

RAILSAFE

Education, Qualification and Certification

RAILSAFE – European harmonised training and qualification system for welders in the rail industry

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1. Introduction

Back in 2003 the European Welding federation (EWF), in its continuous search to find ways to improve the welding education in Europe, realised that there was no harmonization of the qualification and certification of track welders in Europe. Moreover, at the time and since, a number of accidents and near-accidents have happened. These accidents result not only in injury to (and sometimes in death of) passengers, but also in downtime of the railway service and therefore loss of money. The rail industry was quite naturally worried with the situation and interested in finding solutions to avoid such accidents.

The above issues resulted in a discussion on how to address them. Since one of the causes identified was failure of the welds in the rails, it seemed a reasonable approach to take solid steps in guaranteeing the competence of the welders. It was then that the idea of a project to harmonise all the qualification and certification of track welders within Europe took place and led to the development of a European project proposal, coordinated by EWF, with the participation of rail organisations of different countries. This project proposal went through several evaluation phases and was finally approved in 2004.

The project RAILS SAFE, started then, with the purpose to develop a non-mandatory harmonised system for education, qualification and certification of railway track welders for aluminothermic welding. This project was successfully completed in 2007.

More recently another project entitled RAILS SAFE 2 was approved. This new project is the second phase of the previous RAILS SAFE project and the main objective was to have a guideline for the Qualification and Certification of a European Arc Welder for Railway Tracks. RAILS SAFE 2 was successfully completed in October 2010.

2. Objectives of the RAILS SAFE System

Before introducing RAILS SAFE's structure and organisation, it is useful to be reminded of the original objectives and aims of the projects:

RAILSAFE's objectives are:

- to have trained and certified railway track welders available for railway companies to assure the quality and reliability of the railway tracks and thus reducing accidents and downtime caused by welding problems,
- to harmonise welding procedures and to harmonise education, qualification and certification to make exchange of welders for national railway authorities and companies in the European Union possible,
- to assure the quality of and access to continuing vocational education and certification for life-long competences and better employability of railway welders across national borders.

These objectives are to be achieved by continuing education and training and qualification and certification of welders, according to a harmonised European guideline for aluminothermic welders, which was developed in the original RAILS SAFE project and to a new Guideline for electric arc welders which has now been produced under the new RAILS SAFE 2 Project.

RAILSAFE's aims are to develop:

- guidelines for a harmonised system for education, qualification and certification of railway track welders,

- guidelines for specification and approval of welding procedures for track welding in production and for training,
- database of certified railway track welders,
- pilot courses to validate the guidelines,
- a quality assurance system to operate the harmonised system,
- disseminate the results of the project in Europe.

In order to determine the requirements of the railway authorities and the industry for the education, qualification and certification of railway track welders, draft documents were produced on the performance objectives of welders, welding procedures, a database for certified welders and a quality assurance system.

These draft documents were discussed by more than 50 railway track welding experts in workshops throughout Europe.

Although railway authorities and process suppliers were represented in the workshops, they were also asked separately to give their opinion on the draft documents.

During the first RAILS SAFE project a new CEN standard, EN 14730, became available, on the approval of aluminothermic welding processes and on qualification of aluminothermic welders.

Part 1 of the standard gives details about the requirements and procedures for assessing and approving a specific aluminothermic welding technique for use on the rail infrastructure.

With regard to Part 2 of the standard, although this describes a framework for the qualification of welders, it is not prescriptive in terms of the content of the training or about the details of the examination.

The comments received during the workshops and during the visits to the railway authorities and process suppliers as well as the new standard have led to the documents developed and published.

During the start of this new RAILS SAFE 2 project a new European Standard also became available, EN 15594 Railway applications – Track – Restoration of rails by electric arc welding, and this new project has taken in consideration the content of the standard, in order to comply with it.

The present paper gives a description of the structure and organisation of the RAILS SAFE education, qualification and certification system.

