

## THE NEW MODULAR CONCEPT FOR LEVEL 3-QUALIFICATION IN GERMANY

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**Abstract:** The German Society for Non-Destructive Testing is offering an intensive level-3-basic-training. It provides the candidates with the general knowledge to select an NDT-method. The training is organized in modules to meet the requirements of different groups.

**Introduction:** The German Society for Non-Destructive Testing is offering a level-3-basic-training since 1974. Beginning with 2 weeks it was extended during the years to 4 weeks. For level-III-candidates it was obligatory to attend in this course. It was designed to train engineers, which want to become NDT-supervisors. The course was held with lessons and practical exercises. Nearly every German Level III attended the course. It was widely accepted by hundreds of costumers.

A deep change came 1993 with the introduction of EN 473. A course became voluntary. Many candidates reached level-III basic after self-studies and a short examination preparation at organisations other then DGZfP. There are examples that it was possible to reach a full level-III after only 4 days of training.

This came to the attention of industrial NDT-users, which are responsible for plants with a high risk, like nuclear power, high pressure equipment and governmental organisations. They asked the DGZfP to find a solution, which is giving back the confidence in level-III-persons.

### ANALYSIS

The DGZfP-stuff started with the help of the society members an analysis of the situation.

The first question was: What should be the contents of the course?

They found 3 key areas:

1. Basic theoretical and practical knowledge of the NDT-methods:  
For 11 methods should be a general overview of the method, the physical principles, the basic rules, the procedures and the limits.
2. Selecting a method by knowledge of advantages and limits:  
On real objects should be trained the daily work of a level III: selecting a method, using standards, preparing instructions.
3. Basic procedures of qualification and quality management:  
An important part of the work is the supervision of the personnel. For this task the level III has to know the certification standards EN 473 and ASNT-TC-1A.

For NDT laboratories it is also essential to fulfil basic quality requirements. As one example could be discussed the EN 17025 for inspection bodies.  
The second question was: Who will take part?

The analysis showed three main groups:

1. NDT-supervisors of the future:

This is the biggest group. Mainly young engineers with some years of industrial experience have the career opportunity to become a NDT-supervisor. Very often they don't have a level I or level II. They start their NDT-education with level-III-basic, followed by the practical examination level II in PT and MT, and then the main-method-examination level III in PT and MT. Then, year by year, they add UT, RT and other methods. For this group a powerful basic-course is essential for their take off as NDT-supervisor.

2. Specialist for single methods:

This are people, which need a level III in a single method, like LT or AT. They don't have the task to choose a method or supervise people. They are highly specialised in one method. For them it is nice to hear something about other methods, but their target is to go fast through this.

3. People only interested in a general overview on NDT

There are several people, interested to learn the basics about the methods, but they will never perform a single inspection. These are people from quality control, junior managers, controllers, research people and other. They don't need a certificate and they don't take part in the examinations.

**Results:** DGZfP decided to create a new course for level-III-basic. It has to cover the three key areas and to fit for every interested group of students. The maximum length was limited to 4 weeks, but with a 2-week-break in the middle. That is important to keep the daily business of the students in their companies alive and to relax a little bit.

The course is lasting 4 weeks, but divided in 3 modules. The first module is 10 days, the second 5 days and the third also 5 days. Every customer is able to book only the needful modules for his target. So the NDT-supervisors take all modules, the specialists only the first block, and the other may pick up module 1 and 3.

It was also very important, to modernize the art of teaching. We know from theory, that only 20% of the content of oral lessons is stored in the brain of the students. To make the course effective, it was essential to combine learning methods as self studies, classroom lessons, demonstrations, exercises, case studies and examination preparation. So the students have also to go through group work, they have to do practical NDT, they have to solve problems and defend their solution in discussions. Daily tests in the morning train, how to answer multiple choice questions and show, if the lessons of the day before have been understood. With the result, the responsible trainer has a feed back and the possibility to act.

**Discussion: THE COURSE**

Module I:

Beginning with basic knowledge about materials, production methods and type of defects, the course goes through personnel certification according to EN 473 and visual testing. Then it comes

to the methods UT, RT, PT, MT and ET. This is the contents covered by EN 473 basic examination and after 10 days of training it is possible to pass this examination.

## Module II

This module has only one task: to train the selection of a method according to codes, standards and based on the knowledge of module I. Dealing with real objects and real tasks, a group of students is working on a case study. The solution has to be presented to the whole class and discussed with a group of trainers. This is very active and interesting, because very often there are a lot of possible ways to solve the problem.

This module is not ending with an official examination.

## Module III

Here we find the “new” NDT-methods, so AT, IT, VA and optical methods. This is also the place for personnel certification according to ASNT-TC-1A. At the end, quality management is touched with EN 17025, lessons about the accreditation process and an audit exercise.

