

European Quality Requirements of EN 15085 – Welding in Railway Vehicle Construction

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Abstract

Welding in railway vehicle manufacturing is an important process regarding to safety in public transport. In this case the EN 15085-2 is an established element of quality assurance. Additional to the technical requirements written in the standard regulations for the uniform application are necessary for the acceptance in industry. Towards from experience in Germany the procedure for European application will be shown.

Keywords: Railway transport, welding, quality assurance, internet database, EN 15085

1. Foreword

Changes in the form of globally organised production processes and political developments in Europe are influencing the manufacture and operation of railway vehicles. The driving force behind this process is the consumers, who want to see their fundamental need for mobility satisfied. All users also expect a high level of safety in rail travel.

A safe rail transport system cannot be guaranteed without a high level of quality. This applies both to the operation of railway vehicles and their manufacture and maintenance. Welding and joining processes, in particular on load-bearing structures, require special attention. Standards relating to the implementation of quality criteria have ensured that the fundamental technical welding requirements are adhered to by manufacturing companies for the last few decades. Table 1 offers an overview.

Table 1. Standards relating to quality assurance in technical welding

| Regulation | Comment |
|--|--|
| DV 952 | Regulations for state railway DR and after 1945 DB |
| DS 952, later: DS 951 01 and DS 952 02 | Regulations for state railway DB and from 1994 DB AG |
| DIN 6700 | National deregulated system |
| EN 15085 | European deregulated system |

2. Changes to regulations with supporting measures

Standards alone cannot generate uniform levels of quality. They establish a specific level of technology but are subject to ongoing further development and interpretation. In technical welding, this is achieved in Germany by the technical committee of the German Welding Society (DVS) and committees of the German Institute for Standardisation (DIN) in addition to technical welding standards relating to the construction of railway vehicles. Fig. 1 aims to clarify the development of these processes over time. It is clear that the responsible monitoring bodies have changed over time and regulations too have been developed further. These processes have always been accompanied by coordinating groups where interpretations of standards can be discussed.

New to this process is the use of the internet to support in different aspect. The creation of the online register EN 15085 led to the development of an online database of data relevant to technical welding in railway vehicle construction and maintenance. This data is unique in this form and generates new international working methods for the implementation of these quality standards.

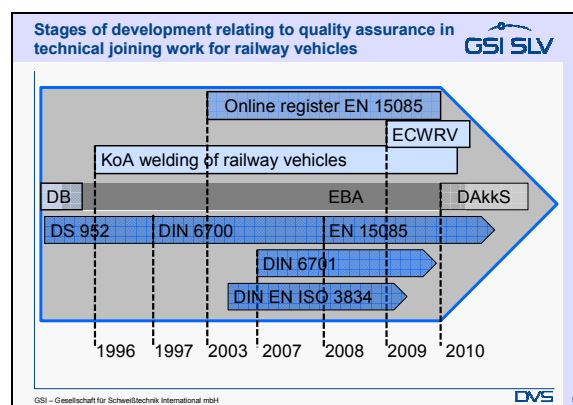


Figure 1. Stages of development relating to quality assurance in technical joining work for railway vehicles

3. Online register for railway vehicles – www.en15085.net

For the last 10 years, the online register as an Internet database for railway vehicles has been an important quality assurance tool for certifying companies involved with welding and constructing railway vehicles or components or purchasing welded railway vehicle components. It is a modern-day response to the need for an overview of manufacturer certification bodies (HZS) and certified manufacturers, an issue which arose following the liberalisation of the markets.

Manufacturer certification bodies recognised by the Federal Railway Authorities (EBA – a National Safety Authority - NSA) are required to enter all certified companies under levels CL1, CL2 and CL4 in the online register and to maintain the content of the certificates and quickly implement any changes. This enables the supervisory authorities full access to all quality-related data and ensures the necessary degree of transparency.

This relates to both manufacturer certificates as well as providing an overview of the annual supervisions, details of which are only accessible to the manufacturer certification bodies and the EBA. This does mean, however, that all manufacturer certification bodies can provide full proof and justification of their activities for the certified companies at anytime. This takes place on a daily basis and the process is clear as all entries are based on one sole database. The data is secured against third-party access and security updates are carried out in accordance with fixed regulations.

By clearly defining responsibilities (for example the manufacturer certification bodies are directly responsible for the accuracy of the data stored in the register), progress of work can be depicted in a clear and up-to-date manner. Manufacturing companies can also be assured of having a clear contact partner to determine the up-to-date nature of data when selecting a manufacturer certification body.