3. Structure and Organisation

The operational structure for the implementation of the Training, Qualification and Certification System for rail welders is presented in Fig. 1

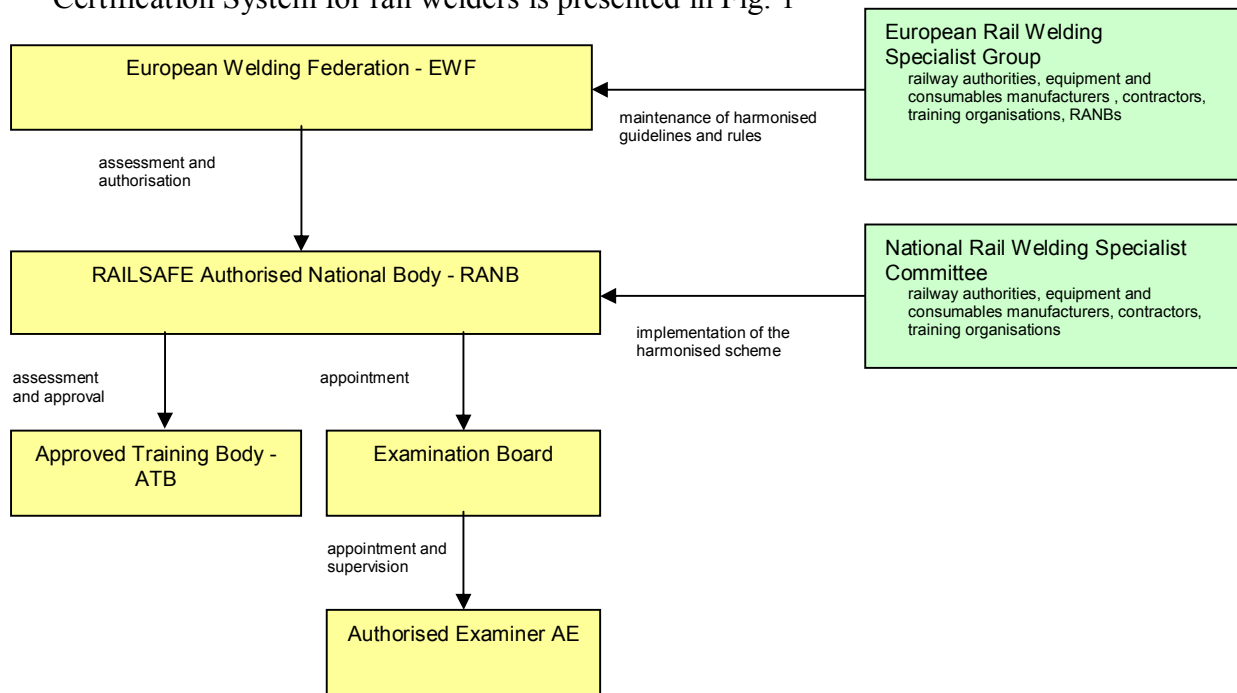


Figure 1 Overall structure of the system

The European Welding Federation applies special rules for RAILSAFE Authorised National Bodies (RANBs) in each country that wish to implement the rail welder education, training, qualification and certification scheme.

The rules require the RANB to establish a National Rail Welding Specialist Committee for this activity with representatives of the national rail industry sector. The representation on this committee would include:

- railway authorities
- rail welding contractors
- the rail welding process suppliers that are active in the country concerned
- rail welder training organisations.

The National Rail Welding Specialist Committee advises the RANB on the conduct of its affairs in relation to the implementation of the RAILSAFE education, training, qualification and certification scheme. This RANB is responsible for the implementation of the scheme at the national level.

A RANB assesses and approves Approved Training Bodies (ATBs) and appoints an Examination Board. The Examination Board appoints and supervises Authorised Examiners (AE).

The National Rail Welding Specialist Committee may itself act as the Examination Board.

A European Rail Welding Specialist Group is established on a European level to maintain the harmonised guidelines and rules. The representation on this group includes:

- railway authorities
- rail welding contractors

- rail welding process suppliers
- rail welding training organisations
- RANBs.

