

IFF MA 06/ EN

OPTIMISATION OF AXLE REPROFILING



TARGET AUDIENCE

Rolling stock maintenance technicians.



GOALS

- Identify the various defects on wheels, their origins and consequences, and optimize reprofiling.



PREREQUISITES

- Visual acuity checked, minimum 6 months experience in the rolling stock maintenance.
- To have attended the training course (IFF MA 01) "Basic rolling element technology".



EDUCATIONAL MODALITIES

Exercises, practical work, workshop visit, exchange of experience and practices, demonstration units, videos.



DURATION: 4,5 Days



PROGRAM

- Know the vocabulary and technology of wheels
- Identify the different defects on wheels, their origins and their consequences;
- Explain the reprofiling method according to the defects concerned;
- Ensure the required quality by reprofiling and removing the minimum of metal;
- Apply the relevant maintenance documents.

• **Level 2 assessment:** Assessment of skills acquired at the end of training ➔ **Yes**

EXAMINATION BY PENETRANT TESTING OF ORGANS AND STRUCTURES LEVEL 2



TARGET AUDIENCE

Non-Destructive Testing Managers.



GOALS

- Establish operating procedures for penetrant testing
- Direct and provide specific technical assistance to Penetrant Testing operators (level 1).



PREREQUISITES

- Visual acuity checked, one year as Penetrant Testing Operator;
- To have attended the IFF MA 16 training "Penetrant Testing of Organs and Structures - Level 1".



EDUCATIONAL MODALITIES

- Training combining theory and practical application in a workshop equipped with several penetrant testing stands on railway parts.
- All standard equipment and apparatus will be used during the training.



DURATION: 4,5 Days



PROGRAM

- Understand the purpose of NDT and its evaluation context (organization, documents, facilities...);
- Distinguish the different metallurgical defects affecting organs and structures according to their elaboration and use;
- Know the physico-chemical phenomena involved in penetrant testing, be able to describe simply the principle of penetrant testing;
- Detect anomalies during the tests and verifications during the phases related to the light phenomena (grading and photometric units, photometric spectrum...);
- Use the tools and accessories during a study in order to draw up a test sheet;
- Classify the different penetrant testing ranges and to propose a method for the elaboration of a test sheet according to the characteristics of the organ to be tested;
- List the necessary products, implement the operations to be carried out during the test and define the illumination conditions to draw up a test sheet.

• **Level 2 assessment:** Assessment of skills acquired at the end of training ➔ **Yes**



TARGET AUDIENCE

Non-Destructive Testing Managers.



GOALS

- Establish ultrasonic inspection procedures;
- Guide and advise ultrasonic operators effectively (level 1).



PREREQUISITES

Visual acuity checked, minimum 3 months experience in ultrasonic inspection;
Have completed the IFF MA 14 "Ultrasonic Examination, Axle Application-Level 1" course

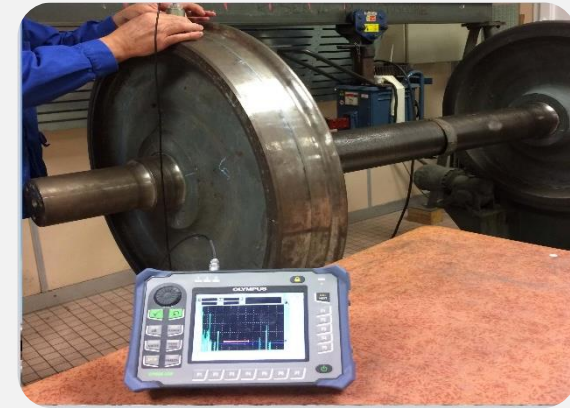


EDUCATIONAL MODALITIES

Training combining theory and practical application in a workshop equipped with several ultrasonic axle testing stands. All standard equipment and apparatus will be used during the training.



DURATION: 13,5 days



PROGRAM

- Have sufficient knowledge for the training (assessment of knowledge as an ultrasonic operator level 1)
- Know and understand the principles and purposes of non-destructive testing and basic metallurgical phenomena;
- Identify the possibilities and limits of NDT according to the cases and quote the principles of safety of operation;
- Define the different defects contained in the parts according to their manufacture, use or maintenance of the rolling stock;
- Understand the physical phenomena related to wave propagation (repeat basic mathematics);
- Explain and demonstrate the consequences of the transport of energy on an ultrasonic wave in one medium or on its passage through a second medium;
- Use straight or oblique soundings to control wheels or axles;
- Set up the means to produce ultrasound using natural piezoelectric pellets;
- Be able to detect anomalies in a work situation.

• **Level 2 assessment:** Assessment of skills acquired at the end of training ➔ **Yes**

IFF MA 19/ EN

MAGNETOSCOPIC EXAMINATION LEVEL 2



TARGET AUDIENCE

Non-Destructive Testing Managers.



