

## 3rd meeting of the EFNDT Railway Forum

NDT within the railway sector in Germany



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DB Systemtechnik

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Wittenberge, 28./29.06.2011

# NDT within the railway sector in Germany

## General structure of NDT of railway components in Germany

Nondestructive Testing of railway components can be divided into the following major areas:

Norms and standards for

- principles of nondestructive testing in the railway sector
- instructions and standards for the recurring nondestructive testing of track- and vehicle components

Education of NDT-personnel

Education of NDT-personnel for vehicle and track components

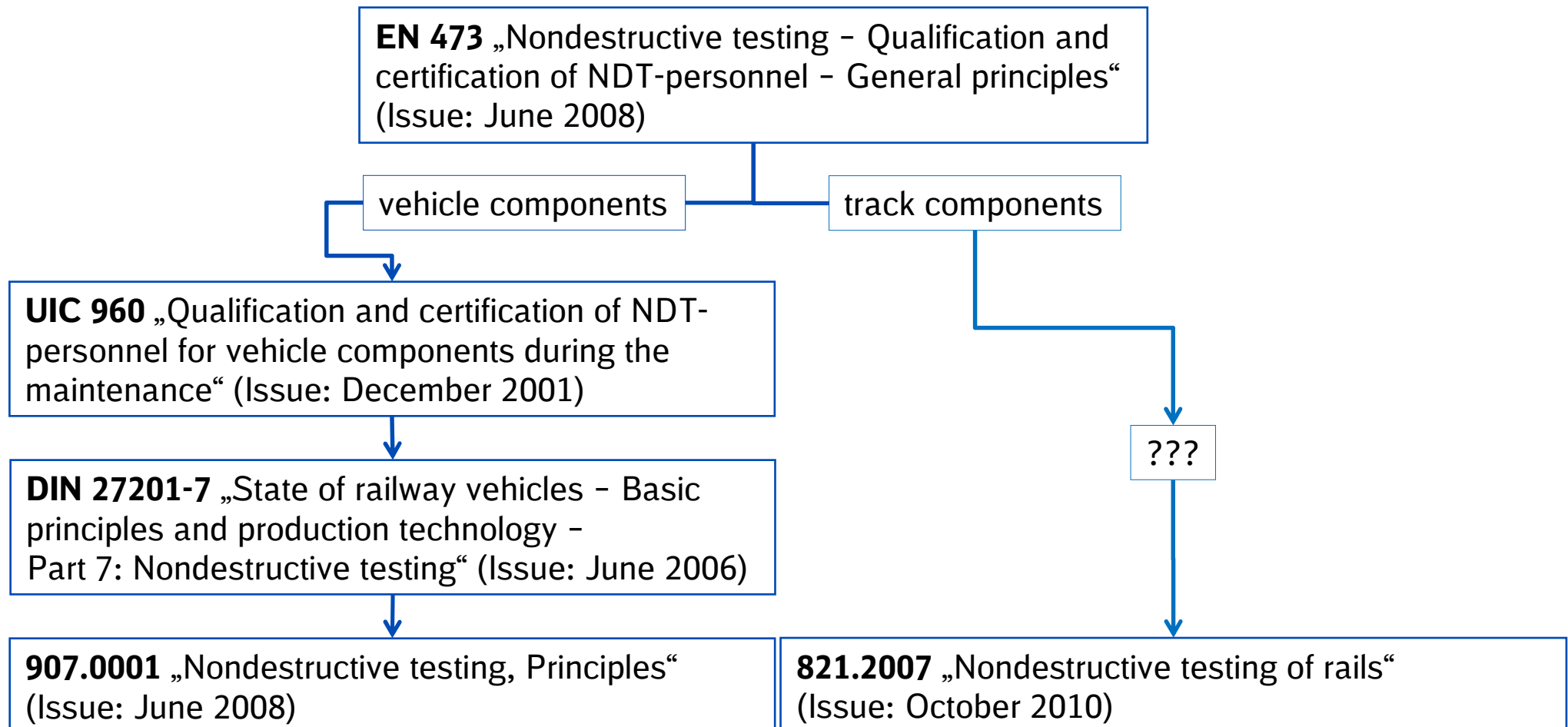
Recognition of NDT-Teams and the supervising of the nondestructive testing through NDT competence centres

