to host and bring the 18th APCNDT in 2029 to Malaysia! More exciting news, technology highlights and events can also be found in this latest issue.

On behalf of the members of the MSNT Board of Directors, I wish everyone a blessed Ramadan and joyful and happy moments for the upcoming Eid.

Ramadan Kareem and Eid Mubarak to all!



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MSNT delegates at the APCNDT 2023 in Melbourne, Australia

The MSNT delegation, consisting of the President, Secretary, and Treasurer, attended the 16th Asia-Pacific Conference on Non-**Destructive Testing** (APCNDT) in Melbourne. Australia, from Tuesday, February 28 to Friday, March 3, 2023. The 16th **APCNDT** was successfully organized by the Australian Institute for **Non-Destructive Testing** (AINDT), chaired by Mr. Paul Grosser, and held at the beautiful Melbourne



Convention and Exhibition Centre (MCEC), located right in the heart of Melbourne on the edge of the Yarra River. The MSNT delegation attended several Asia Pacific Federation for Non-Destructive Testing (APFNDT) meetings and also won the bid to host the 18th APCNDT during the APFNDT General Assembly, on Wednesday, 1st March 2023.

We will meet soon for the next APCNDT organized by the American Society for Nondestructive Testing in Honolulu, Hawaii, USA from 11th – 14th May, 2026 (<u>https://www.apcndt2026.com/</u>).



MSNT will host the 18th APCNDT in 2029



It is our great honor to announce the MSNT's successful bid to organize the 18th APCNDT, which will be held at the KLCC Convention Centre on November 12th – 16th, 2029.

We would like to thank our supporters, the Kementerian Pelancongan, Seni dan Budaya Malaysia (MOTAC), Malaysia Convention & Exhibition Bureau (MyCEB) and Malaysia Airlines.

We also thank APFNDT AEC, the APFNDT Board of Directors, and the APFNDT member NDT societies for choosing Malaysia to host this important regional event for APFNDT and its member societies. We thank the MSNT Board and members for their support and encouragement. To Agriculture Malaysia, Sydney, we can't thank you enough for the outstanding foods during the Food Diplomacy Reception in conjunction with 16th APCNDT. The event plays a vital role in winning the hearts of the our fellow delegates.

To our Malaysian colleagues participating in the 16th APCNDT, we thank you for your encouragement and moral support... Malaysia Boleh!

MSNT's APFNDT awards during the 16th APCNDT

ASIA Pacific Federation for Non Destructive Testing

MSNT received multiple awards, for a Society and Individuals, during the 16th APCNDT, indicating recognition by the most important federation for NDT in the Asia Pacific region. MSNT thank the APFNDT Executive Committee (AEC), APFNDT Board, and APFNDT Member Societies for the vote and supports.

The received awards are:

- 1. APFNDT Award for Dr. Abd. Nassir Ibrahim
- 2. Recognition of Voluntary Effort in NDT for Mrs. Salbiah Hussien
- 3. APFNDT recognition on the 6th MINDTCE

Awards for Dr. Abd. Nassir & Mrs. Salbiah were received by the President of MSNT, Dr. Ilham Mukriz, during the APNCDT 2023 Conference Celebration hosted by the Australian Institute for Non-Destructive Testing AINDT on March 1, 2023 at the Showtime Events Centre, DFO South Warf, Melbourne.

APFNDT Award for Dr. Abd. Nassir Ibrahim

The recipient of this award is Dr. Abd. Nassir bin Ibrahim, past MSNT President and current Advisor.

Dr. Abd. Nassir received the Asia Pacific Federation for NDT (APFNDT) Award for his achievements as an individual who has acted for the benefit of the Asia Pacific NDT community and who has taken conspicuous actions in the field of:



- Promotion and expansion of the APFNDT, particularly through activities in one of its working groups;
- Standardization of NDT; and
- Certification of NDT personnel in developing countries.



The APFNDT award is given every four years and consists of a certificate and a plaque. MSNT congratulates Dr. Abd. Nassir on this award and thanks him for his continued support of NDT.

APFNDT Recognition of Voluntary Effort in NDT



The recipient of this award is Puan (Mrs.) Salbiah Hussien of Jabatan Pembangunan Kemahiran (JPK), Malaysia.

The APFNDT recognizes her consistent and significant efforts in supporting NDT in the region.

Mrs. Salbiah Hussien received her certificate, which was signed by Dr. Norikazu Ooka, the APFNDT President.

MSNT congratulates Puan Salbiah for this recognition and thanks her for her continuous support to NDT.



