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Introduction:

Businesses conducting commerce in rail equipment industries understand that competitors from all over the world are looking at their business, probing for weakness, looking to grab their share of the market. In a globally competitive environment, standing still is no longer an option. If your business is to survive and thrive you must be constantly looking for new markets and new opportunities. For American rail equipment manufacturers the place to look for abundant new opportunities is Europe.

EN 15085 White Paper
Reference Only - Rail Equipment

The European Union (EU) consists of nearly 500 million people and taken as a single economy the EU is the United States largest trading partner. The table below lists the 27 EU countries and their population.

	Common name	Official name	Accession	Population	Area (km ²)	Area (miles ²)	Capital
1	Austria	Republic of Austria	1-Jan-95	8,340,924	83,871	32,383	Vienna
2	Belgium	Kingdom of Belgium	25-Mar-57	10,666,866	30,528	11,787	Brussels
3	Bulgaria	Republic of Bulgaria	1-Jan-07	7,640,238	110,910	42,823	Sofia
4	Cyprus	Republic of Cyprus	1-May-04	778,700	9,251	3,572	Nicosia
5	Czech Republic	Czech Republic	1-May-04	10,403,100	78,866	30,450	Prague
6	Denmark	Kingdom of Denmark	1-Jan-73	5,511,451	43,094	16,639	Copenhagen
7	Estonia	Republic of Estonia	1-May-04	1,340,935	45,226	17,462	Tallinn
8	Finland	Republic of Finland	1-Jan-95	5,312,415	338,145	130,559	Helsinki
9	France	French Republic	25-Mar-57	64,473,140	674,843	260,558	Paris
10	Germany	Federal Republic of Germany	25-Mar-57	82,218,000	357,050	137,858	Berlin
11	Greece	Hellenic Republic	1-Jan-81	11,125,179	131,990	50,962	Athens
12	Hungary	Republic of Hungary	1-May-04	10,036,000	93,030	35,919	Budapest
13	Iceland	Republic of Iceland	---	316,252	103,125	39,770	Reykjavik
14	Ireland	Ireland	1-Jan-73	4,501,000	70,273	27,133	Dublin
15	Italy	Italian Republic	25-Mar-57	59,619,290	301,318	116,340	Rome
16	Latvia	Republic of Latvia	1-May-04	2,266,000	64,589	24,938	Riga
17	Lithuania	Republic of Lithuania	1-May-04	3,357,873	65,303	25,214	Vilnius
18	Luxembourg	Grand Duchy of Luxembourg	25-Mar-57	483,800	2,586	998	Luxembourg
19	Malta	Republic of Malta	1-May-04	407,810	316	122	Valletta
20	Netherlands	Kingdom of the Netherlands[6]	25-Mar-57	16,471,968	41,526	16,033	Amsterdam
21	Norway	Reich Commissariat of Norway	---	4,954,000	385,252	148,746	Oslo
22	Poland	Republic of Poland	1-May-04	38,115,641	312,683	120,728	Warsaw
23	Portugal	Portuguese Republic	1-Jan-86	10,599,095	92,391	35,672	Lisbon
24	Romania	Romania	1-Jan-07	21,498,616	238,391	92,043	Bucharest
25	Slovakia	Slovak Republic	1-May-04	5,400,998	49,037	18,933	Bratislava
26	Slovenia	Republic of Slovenia	1-May-04	2,025,866	20,273	7,827	Ljubljana
27	Spain	Kingdom of Spain	1-Jan-86	46,661,950	506,030	195,379	Madrid
28	Sweden	Kingdom of Sweden	1-Jan-95	9,253,675	449,964	173,732	Stockholm
29	Switzerland	Swiss Confederation	---	7,785,600	41,285	15,940	Bern
30	United Kingdom	United Kingdom of Great Britain	1-Jan-73	61,003,875	244,820	94,526	London
EU-27		European Union total		499,514,405	4,456,304	1,720,590	-
EFTA-3 (red)		EU+EFTA Members		512,570,257	4,985,966	1,925,046	
USA		USA Total		304,059,724	9,161,922	3,537,438	Washington
Difference				208,510,533	-4,175,956	-1,612,392	