RANBs would normally be the national railway authorities, but an authority could decide to subcontract the role to another organisation.

The Rules for the implementation of the RAILS SAFE system are available through the European Welding Federation (EWF). These can also be downloaded from the RAILS SAFE website (www.ewf.be/railsafe).

The harmonised system provides for theoretical education and practical training of railway welders, their examination, issue of a life-long Diploma and Certificates with limited time validity.

Certification requires qualification as above plus track and/or arc welding experience.

The theoretical education and examination for a Diploma is generic and the practical training for a Diploma is process supplier specific. The practical examination for a Diploma is process variant specific. Qualification, resulting in the issue of a Diploma, requires theoretical education, practical training and theoretical and practical examination. This practical examination would normally be conducted out-of-track, e.g. in the training school. After passing the examinations the welder will receive a generic Diploma valid for his/her whole life.

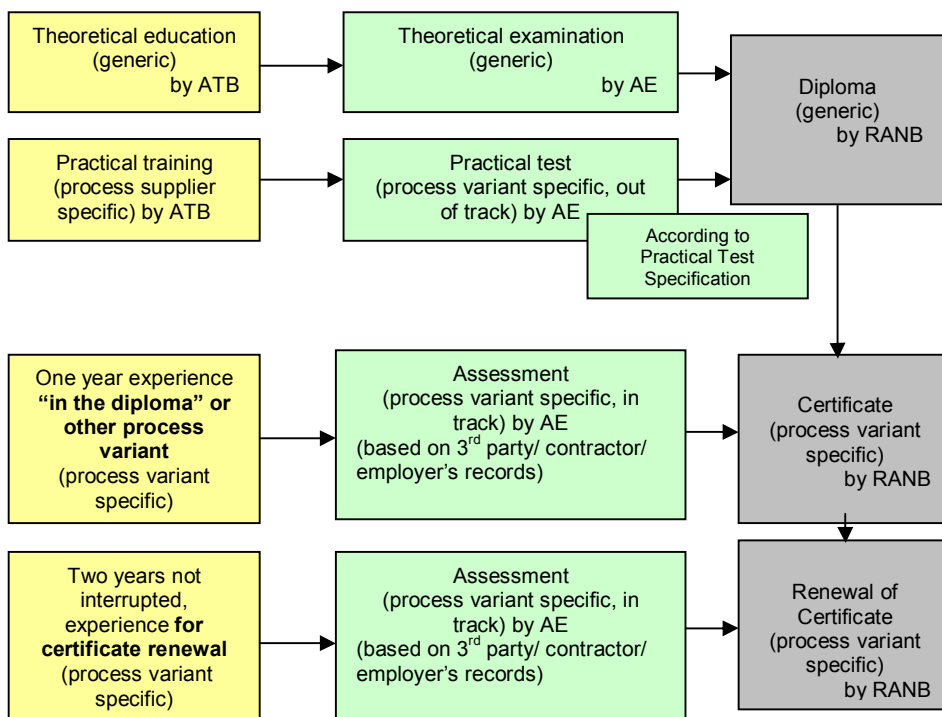


Figure 2 Overall structure of education, training, qualification and certification system

Diploma holders are required to demonstrate a one year period of supervised, documented and satisfactory experience to receive a Certificate, which is process variant specific. This applies to the Certificate of the process variant in which the welder has been trained for the Diploma as well as to additional Certificates in other process variants. To get a certificate in other process variant, the welder must also undergo practical training in that process variant.

Certificates are valid for two years. In order to renew a Certificate for another two-year period, holders are required to demonstrate supervised, documented and satisfactory experience in the process variant for which the certificate was awarded during the period of validity of the certificate.

The current scope of the RAILS SAFE system covers track welding by the aluminothermic and electric arc processes. Arc welding covers both rail restoration and rail joining techniques.

