ICNDT

The World Organisation for NDT

ICNDT – WCNDT

Joint Workshop on Certification of Personnel 2024 - Report

ICNDT is formally registered as a legal association in Vienna in accordance with the Austrian Corporations Act and has a bank account to conduct financial business transactions.

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of the Austrian Corporations Act.

This is the report on a Joint ICNDT – EFNDT Workshop held in Lisbon at the ECNDT July 2023.

Introduction

A joint WCNDT – ICNDT workshop entitled ICNDT Certification Workshop was held during the 20th WCNDT conference held in Incheon Korea. It was a well-attended workshop with seven presentations provided by attendees to the conference and ICNDT members with lively discussion after each paper

Papers were given by: Sajeesh K Babu Chair of ICNDT, NDTSS – SGNDT Certification Scheme in compliance with ISO 9712:2021 & SS ISO 9712:2022. David Bajula vice chair of ASNT CMC and Chair of ISO TC 135 TAG, Administration of ASNT- 9712 Certification Program – Achieving Operational Excellence; Diwakar Joshi, Indian Society for NDT and Member of ICNDT WG1, International Certification in NDT (ICN) from ISNT; ; Mike Farley past Chair of ICNDT, Mutual Recognition of Personnel Certification as an aid to the globalisation of NDT; Harold Jansen SAIW Manager and ICNDT - ICEC Chair, ICNDT Examination Question Bank; Colin Bird ICEC Secretary, Education Gaps between Level 3 and Advanced Technology; Patrick Boulton PCN Certification Engineer.

This report summarises the presented papers and suggests some conclusions. There is a link to the ICNDT website where the presentations can be found

Paper Summaries

Administration of ASNT- 9712 Certification Program – Achieving Operational Excellence

David Bajula presented a detailed paper on the **ASNT- 9712 Certification Program** highlighting the change from the previous ACCP to ISO 9712:2021 edition.

David stated that ASNT has now transitioned out of ACCP and is now fully compliant with ISO 9712:2021 and that ASNT were seeking global mutual recognition agreements.

David's presentation detailed that the new ISO 9712:2021 certification scheme included both hands- on and computer- based examinations providing consistency where employer based programs may not.

He provided a detailed presentation of the psychometric testing that is performed on the examination system of both the theoretical examination questions and the practical examinations. As part of the presentation, he provided a detailed look at the psychometric used by the ASNT scheme. In particular he demonstrated the use of Anghoff values for assessing the suitability and level of questions showing the rejection levels for questions. If they are either too hard or too easy questions are rejected and sent for re-assessment. He detailed the psychometric testing on examination test pieces including defect characterisation candidate results. In conclusion he provided a very detailed look at the control put into the ASNT certification system.

International Certification in NDT (ICN) from ISNT

Diwakar Joshi presented the work of ISNT emphasising the importance of education and that NDT is central to much of the plant and machinery in this world.

The main emphasis of the presentation was education stating that NDT technicians only perform successful work when they are fully educated with not just the basic NDT techniques but understanding their own and the technique limitations. As part of the presentation robust training was emphasised and that the ISNT system has minimum education requirements for the level 1, 2 and 3 certifications. As an example, the Level 3 certificate holders require a minimum of a Diploma in Engineering or two years science or engineering further education. It was noted that ISO 9712 does not specify a minimum education level.

As part of the education provision within the ISNT system, ISNT is organised into 19 regions/chapters which organise seminars, webinars and college courses in addition to the larger conferences organised by ISNT.

In conclusion, Mr Diwakar Joshi emphasised education in addition to a well- run central certification system to create NDT technicians fully educated for their work is gaining popularity within India.

NDTSS – SGNDT Certification Scheme in compliance with ISO 9712:2021 & SS ISO 9712:2022

Sajeesh Kumar Babu presented a detailed examination of the Singapore certifications scheme with respect to ISO 9712:2021. In particular, Sajeesh noted that ISO 9712:2021 is potentially expensive and time consuming to administer with the detailed checks that are required and the detailed sector specific examinations and requirements. Sajeesh explained how NDTSS has created a simple but detailed semi-automated certification scheme including simple to use application forms for examination candidates.

One of the key features of the NDTSS scheme was the simple approach to re-certification - accepting certificates recognised under the IAF MRA for ISO/IEC 17024 & ICNDT/EFNDT MRAs and held at acceptable examination centres as defined in their scheme manual. In particular, NDTSS recognises all ICNDT Schedule 2 MRA certificates.

Sajeesh introduced the on-line theory examination system which uses the same platform as being launched by ICNDT ICEC for its Examination Question Bank. This system provides statistical information about each question

and candidate , thereby giving information for psychometric testing of the examination questions. The security of the system and the control of the examination material was emphasised.

The certification system provides the technicians an efficient on-line method of logging their NDT activities with respect to the recertification process providing an instant report on their progress to use for the renewal of their certificate. A further aid to the technician is the provision of reminders when their certificate is within 9 months of requiring renewal.

In conclusion NDTSS has developed a highly efficient certification scheme to aid both the technicians and the scheme management based upon and complying with ISO9712:2021.

Mutual Recognition of Personnel Certification as an aid to the globalisation of NDT

Mike Farley opened his presentation with a reminder to all that designing, building and operation of plant and machinery is a globalised business. He emphasised that this is true for all sectors where safety is important and particularly where complex supply chains are present. To enable this global business, we need NDT certificates which are globally recognised. This being supported by the ICNDT MRA and the ICNDT Guide.