Implementation of NDT within maintenance processes of track and vehicle components in the workshops of the different maintenance areas

# NDT within the railway sector in Germany

## Norms and standards

Currently applied NDT-norms and standards for the DB AG and other railway companies:



## NDT within the railway sector in Germany

Norms and standards (Example for internal norms of a railway company)

### NDT of vehicle components

907.01__	Ultrasonic testing of new axles
907.02__	Ultrasonic testing of installed axles
907.03__	Ultrasonic testing with automated inspection systems
907.04__	UT-, ET-, MT- and VT of wheels
907.05__	free (at the moment)
907.06__	Testing of other components (bogies, buffers etc.)
907.07__	Directory of old DB- and DR-standards
907.08__	Special methods (for example stress measurement)
907.09__	Inspection plans for axles

### NDT of track components

821.2007Z0_	Ultrasonic testing of rails
821.2007Z1_	Ultrasonic testing of switches
821.2007Z2_	free (at the moment)
821.2007Z3_	Eddy current testing of rails and switches
821.2007Z4_	VT and MT of rails and switches
821.2007Z5_	Penetration testing of switches
821.2007Z6_	Inspection with rail inspection vehicles

# NDT within the railway sector in Germany

## Education of the personnel

The education of the NDT-personnel takes place primarily in the education centre Wittenberge of the DGZfP.

The training takes place for the railway sector (sector 9) according EN 473 (new: DIN EN ISO 9712). The education is divided into areas of track („O“) and vehicle („W“) components.

Deviating of the EN 473 is a necessary requalification and recertification of the personnel for 5 years.

### ***The education includes the following NDT-methods:***

Ultrasonic testing UT	sector 9(W) and 9(O)	level 1 and level 2
Visual testing VT	sector 9(W) and 9(O)	level 2 9(W) and level 1 9(O)
Penetration testing PT		level 1
Magnetic particle testing MT	sector 9(W)	level 2 9(W)
Eddy current testing ET	sector 9(W) and 9(O)	level 1

### ***Furthermore there a different modular NDT-courses:***

Automated ultrasonic testing (9(W) and 9(O))  
Ultrasonic testing of welds in rails (9(O))  
Eddy current testing of rails (9(O))

# NDT within the railway sector in Germany

## NDT competence centre

Implementation of NDT competence centres (NCC).

1. Tasks:
  - Competence centre for the participation of the implementation of regular NDT of track and vehicle components
  - Recognition of NDT groups in workshops
  - Development and release of internal NDT-specifications
2. Recognition:

through a national workgroup (founded in the German FA Bahn of the DGZfP in accordance with established rules)
3. Requirements for a NCC: (ISB 01 of the FA Bahn of the DGZfP):
  - personnel certificates level 3 accordingly EN 473 within the railway sector
  - proven experience in the creation of internal NDT specifications for the regular inspection of security-relevant railway components
  - suitable NDT-equipment for the validation of inspection procedures

# NDT within the railway sector in Germany

## NDT-workshops

NDT-workshops within the railway sector have to fulfill the following requirements:

- ➡ Recognition by a NCC,
- ➡ within the sector 9 qualified NDT-personnel, this concerns both inspection personnel and the supervisor,
- ➡ Use of approved standards and guidelines,
- ➡ Inspection in accordance with prescribed standards of the customers.

*For the NDT-workshops for track components there are the same requirements with the following exception:*

*The NDT-personnel has to be qualified within the railway sector, but it is not necessary to have a certificate accordingly EN 473.*

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**Thank you for your attention !**