

**What's broken in the present systems for qualification and certification of NDT personnel, and in the accreditation of ISO/IEC 17024 systems?**

**And what are the fixes?**

Presented by John Thompson



# Terms and definitions

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- Qualification (of NDT personnel)
  - Vision
  - Training
  - Examination
  - Experience



# Terms and definitions

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- Certification (of NDT personnel)
  - Verification of qualification
  - Issuance of confirmation of certification
    - Paper certificate
    - Online verification



# Terms and definitions

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- Accreditation (of Certification)
  - Verification of compliance with applicable standard (ISO/IEC 17024)
  - Confirmation of satisfactory implementation by the CB of normative criteria
  - Issuance of confirmation of accreditation
    - Paper certificate
    - Online verification



# Four main issues (1)

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- Accreditation systems
  - concentrating on ISO/IEC 17024 to the exclusion of application standard
  - assessors lacking in technical knowledge of the application
  - assessments lacking in consistency



## Four main issues (2)

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- Application standards
  - provide only *minimum* criteria
  - do not lead to equivalence of qualification and certification



## Four main issues (3)

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- Quality is not assured
  - in training and experience
  - in written and practical examinations



# Four main issues (4)

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- Recognition
  - Through Multilateral Agreements
- Acceptance
  - By industry





# Accreditation systems

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- In Europe
- EAC
- Peer review
- MLA
- EA Guide 4
- The rest of the world
- IAF
- No peer review
- No MLA
- IAF Guide 24



# Accreditation systems

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Lacking consistency

Assessors not knowledgeable on NDT

Failure to verify CB compliance with normative criteria



# Standards (ISO 9712/EN 473)

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- Set only minimum requirements
- Not adequate to
  - ensure acceptable and equivalent levels of competence
  - harmonise scopes of certification leading to equivalence and international acceptance



# Quality (1)

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- Examination questions
  - no guidance on level of difficulty
  - lack of universal bank of questions
- Practical examinations
  - required to have only a range of defects
  - number of specimens is too low
- Experience can be variable in quality



## Quality (2)

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- Renewal process is worthless; need regular monitoring or surveillance
- Period between formal performance demonstrations (recertification every 10 years) is too great
- Scopes of certification (competence) too broad



# Quality (3)

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- Over/under qualifying
  - Some NDT Personnel CBs will vary the scope of the examination to suit the employment of the candidate (e.g. PCN).
  - Others offer standard qualification examinations that over-qualify the candidate, who subsequently uses only a fraction of the NDT techniques within each method.



# Recognition/acceptance

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- European Federation for NDT arrangements for mutual recognition
- Based on accreditation, or by peer review where no AB is available
- Successful, but does not result in
  - equivalence of certification
  - acceptance of certification



# So, are there any 'fixes'?

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- The International Committee for NDT ([www.ICNDT.org](http://www.ICNDT.org)) has established a working group (WG1) to address some of the problems highlighted ...
- Hyperlink to [WG1 report](#) dated 2010-10-01





# Are there other 'fixes'?

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- Probably ...
- Adoption of 'Best Practice' principles in the application of NDT ...



# Best Practice

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- Make use of accreditation systems
- Qualify inspection systems where appropriate
- Use 3<sup>rd</sup> party qualified and certified personnel where possible
- Supplement with job-specific qualifications
- Provide representative test pieces containing typical discontinuities and geometry for operator practice
  - (to give confidence, as well as to confirm correct test setup)



# Best Practice

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- Audit operator performance through random repeat inspections and regular supervision
- Regularly review procedures and instructions for continued appropriateness
- Ensure that the NDT vendor is not encouraged to risk safety and quality for speed
- The remuneration of all those involved in inspection activities should not depend on the number of inspections carried out in a given time



# Are there more 'fixes'?

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- Probably ...
  - ... Qualification of NDT systems
    - Equipment
    - Procedures
    - Personnel
  - ... for specific inspections



# Qualification of NDT systems

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- Central certification in accordance with ISO 9712 and EN 473 is by necessity (mainly) broad and shallow.
- Employer based or 2<sup>nd</sup> party certification is (usually) narrow in scope and focussed on specific techniques; It is easily abused by unscrupulous employers.
- Where an inspection is either novel or critical, consider independent qualification of the test or inspection system.



# Qualification methodology

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- ENIQ (European Network for Inspection Qualification) methodology
  - Nuclear
- CEN Methodology for qualification of NDT (CEN TR 14748)
  - Non-nuclear
- ISO TS 11774 : NDT – Performance based qualification
  - Drafted by ISO TC135/SC7/WG7
  - Focussed and cost-effective



# Okay, qualify NDT systems ...

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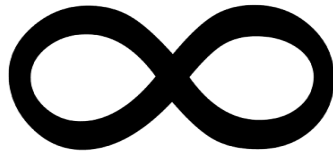
- But what are the issues?
- The present qualification schemes using ASME, ENIQ and CEN methodologies, are complex and expensive.
- ISO TS 11774 for performance based qualification may provide a cost effective solution.



# Are there more 'fixes'?

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- For sure,
- ... but we could go on forever!







# Thank you for participating

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- Discussion?
- Questions?
- Further information?
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