APFNDT recognition on the 6th MINDTCE

APFNDT awards a plaque for MSNT's success in organizing the 6th MINDTCE. The plaque symbolize international recognition on the event hosted by the MSNT. The award was received by Dr. Ilham Mukriz from Dr. Norikazu Ooka during APFNDT General Assembly 2 on March 2nd, 2023.



Dr Ilham Mukriz – The elected APFNDT Regional Group (Board) Member



MSNT president, Dr Ilham Mukriz Zainal Abidin, was elected to be one of the APFNDT Regional Group (Board) member for 2023 – 2026. This significant recognition by the APFNDT marks one of many MSNT's achievements in the Asia Pacific region.

Dr Ilham Mukriz – The elected APFNDT Regional Group (Board) Member (2023 – 2026)



APFNDT 2023 to 2026 Office Bearers

Position	Society	Name
Past President	JSNDI	Dr. Norikazu Ooka
President	JSNDI	Dr. Takamasa Ogata
Vice President	ISNT	Prof. Krishnan Balasubramaniam
General Secretary	NDTSS	Mr. Paulchamy Pugalendhi
Treasurer	ASNT	Mr. Kevin Smith
APCNDT 2026 President	ASNT	Mr. Danny Keck
Secretariat Representative	JSNDI	Mr. Shohei Ocka
Auditor	NDTSS	Dr. SK Babu

APFNDT Regional Group (Board)

	Position	Society	Name
Regional Representati Group 1	Regional Representative	ISNT	Mr. Diwakar D. Joshi
	Group 1	RSNTTD	Mr. Alexander Mullin
Regional Representati Group 2		ChSNDT	Mr. Ji Jingyuan
	Regional Representative Group 2	KSNT	Prof. Ik-Keun Park
		MSNT	Dr. Ilham Mukriz Zainal Abidin
		SNTCT	Dr. Chih-Hung Chiang
	Regional Representative Group 3	AINDT	Mr. Pranay Wadyalkar
		ASNT	Mr. Neal Couture

Mr. Wan Abdullah Wan Hamat – MSNT VP as a keynote speaker at the SPRINT Robotics Asia Pacific Summit



MSNT is pleased to announce that Mr. Wan Abdullah Wan Hamat of PETRONAS was one of the keynote speakers at the Summit and spoke about the Industrial revolution NDE 4.0.

HANDHELD X-RAY FLUORESCENCE (HHXRF)

X-ray fluorescence analysis can be thought of as spectrochemical analysis within an X-ray region. It has the same characteristics as atomic absorption spectrometry and optical emission spectrometry, with the difference that the sample does not have to be dissolved in a solution for the analysis.

> Handheld X-ray fluorescence (HHXRF) is widely used for rapid on-site analysis (material identification and chemistry) due to its ease of use and non-destructive nature.

Petrochemical, oil & gas, & power plants

Inspect components before, during, and after installation to ensure alloy chemical composition and grade ID are maintained without structural changes to ensure field safety and regulatory compliance.



Archaeometry

 When attempting to accurately determine the chemical composition of archeological artifacts and materials, samples should not normally be disturbed.

HITACHI

Inspire the Next

 It is used by universities around the world to analyze soil, ceramics, pigments, glass, and metals found at archeological sites.

QA/QC

Manufacturers, suppliers and purchasers of materials need to be able to quickly tell if they are getting what they paid for. XRF testing can determine product quality at every stage of the supply chain without damaging the material.

Precious metals

 These materials have extremely high value and are highly sought after for a number of industrial applications as well as for the jewelry industry.

The slightest trace or imperfection on these materials can have a significant impact on their value.

INTERSCIENCE SDN. BHD.

2, Jalan Sg Kayu Ara 32/38, Berjaya Industrial Park, 40460 Shah Alam, Selangor. Tel : +60 3 5740 9888 Fax : +60 3 5740 9866 Email: info@its-interscience.com

Coatings

Fast, non-destructive XRF analysis of heavy and bulky items when using a benchtop instrument is not practical.



Regulatory

- Essential to ensure that industrial sites are safe and comply with regulations.
- The ability to test components in the context in which they are used means that operators have an up-to-date and comprehensive view of the condition of their assets and can quickly identify and address potential problem areas.

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Nuklear Malaysia dispatched GPR team to SAR after deadly landslide in Batang Kali

The Ministry of Science and Technology (MOSTI), through the Malaysian Nuclear Agency (Nuklear Malaysia), provided ground penetrating radar (GPR) expertise to locate buried victims at the site of the landslide in Batang Kali, Selangor. Four Nuklear Malaysia personnel were deployed for this mission.