4. Course content

A Guideline, entitled *Minimum Requirements for the Education, Training, Examination, Qualification and Certification of a European Aluminothermic Welder (EAW)*, EWF-635-07, proposes the structure of the courses to be implemented in the training schools/departments (ATBs) for harmonising the transfer of knowledge around Europe and thus assure adequate skills for the rail welders.

The EAW course consists of a theoretical education module and practical training module, as shown in Table 1. Both modules are divided into sub modules, each with a recommended number of teaching hours.

Module	Sub Module	Recommended teaching hours
1. Theoretical education	1. Health, safety and environment	7
	2. Track fabrication	1
	3. Materials and their behaviour during welding	8
	4. Application of aluminothermic welding to rails	23
	Theoretical examination	1
	Total Module 1	40
2. Practical training (for process variants of one process supplier)	1. Pre-welding activities	77
	2. Aluminothermic welding	
	3. Post-welding activities	
	4. Welding process variants	
	Practical test	3
	Total Module 2	80
Total Course		120

Table 1 - Parts composing the training course including examinations for European Aluminothermic Welder

Recently a second guideline has been finalised under RAILS SAFE 2, *Minimum Requirements For The Education, Training, Examination, Qualification And Certification Of A European Arc Welder For Railway Tracks: - European Arc Welder For Rail Joining (EAWRJ); - European Arc Welder For Rail Restoration (EAWRR)*.

The structure of the course is similar but this time with different options in the scope of training as indicated in the columns below:

Module/ Sub Module	Recommended teaching hours		
	Joining only	Restoration only	Joining and restoration
1. Theoretical education			
1. Health, safety and environment	7		
2. Track fabrication	2		
3. Materials and their behaviour during welding	11		
4. Application of arc welding to rails	24	18	34
Theoretical examination	1	1	1
Total Module 1	45	39	55
2. Practical training (per welding process and skill module)			
1. Joining only (1 module)/ Restoration only (1 module)/ Joining and Restoration (2 modules)	43	59	102
Practical test	4	4	8
Total Module 2	47	63	110
Total Module 1 and 2	92	102	165

Table 2 - Parts composing the training course including examinations for European Arc Welder for Rail Joining and Restoration

As explained before the reliability of the skills acquisition can only be assured by implementing a quality assurance system, with its rules and operating procedures, in all the countries using the harmonised system.

These rules and procedures are outlined in the document “Rules for the implementation of RAILS SAFE Guidelines”: EWF-643-08, which is structured as follows:

- Part 1: Standard Requirements For RAILS SAFE Authorised National Bodies (RANBs);
- Part 2: RANB Assessment, Surveillance And Reporting Procedure;
- Part 3: Standard Requirements For ATBs;
- Part 4: Examinations.

This document is the basis for the implementation of Training, Qualification and Certification in track welding by the RANBs in their countries.

5. Results obtained

The RAILS SAFE system includes the aluminothermic track welding part available since 2007 and the arc welding part concluded in 2010. One country is on the verge of implementing the RAILS SAFE system, the Netherlands. ProRail is the organism responsible for the Dutch railway network and is implementing at the moment the RAILS SAFE system for the qualification and certification of the European Aluminothermic Welder. The first phase of the implementation should be completed by the end of this year.

Other countries that were not partners in the project are being made aware of this system and are contacting EWF for information towards its implementation in their countries. The Czech Republic intends to implement the RAILS SAFE system in the next 12 months and other countries are expected to follow.

6. Conclusions

The rail industry now has a harmonised training, qualification and certification system at its disposal.

This system is based on the experience obtained in the harmonisation of welding personnel qualifications for 'conventional' welding, which started in Europe in 1992 and is now used by 39 countries with more than 150 000 diplomas awarded.

The performance of the EWF System is a guarantee of quality on which the rail industry can rely.

The next step is for organisations acting in the railway sector to make the use they see fit of this Harmonised System for Training, Qualification and Certification of Rail Welders.

European Welding Federation

Enquiries about RAILS SAFE may be addressed to:

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