The work of the Coordination Committee for the Welding of Railway Vehicles (KoA) is also supported by this internet platform. Important work results are published here too, such as the regulation issued by the KoA for the application of standard EN 15085.

The internet platform is becoming even more attractive and new services, such as a database of recognised welding consumables, can also be integrated here.

4. Changes through Europeanisation

The German Coordination Committee recognised the need to open up the online register as a tool for all users

very early on. This means, for example, installing multiple language functionality for users across Europe.

As a result, all market participants have been able to gain information here. As an additional function the online register in this extended form has proven to be useful in setting up supply chains both for customers and suppliers.

This applies to both manufacturers and manufacturer certification bodies across Europe and recently even at a global level. As an example more than 200 companies in China alone prove this, although it should be noted that standard EN 15085 is applied in China even for railway vehicles for the Chinese market. A comparable development is given in Turkey because more than 40 companies are also certified.

Demand to participate in the online register EN 15085 demonstrates an acceptance of the database in terms of its market information as well as the goal of adapting to existing quality requirements.

5. European Coordination Committee EN 15085 (ECWRV)

The German Coordination Committee not only resolved to open up the online register to free global access but recently also supported the foundation of a European Coordination Committee. The goals and responsibilities of the ECWRV are described in [1] and [2].

The ECWRV (European Committee for Welding of Railway Vehicles) is currently represented in the following countries:

Germany, France, Italy, Poland, Portugal, Switzerland, Spain, Slovakia, the Czech Republic and Hungary.

Austria, Sweden and Great Britain have also expressed an interest.

The desire of other foreign manufacturer certification bodies to be involved in the online register was expressed within the ECWRV in 2010. The first step involves creating pre-requisites to enable other recognised manufacturer certification bodies in Europe to take part in the online register. The terms and conditions governing the participation of these manufacturer certification bodies in the online register have to be defined.

The work of the ECWRV can be divided into three working groups, as shown in fig. 2.

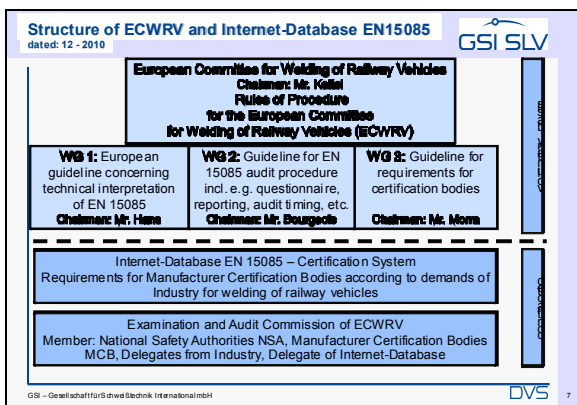


Figure 2. Structure of the ECWRV

The ‘Examination and Audit Commission’ shown in fig. 2 has not yet been defined. This commission will ensure the same framework conditions for all manufacturer certification bodies participating in the online register. A licence agreement will be signed between the online register and manufacturer certification bodies taking part in the register which will define the relevant quality criteria.

6. Quality criteria for manufacturer certification bodies

At the start of 2010, a working group of the TC 256 set itself the goal of establishing the required criteria for recognised manufacturer certification bodies. This document was developed further and finally resulted in an extension to standard EN 15085-1. This is expected to come into effect in 2011 and the draft can serve as a basis for any bilateral agreements. It can be assumed that the requirements of manufacturer certification bodies specified in EN 15085-1 are minimum requirements for taking part in the online register. The manufacturer certification bodies which accept and implement these requirements will be granted access to the online register and will be entitled to enter the manufacturing companies they have certified into the register.

Manufacturing companies which want to be listed in the online register need to take account of this in future when selecting a manufacturer certification body. This is recommended in particular for cooperations within Europe.

The specifications as defined by the EBA continue to apply in Germany. These specifications include the stipulation that auditors can only be recognised in accordance with standard EN 15085-2 in the certification system if they can demonstrate their competence as part of an in-depth discussion with the EBA. This kind of implementation extends further than the requirements of the standard itself and forms an important part of quality assurance.

See [3] for an overview of the expertise required of auditors and responsible welding supervisor managers in technical welding manufacturing companies.

7. German Accreditation Body

The German Accreditation Body (DAkKS) began operation on 01.01.2010. It is based on European law, which foresees an only one national accreditation body for each European country. The DAkKS brings together the work of the different German accreditation bodies, such as the DAP and TGA. Some other countries like Italy and France instal these kind of institution earlier than Germany.