On December 16, 2022, Malaysia's second worst disaster after the Highland Tower collapse in 1993 occurred at Father's Organic Farm in Batang Kali. Following two landslides that resulted in a massive landslide, tons of earth



collapsed onto the campsite, burying campers and all their belongings.



Ninety-four people were affected by the disaster and many were buried under the thick earth in the 2:30 a.m. incident. This is not the first time Nuklear Malaysia has participated in a joint mission with GPR. During Ops Reunite, a joint mission between the Malaysian and Australian forces in 2016, a group of experts from Nuclear Malaysia managed to locate the remains of Commonwealth soldiers.

The mission team succeeded in recovering 32 skeletons and transporting them to Australia. Following this success, another joint operation was conducted the following year by the Malaysian and New Zealand forces under the name Ops Te Auraki, during which 27 skeletons were successfully recovered.

5 Advantages of PCI Over Other UT Techniques Trevor Tartaglia, Product Applications Leader at Evident Industrial



Phase coherence imaging (PCI) is a new advanced ultrasonic inspection technique that produces live total focusing method (TFM) images with unprecedented clarity and sensitivity to small defects. Unlike other ultrasonic testing (UT) technologies — including



Figure 1. Conventional TFM image of creep damage acquired using a 10 MHz, 64-element Dual Linear Array™ (DLA) probe and the L-L wave set.



conventional phased array (PAUT) — PCI's signal processing does not consider the amplitude when generating TFM images. Its signal processing is based exclusively on the phase information of the elementary A-scans used to generate a TFM image.

Figure 2. PCI image of creep damage acquired using a 10 MHz, 64-element Dual Linear Array™ (DLA) probe and the L-L wave set.

This amplitude-free approach results in enhanced visualization and characterization capabilities for some of the most difficult-to-detect defects using today's conventional ultrasonic techniques. For example, compare this conventional TFM image of creep damage in Figure 1 to the PCI mode image of the same damage in Figure 2.

5 Advantages of PCI Over Other UT Techniques Trevor Tartaglia, Product Applications Leader at Evident Industrial

The background noise and the back wall echo in the amplitude-based TFM image (blue background) obscure the creep damage that is clearly visible in the PCI mode image (gray background).

How PCI works:

- First, the acquired A-scans are normalized.
- Then, the phase distribution of each A-scan is compared for each position in the TFM zone.
- For a given position, the higher the level of coherence between the A-scans, the stronger the signal response for that position (with a maximum of 100%).
- Reflections and diffractions from defects result in a coherent response, compared with the incoherent response of acquired signals from high-frequency background noise. This makes identifying defects very easy, especially for small defects in noisy or attenuative materials.

5 Advantages of Phase Coherence Imaging

1. Live 2D Images Using Signal Phase Information

Ultrasonic testing users may be familiar with exploiting the signal phase information to identify and size defects using techniques such as time-of-flight diffraction (TOFD). Such techniques are effective for identifying defects that are very small or in an orientation that has a poor response with the PAUT technique.

That said, TOFD has two main disadvantages:

- It's impossible to locate a defect in the index axis without scanning multiple index positions.
- The amplitude is still required to visually identify the phase changes to size defects.

5 Advantages of PCI Over Other UT Techniques Trevor Tartaglia, Product Applications Leader at Evident Industrial

CI is a powerful technique for identifying defects that are poorly oriented or very small, such as high-temperature hydrogen attack (HTHA), but it avoids the problems associated with TOFD. Because the TFM acquires the volumetric data, the defects can be located and sized in all directions. The final image produced using PCI is also completely independent of amplitude. This makes the analysis easier as it removes the need to scan at multiple index points. And, since PCI generates a live image, it doesn't require the full raw data for postacquisition processing.

2. It's Impossible to Saturate the Signal

One of the challenges with amplitude-based techniques is signal saturation. Despite calibrations and gain adjustments during the setup, it is still possible that certain reflectors saturate the signal. This can be due to their size, type, or orientation compared to a side-drilled hole (SDH) in a calibration block or another known reflector.

Since PCI is based on the variance of the statistical distribution of the elementary A-scans for a specific point in the image, the coherence level cannot exceed 100%. Even if the signal of the elementary A-scans is saturated, this will have no impact on the final PCI data because only the phase information is considered and accessible. This makes preparing for an inspection easier and faster since the scan quality is less sensitive to the configuration.