GOALS

- Know how to carry out magnetic particle examinations (level 1);
- Lead and assist level 1 MT technicians.



PREREQUISITES

- Visual acuity checked, minimum experience of one year as a MT operator.
- Must have completed the IFF MA 15 "Axle Examination - Level 1" course.



EDUCATIONAL MODALITIES

- This training combines theory and practical experience in a workshop equipped with several MT test stands with axles and other railway parts with characteristic defects.
- All standard equipment and apparatus will be used during the training.



DURATION: 9 Days



PROGRAM

- Know and understand the principles and purposes of non-destructive testing, to appreciate its possibilities and limitations;
- Define the different defects contained in the parts according to their manufacture, their use and the maintenance of the rolling stock;
- Know the physical phenomena involved in magnetic particle testing;
- Know the influence of currents on MT;
- Choose and implement the most suitable equipment for a MT test;
- Set up the most suitable lighting conditions for magnetic particle inspection;
- Know how to interpret the results of the inspection in the event of doubt on the part of the MT operator and to know how to decide what action to take;
- Write and structure a test sheet from a previously established specification.

• **Level 2 assessment:** Assessment of skills acquired at the end of training ➔ **Yes**

IFF MA 30.4/ EN

Application of Maintenance Rules



TARGET AUDIENCE

Rolling stock maintenance agents.



GOALS

- Select and apply a maintenance document and those referred to, in order to guarantee the conformity of carried out operations.
- Fill in the documents relating to the traceability of a maintenance operation.
- Propose and justify the evolution of a maintenance rule.



PREREQUISITES

To have followed the IFF MA 30.01 training.



EDUCATIONAL MODALITIES

Exercises, practical work, group work and exchange of good practices, videos.
The equipment maintenance policy and in particular the organization of maintenance.



DURATION: 3 Days



PROGRAM

- The equipment maintenance policy, including the organization of maintenance.
- Its challenges, including those of the Rolling stock production System.
- Implementation of maintenance (role of the different actors), the feedback and its consequences in terms of training, evolution of maintenance rules and modifications.
- Dismantling, assessment and reassembly of a repairable part of the equipment, e.g a shock absorber (or equivalent).
- Use of the identification labels for repairable parts of the Equipment and presentation of the traceability sheets.



• **Level 2 assessment:** Assessment of skills acquired at the end of training ➔ **Yes**

Integration of new recruits (Rolling stock Technician)



TARGET AUDIENCE

Young recruits with technician, specialized technician or higher level.



GOALS

- Discover the railway environment, organization and technology of rolling stock
- Identify the different series of rolling stock and describe the principles governing technical and technological choices as well as the preventive maintenance policy for rolling stock.
- To know the principles of Safety, Security, Reliability, Availability of rolling stock



PREREQUISITES

- Immersion in a facility and discovery of the railway environment.



EDUCATIONAL MODALITIES

Exercises, practical work, group work and exchange of good practices, videos.
The equipment maintenance policy and in particular the organization of maintenance.



PROGRAM

- Railway environment: organization and technology of rolling stock
- Maintenance of rolling stock: maintenance policy and different types of maintenance (preventive, corrective and modular)
- Rolling Stock Technology : Description and Operation
- Different series of equipment and describe the principles governing technical and technological choices
- Principles of Safety, Security, Reliability and Availability of rolling stock.



DURATION: 5 Days

• **Level 2 assessment:** Assessment of skills acquired at the end of training ➔ **Yes**

IFF MA 44/ EN

BEARING PARTS (Module for managers)



TARGET AUDIENCE

Managers and supervisors of rolling stock maintenance.



GOALS

- Contribute to the technical leadership of managers in the field of Rolling Stock;
- Become aware of the need for rigorous behavior in areas affecting the safety of railway operations;
- Ensure compliance maintenance of bearing parts operations to ensure safe railway operations;
- Ensure compliance with training plans for their staff;
- Be driven by a continuous improvement dynamic.



PREREQUISITES

Hold a management position (supervisor or manager) related to the maintenance of rolling elements.



EDUCATIONAL MODALITIES

Educational demonstrators, videos, a railway axle, tools necessary for the practical part, trainee training document.



DURATION: 4,5 Days



PROGRAM

- Master the regulatory and normative arsenal framework
- Explain the Rolling Stock axle maintenance policy
- Master the architecture of the axle maintenance documentation
- Explain the different roles and stresses of the wheelset under a vehicle in service
- Master the terminology and the role of each of the components of a wheelset
- Understand the interactions with the Infrastructure
- Understand the technical nature of the axle product
- Exchange technical information with the technicians
- Identify the main defects on an axle (axle, wheels, gearboxes).



• **Level 2 assessment:** Assessment of skills acquired at the end of training ➔ **Yes**