With regard to technical welding matters in railway vehicle construction, it can be assumed that the DAkKS will be responsible for the accreditation of manufacturer certification bodies in future. As such, it supplements the EBA’s role in appointing manufacturer certification bodies. The EBA’s sovereign role in rail transport safety remains unaffected by this. It has not yet been decided which system the DAkKS will use. In principle, the procedures depicted in Fig. 3 can be applied. The form of accreditation cited in the revision of EN 15085-1 is DIN EN ISO 17021. The approach chosen can be evaluated in different ways at a national level. It could be possible that there are different basic standards for accreditation in different European countries. But the principles of these standards for quality assurance are mostly the same and therefore a good fundament for the acceptance of manufacturer certification bodies worldwide.

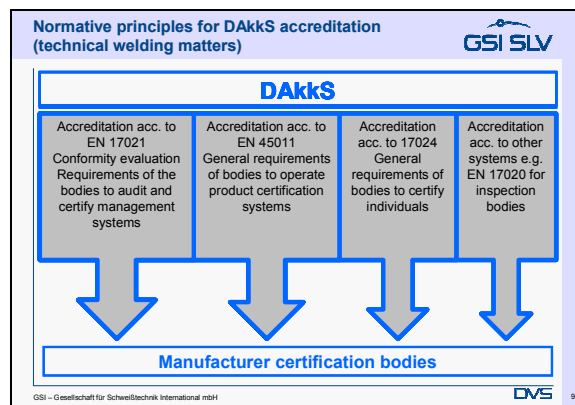


Figure 3. Possible approaches taken in accrediting manufacturer certification bodies

The current interaction between the EBA, manufacturer certification bodies and manufacturers of railway vehicles is depicted in Fig. 4. This interaction works successful since more than 10 years and leads as a result to a high level of quality assurance.

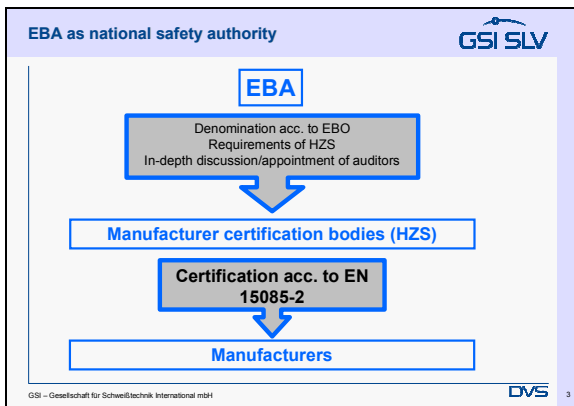


Figure 4. Current accreditation of manufacturer certification bodies by the EBA

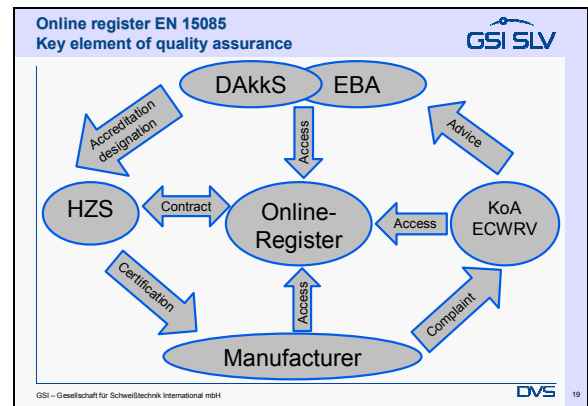


Figure 5. Possible interaction to ensure comparable quality standards for the welding of railway vehicles

8. Possible interaction with a European quality assurance system for the welding of railway vehicles

Both the ECWRV and national accreditation bodies are still very young. National safety authorities comparable with the EBA do not yet exist in all European countries or else are not operational.

It is all the more important then that we develop suggestions today to guarantee interaction between the most important players in the interest of ensuring reliable criteria for the quality of welding for railway vehicles. Potential interest may be expected from the following interest groups:

- National safety authorities for railway traffic
- National accreditation bodies
- Manufacturers of railway vehicles
- Operators of railway vehicles
- Manufacturer certification bodies for certifying technical welding companies in accordance with EN 15085-2
- Last but not least – the costumer of railway transport!

Fig. 5 highlights a possible means of interaction. It remains to be seen how exactly this interaction will work over the next few years and the details will be discussed by the committees named here.

The online register EN 15085 will continue to gain significance as a key element for quality assurance. Starting as a simply database the online register is now the new tool as an Internet platform to secure equal requirements for the uniform application of EN 15085.

References

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