3. No Need to Preadjust the Gain to a Known Reflector

PCI is a technique that is entirely amplitude free. This means that the typical setup step where you use a known reflector in a calibration block to adjust the gain is rendered unnecessary. With the need for gain adjustment eliminated, the time and effort required to create a setup that provides a high-quality image is greatly reduced.

5 Advantages of PCI Over Other UT Techniques Trevor Tartaglia, Product Applications Leader at Evident Industrial

Gain readjustment between scans based on the types of reflectors found is also no longer necessary, reducing the need to repeat TFM scans to make sure that the data is valid. The sizing accuracy of a PCI setup can still be validated, but with a notch sample. By using the peak of the tip diffraction response from the notch, the defect height can be measured with the cursors.

4. More Consistent Results and Easier Sizing

Since PCI setups are easier and faster to create with fewer parameter for the inspector to configure, the technique enables better consistency between inspections and different inspectors. Moreover, because it's impossible to saturate the signal during the scan and the gain has no influence on the signal, there are fewer manipulations that could change the outcome during the analysis. To size a defect, the inspector only needs to find the hot spots from the tip diffractions and place the cursor on the maximum of these hot spots. The resulting readings provide the size of the defect, and there are no adjustments that need to be done before each sizing. The overall process is expediated and significantly easier. If the same probe is used, the defect size will remain the same between each scan.

5. Fewer Groups Required for the Same Zone Coverage

Another advantage of PCI versus conventional TFM is that scan variations in the signal amplitude are irrelevant. Where the flaw detector's beam simulator shows signal amplitude distribution in the part, the PCI will have good results, even if the returned amplitude is low. This is a side effect of the amplitude-free nature of PCI. The coherence can be evaluated even if the amplitude is weak since the signal is normalized before the phase is evaluated. Even more important, the position of a defect within the TFM zone will have less impact on that signal coherence than the amplitude.

5 Advantages of PCI Over Other UT Techniques Trevor Tartaglia, Product Applications Leader at Evident Industrial

Tip diffractions can often be lost in the background noise when using conventional TFM or phased array. PCI, on the other hand, highlights these diffractions, making them stand out even when they would not be evident with conventional TFM or PAUT. All of these factors result in fewer groups being required for the same zone coverage.

Final Thoughts

Because PCI is not an amplitude-based technique, technicians should modify their approach when selecting the configuration and setup parameters. For more information about PCI and how use this powerful technique, read this helpful <u>Getting Started with Phase</u> <u>Coherence Imaging (PCI) guide</u>, as well as these <u>FAQs about PCI.</u>

34th MSNT AGM, 2023



MESYUARAT AGONG (AGM) MSNT KE-34 (2023) 34th MSNT ANNUAL GENERAL MEETING (AGM) (2023)

TARIKH / DATE: 3 MEI 2023 / MAY 3rd, 2023



MASA / TIME: 8.00 AM – 1.00 PM TEMPAT / VENUE: BANGI RESORT HOTEL (BRH), BANGI, SELANGOR ______ contacts@msnt.org.my

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Notice is hereby given that the 34th AGM of the Malaysian Society for Non Destructive Testing (MSNT) will be held as follows:

Venue: Bangi Resort Hotel, Bangi, Selangor (Melati Hall) Day: Wednesday Date: May 3^{rd,} 2023 Time: 8.00 AM to 1 PM Registration: 8.00 AM – 8.30 AM

Read the Notice <u>here</u>.

Malaysia lunch reception during the 16th APCNDT by the <u>Agriculture Malaysia, Sydney</u>

The <u>Agriculture Malaysia, Sydney</u>, upon request by <u>Malaysian Society</u> <u>for NDT</u>, hosted a lunch reception for the delegation of 16th Asia Pacific Conference for Non-Destructive Testing (APCNDT) at Melbourne Convention and Exhibition Centre (MCEC) – an avenue to showcase the best of Malaysian cuisine to international audiences.

Food diplomacy and culinary experiences are among the key strategies practiced by our office to spread awareness on Malaysian foods, its culture and heritage. Much to our surprise, the durian crepe is the most popular dish of the day!





Join us or renew your membership at https://member.msnt.org.my/

MSNT sends best wishes and warm greetings to all Muslims celebrating the holy month of Ramadhan 1444 (H). MSNT wishes you good health and best cheer this Ramadan.

May this blessed Ramadhan inspire us with courage and strength that will help us overcome all challenges and obstacles in life.

Ramadhan Kareem, 1444K malsocforndt 🌐 www.msnt.org.my 🕧 Malaysian Society for NDT

Malaysian Society for Non-Destructive Testing (MSNT)