## THE EXAMINATION

The examination has three parts and takes two half days.

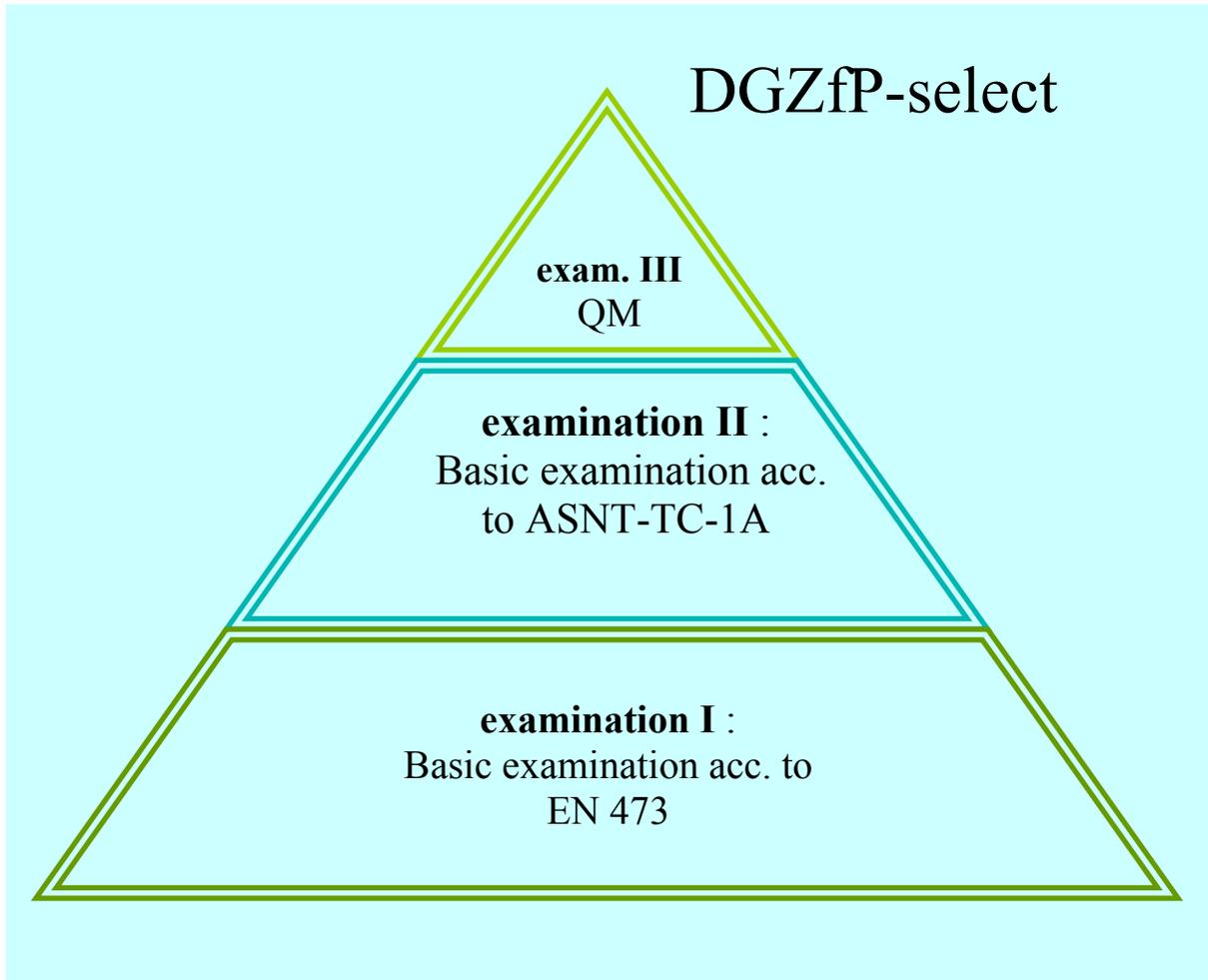
The first is the Part A and B of the EN 473-basic-examination. After successful passing the first step to Level III is done.

The second examination is voluntary and covering ASNT-TC-1A. It is useful for the employer of those candidates, using this certification scheme in their company.

The third examination is testing the basic knowledge about EN 17025.

Every candidate can choose which examination is fitting for him and his company.

But, there is a special bonus for those, passing all three examinations. If they later on reach the level III in two methods at DGZfP, they will get the official title “NDT-Master”. This title shows their extensive training and should help, to give back the confidence in level III.



**Conclusions:** Market situation in Germany after 1993 was undermining the confidence in level-III-persons. DGZfP took steps, to offer a modern and intensive basic training and to make the young level III persons fit for their daily business. A modular approach makes the course also interesting and attractive to other groups.

The increasing number of costumers shows the acceptance of this approach.