

BASTIEN RICHARD PROFILE



Bastien's RICHARD

Head of the Centre of Expertise in Non-Destructive Testing (NDT)
Railway Test Agency – SNCF Voyageurs



Bastien RICHARD has been Head of the centre of expertise in Non-Destructive Testing (NDT) at AEF for ten years. The role of an NDT inspection is to determine the operational status of a component or structure without damaging it. The aim is to identify any defects caused by loads during service that might affect the safe use or compliance of a product over time.

Bastien is in constant contact with the teams that handle failure analysis. He is active in this chain of comprehension to research and understand the causes of material damage.

Visual inspections are not always sufficient. Bastien therefore conducts additional analyses using applied physics techniques, NDT, intervening at various levels:

- **Maintenance:** tests conducted as part of the production process, checking for fatigue defects once operating modes have been defined.
- **Supplier approval:** inspections on the assembly process. Here searches are made for manufacturing defects. He therefore validates the supplier quality control process.
- **Potential study:** an NDT expert analysis is conducted in the lab to validate any increase in potential. This means adjusting the original maintenance instructions by analysing a sample of components representative of those in service.

Throughout this chain of comprehension, a more in-depth process of analysis and investigation may be conducted by opening up the part (destructive tests) to assess the cause in closer detail.

What are the NDT methods used?

These methods involve internal (volume) or external (surface) testing:

- **ultrasonic:** 3D tests, analysing signals that are emitted and then received through the materials; they are the industrial equivalent of a medical ultrasound
- **dye penetrant:** 2D testing on non-porous materials using a series of products to detect surface discontinuities
- **magnetic particle:** 2D testing on ferromagnetic materials using a system of magnetisation and metal particles in a liquid suspension simultaneously
- **Eddy current:** 2D tests, this time using no other product, to analyse the induction of currents on the surface of conductive materials, which are interrupted when defects are present.

To perform these tests, a process of training must be followed, and exams passed, to obtain ISO 9712 certification.

Bastien holds level 3 ultrasonic and dye penetrant certification, and level 2 Eddy current certification, issued by French certification body, COFREND. Level 3 qualifies Bastien to be a COFREND examiner at the only examination centre specialising in railways, which is based at the AEF.



YOUR CAREER IN FOUR STAGES

2005

- Internship at SNCF to complete his Masters in Electronics and IT at PARIS-UPMC Polytech
- Joined SNCF as a Studies Officer in Track Management

2007

Was involved in the trial runs for the rail speed record for SNCF RESEAU, with the LGV EST line

2011

Joined AEF as NDT Manager

2015

Obtained his first Level 3 Ultrasonic certification

Three words that describe your job?

Expertise

Innovation

On the ground

What makes you most proud in your job?

What makes me most proud is developing a technical scenario and making it sustainable. I enjoy putting a new and innovative piece of test equipment into production, one that is sustainable and delivers substantial gains for railway maintenance.

These gains may be related to rail safety (probability of detection) or be of a different type: financial (reduction in operating times), quality (traceability), environmental (scarcity of consumables), or affect quality of life at work (operator ergonomics).

I recently had the opportunity to file two patents. In addition to the company's industrial protection, it's really gratifying for me and my team.

What is your best memory of an assignment for Eurailtest?

I worked with my team on the Saint-Louis-Arzviller inclined plane, a boat lift dating back to 1965. It was built to avoid boats taking a longer route through 17 locks. The peculiar feature of this structure is that it's mounted on bogies, axles and railway track.

The structure's owner, *Voies Navigables de France (VNF)*, France's inland waterway navigation authority, called on Eurailtest/AEF to carry out an initial diagnosis of the axles in 2015, using ultrasound. The expert analysis identified cracks on the axles, some of which were quite significant! We went back there in 2020 and again in early 2021 for a follow-up inspection of the structure.

What's interesting about this assignment, original for not being railway related, is delivering a solution to address the customer's need and see the installation continue to function.

ANY FINAL WORDS TO ROUND OFF THIS INTERVIEW?



"Creativity is contagious, pass it on."

Albert Einstein