Mike provided a short historical recap of how ICNDT has successfully started and coordinated MRA activities since 2008 with the start of the ICNDT Schedule 1 MRA launched in 2013 in Croatia aiding more efficient trading. Now the ICNDT MRA covers much of the world's NDT economy With NDT societies in 47 countries signed up to recognise certification provided by 20 certification bodies globally.

In conclusion, Dr Farley said that although systems are in place through the MRA to achieve harmonisation at a high level of quality, the vision of widespread mutual recognition is still unfulfilled. To avoid unnecessary costs, wasting of time, frustration and de-motivation we need Certification Bodies to find more opportunities to recognise training, experience, examinations and certificates gained in the other PCBs in the ICNDT MRA Schedule 2. We need other bodies/codes (examples are ASME, EN4179/ NAS410, ANDE) to recognise ISO 9712 certification. If the MRA did not exist it would need to be invented and it will become more important as skills shortages worsen

ICNDT Examination Question Bank

Harold Jansen provided a detailed presentation of the ICNDT On-line Examination Question Bank (EQB). This presentation included an on-line demonstration to the audience who were given a QR code to log in and try the EQB during the presentation.

Harold presented his mission to provide a global NDT question bank "benchmark" which is cost effective and user friendly. The challenge to provide a question bank fully compliant with ISO and other standards.

The strategic intent of ICNDT is to make the EQB available in 10 international business languages to ISO 9712:2021 and ISO/TS25107. All questions are to be referenced to accepted handbooks, publications or standards and available in all the accepted NDT techniques.

He showed tables of the current distribution of questions within the EQB stating this needed to be improved to provide the necessary distribution of questions according to ISO 9712.

The demonstration showed how ICNDT would licence the EQB out to approved PCBs and how they would control the issue and delivery of the questions to their candidates. The demonstration showed how the exam was to be controlled with respect to marking and issue of the test results.

From the live demonstration he showed how the anonymous candidates in the audience performed in the exam showing the questions and marks and their overall scores in the examination. This demonstrated the sectors

within the examinations and the performance of the test group and individual candidates. The demonstration showed how the results can be used quickly and efficiently to provide psychometric results for the individual questions within the EQB.

Harold stated that ICNDT WG1 will be used to update and review the current questions and then add questions to the examination bank. Further any PCB which offered services such as translating the EQB into additional languages will receive the EQB at a suitable reduced licence fee. Questions were asked during the presentation about the cost of the licence. Harold stated that the intention was that there should be a small annual fee with a charge per examination. The charge currently is being discussed but expected to be less than €5 per exam.

In conclusion, a detailed presentation of the ICNDT on-line EQB was provided with a statement that it is the intention of it becoming available to ICNDT MRA members within a year. There was also a request for WG1 members to volunteer effort in support of the EQB. Already a number of individual and PCBs within the MRA have volunteered their assistance.

Education Gaps Between Level 3 and Advanced Technology

Colin Bird presented the case that NDT Level 3 personnel by the requirements of ISO 9712 are technicians are technicians and not fully qualified engineers. ISO 9712 does not provide a minimum education standard for NDT technicians however some PCB and institutions do require minimum education standards.

He pointed out for advanced NDT technology, such as array technology, the physics and mathematics involved is at a level much higher than the requirements for NDT Level 3s. and beyond the level of understanding of most NDT trainers This is not a fault of training establishments, equipment manufacturers, or the level 3s themselves. It is an evolved situation within NDT due to the with the rapid advancement of highly processed data. He questioned “How can a level 3 in charge of procedure qualification where there is advanced technology including AI possibly know how to qualify the procedure or technique?”. There is an education gap. He suggested that collaboration between universities, equipment manufacturers is required and it may be necessary for training establishments to send their trainers on specialist courses to increase their knowledge of the physics of these new technologies.

The presentation was followed with a good discussion and an overall agreement that the current provision of training for advanced technologies training needs to be improved.

Education with Respect to NDT Certification

Patrick Boulton presented how BINDT guides NDT education with the aim of both complying with and advancing general NDT education within the UK and out with the UK. He gave the example of additive manufacturing which is a relatively new manufacturing method providing NDT challenges. E.g. What are the material properties?; how does the manufacturing process effect the type and distribution of defects and flaws?; what are the likely in-service conditions and what defects will be created in service?. How do technicians select the appropriate NDT techniques for these components?

The ISO 9712 standard states that the training durations specified assume that candidates have adequate knowledge of materials and processes, and mathematics.

Patrick stated that BINDT has created a number of on-line self -teaching courses in materials and processes. These control the time you spend on each slide and provides self -testing within the course, before progress to the next topic or level.

He also stated the requirement BINDT is considering how to ensure candidates have adequate knowledge in mathematics.

Conclusions

A well supported and effective workshop was held during the 20th WCNDT conference in Incheon, Korea 2024. There was lively questioning at the end of the workshop with only time limiting the questions.

It is concluded that there were two overall themes to the workshop:

1. Global harmonisation to ISO9712 is a necessity for the NDT global economy.

2. NDT Education needs to be broader and have a greater depth than that required for the current certification levels to meet the demand for new inspection technologies and new manufacturing processes and materials.

3. It was noted that during the debate at least 3 PCBs are examining and, in some cases, requiring the examination candidates to demonstrate an education to a greater depth and breadth than required by ISO 9712.

Acknowledgements

The author of this summary report wishes to thank the presenters for their contributions to a very successful workshop and also thanks the contributors for their permission to publish their presentations.

The presentations can be read in full on the ICNDT web pages under https://www.icndt.org/ICNDT-Activities/ICNDT-Documents.

Colin Bird ICEC Secretary for ICNDT

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