The Different Qualification Systems For NDE Personnel

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Abstract: Increasing safety issues require that personnel involved in control of materials, machines, boilers etc. are well qualified and that their qualification can be demonstrated to external auditors. Two different ways of qualification have been developed over the years – namely the employer based system and the central certification system. There are of course advantages and disadvantages for both systems and employers might find it difficult to choose between them. Based on more than 20 years of experience with qualification to both systems this paper will highlight the pros and cons and gives some information in combining them.

Introduction
Basically there are the two systems – the employer based system and the central certification system. The development of these different approaches stems from the different philosophies that American and European people have. In Europe all kind of external qualification systems are used and their reliability has been proven over the years. Americans strongly believe in the responsibility of the employer. Their choice is therefore a system which puts the responsibility for the qualification of the staff directly into the employer’s hands.

The American Society of Mechanical Engineers (ASME) was very dissatisfied with the qualification of personnel engaged in quality control and NDT. Together with the American Society of NDT (ASNT) they developed in 1966 a technical recommendation called SNT-TC-1A which details the requirements for the qualification of NDE personnel. But SNT-TC-1A is only a recommendation. The employer has to prepare his specific written practice specifying how he is going to qualify his personnel. The certification is done by the employer himself. This system is also true for CP-189. Since recently ASME has been very reluctant to accept any central certification systems.

The European way was the central certification. Basically there are 2 standards – EN 473 and ISO 9712. In 1992 the EN 473 was published shortly after the publication of ISO 9712. They are very similar with one big difference – whilst ISO 9712 can be amended to national requirements the EN 473 has to be adapted as it stands. Both standards clearly specify the requirements for training, practical work, examination, work experience, visual acuity, certification requirements and validity of certificates.
The main differences between the two systems

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Development of Certificates

Due to the fact that data on certification are not easily available and no central database exists we have used our own data to demonstrate the development of certification in the NDE field. The respective data will be presented in the talk.

Why is qualification of NDE personnel so important?

Increasing product liability as well as increasing safety issues makes it necessary for employers to have records of qualification at hand when they are going to be sued. The higher the risk the better employers must be able to demonstrate that they have chosen the right personnel. And with central certification system the qualification is more comparable than with employer based systems as every employer can decide how the qualification is done.

SNT-TC-1a leaves the practical training and exam completely in the hands of the employer whilst EN 473/ISO 9712 defines the exact terms for this. It should be mentioned that the employer has the responsibility to ensure that his staff is able to handle his specific materials / equipment. Therefore EN 473 as well as ISO 9712 foresees an authorization to work. This means that the employer should describe in his quality management system the way how he qualifies his staff. Authorisation records should be written. Examples for which can be found under www.icndt.org.

Exams are the crucial point

Everybody believes that training is the most important point. The training should be a good preparation for the exam but it could be done in self study with tests, in classrooms or otherwise. But in fact the exam and how it is conducted is the most crucial part of all. There are different ways of conducting exams:

- Easy questions
- Helping the examinee
- Easy exam specimens
- Evaluation done benevolently

But to be honest this does not help anybody. The exam is the hurdle that divides the good ones from the bad ones. And no one should make it too easy for candidates to pass. Current failure rates for are approx. 20 and most failures do arise in the theoretical parts.

People that have had SNT-TC-1A training prior to a shortened training according to EN 473 and a full exam showed a much higher failure rate. Thus demonstrating that there are differences between the two exams.
The future or What to do?

Basically the employer needs to take the best from both systems. For comparability he should use a central certification system. He should take great care when choosing the qualification and certification body. Training times in EN 473/ ISO 9712 are tightly set and reduction cannot be recommended. This means going to the training company with the lowest training hours is not recommendable. Exams must be fair, but hard as this will ensure that if passed his staff is well qualified. The certificate demonstrates that the candidate has shown the theoretical and practical ability to generally apply the method.

Based on this the employer must train the certified person to his specific needs e.g. materials, equipment and techniques. Only in doing so he has a proof in the case of being sued. This should be followed by an authorization to work.

Our experience over the years

When the whole business started participants had a good schooling and were well interested. Employers did not so much discuss training hours. They were expecting that staff sent to the trainings came back well qualified and able to carry out NDT jobs.

Nowadays people do not have such a good schooling. Especially knowledge of math and physics is not as good as it was before. Trainers have to spend far more time in explaining general aspects of math and physics. This time is of course missing for the training of the NDT specialities. Offering pre-courses is not a solution as employers do not book them. A solution would be Elearning and programs must be developed to cover this gap.

Due to the lack of qualified people and a high unemployment rate the agency of unemployment tries to find areas where people are easily employed when qualified. Therefore more and more trainings are filled with people who had worked previously as butchers, hairdresser etc. These people do not always have an interest in the field of NDT and therefore slow down the courses. The introduction of entrance tests prior to attending a course could reduce this problem.

Plus the equipment is getting more complicated. Therefore demands on the NDT persons are getting higher. And of course the possibility of claims increases and employers want to make sure that their staff is fit to do the job.

Nowadays employers want to have their staff trained quickly – the more time they spend in the training the less work they can do in the company. But trainings are already very short and a further reduction would mean that the employer would have to do a lot more training than he is doing now. And will he do it? This question can be answered only by the employers themselves.

Candidates want to have fun at the training. Sitting in a classroom for more than 1 hour and listing carefully is not what they expect. The training must be varied e.g. group work, practical work, discussions. Candidates are not always motivated to do extensive self studies. But again Elearning might help here as candidates can prepare them in a focused way.

Trainers want to be involved in the development of trainings and be treated fair by the candidates. But candidates are not always willing to treat them fairly especially if the material is difficult and they do not understand it easily. It is necessary to train the trainers to handle such situations.

Above all the candidates and the employers want to have a fair examination. But what does this mean? Is it an easy examination or an examination which is in line with what candidates have learned?
And what do certification bodies expect? They want to make sure that their certificates are only given to people that are fulfilling the requirements. But how can they control this? The employer signs for all the data and if he is not answering correctly what can the certification body do?

If we as the NDT community do not strictly obey to the rules set by EN 473/ISO 9712 or SNT-TC-1A we will have the same inflation of our certificates that we had in the QMS world. And this is certainly something nobody really wants.