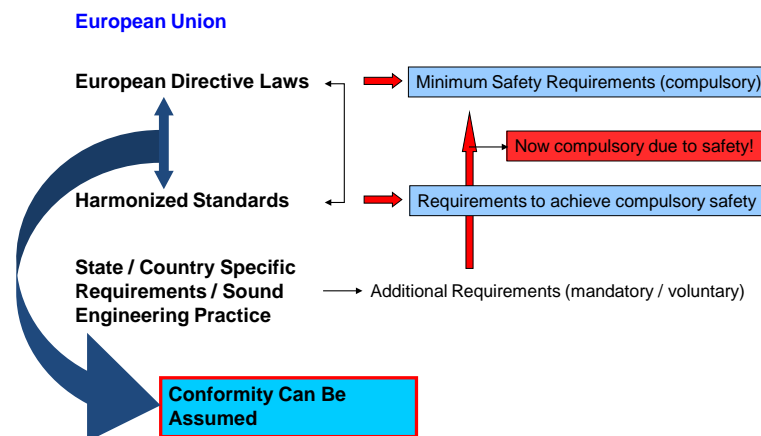
As we can see by the totals, the EU has almost 200 million more people than the USA living on less than half the land area. This high population density combined with a price of gasoline that is typically twice or more than the price of gasoline in the USA means that the people of Europe rely heavily on rail for the transport of goods and people. This massive market for rail equipment, prior to the formation of the EU, was a patchwork of laws, regulations and standards where each country protected its own market from outside competitors. Since the process of European integration was launched on May 9, 1950 there has been a progressive harmonization of standards within the EU leading to the dissolution of trade barriers across the now 27 members of the union. The standard concerning railway applications is EN 15085. This series of standards

outlines the process for certifying a weld/fabrication shop to sell its products to the EU market. Achieving EN 15085 Certification of your shop is the key to unlock new opportunities for growing your business and staying competitive in the global marketplace.

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EN 15085 Background:

The European community has defined rules and regulations for railway applications to ensure the safety of people, the environment and equipment operation. The process of harmonizing the various standards for railway applications across the EU members has been a gradual process that has culminated in the publication and implementation of the EN 15085 series of standards in 2007. The diagram below illustrates how the new standards are implemented based on the European Directives issued by the EU Parliament and supported by local rules and sound engineering practices to achieve a standard that is mandatory across all of the EU countries.



The European Standards Series EN 15085 is applicable for the manufacture of welded assemblies, sub-assemblies or parts welded by any welding process: manual, partly mechanized, fully mechanized or automatic welding (as defined in EN ISO 4063). This series of standards was approved by CEN (European Committee for Standardization) on August 18, 2007. EN 15085 was given the status of a national standard in April, 2008 and conflicting national standards were withdrawn, including the DIN/BS series standards. EN 15085 rules are compulsory for all railway applications, and are enforced within the European Union. An example of how this is done in Germany:

The EBA (Federal Railway Authority) is the German government organization which enforces the rules and requirements for the design, manufacture, approval and operating permits within the Federal Republic of Germany (FRG). Based on the rules and requirements set by EBA, railway manufacturers are mandated to follow defined codes and standards, of which EN 15085 is one of them.

EN 15085 mandates that all manufacturers of welded railway products to be sold and used in the EU achieve proper certification and approvals before doing so. Without this certification and approval, welded products are not accepted for operation. The welded products are certified per their design and fabrication

requirements according to the applicable standards. EN 15085 Certification is absolutely necessary for any railway equipment manufacturer's competition in the EU and other international markets.

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EN 15085 Defined

The series of European Standards EN 15085 "Railway applications – Welding of railway vehicles and components" consists of the following parts:

EN 15085 Part 1: General

- EN 15085 Part 1 provides an overview and scope of the 15085 series of standards and how it applies to the welding of metallic materials in the manufacture and maintenance of railway vehicles and their parts.

EN 15085 Part 2: Quality requirements and certification of welding manufacturer

- EN 15085 Part 2 of the standard defines the certification and quality requirements for the welding manufacturer to undertake for new fabrication and repair work.
- It then provides an essential link between performance requirements defined during design to achieve the appropriate quality welds during production and the demonstration of the required quality by inspection.

EN 15085 Part 3: Design requirements

- EN 15085 Part 3 defines weld performance class during design, which is based on safety and stress factors relevant to railway operation.
- Quality levels of imperfections are assigned to weld performance classes to ensure a certain level of performance intended during design.

EN 15085 Part 4: Production requirements

- Based on the weld performance classes, certification levels for production, as well as inspection and testing and qualifications for welding personnel of the manufacturer are specified.

EN 15085 Part 5: Inspection, testing and documentation

- This standard deals with inspections and testing to be executed on the welds, destructive as well as non-destructive tests to be performed and necessary documentation to issue to declare the conformity of the products.
- The EN 15085 series of standards does not deal with product qualification. [Back to top](#)

EN 15085 Governing Standards

For US manufacturers, implemented welding procedures that meet the AWS (American Welding Society) requirements will be approved according to the applicable European Norms and Requirements. A list of Norms (see below) includes the applicable welding standards.

Some of the governing standards for a Manufacturers Approval according to EN 15085 Parts 1-5 – Welding of Rail Road Vehicles and Vehicle Parts are:

EN ISO 14731:2006, *Welding coordination - Tasks and responsibilities (ISO 14731:2006)*

EN ISO 3834 (all parts), *Quality requirements for fusion welding of metallic materials*

DIN EN 12663 *Railway applications – Structural requirements of railway vehicles bodies*

EN ISO 15609 (all parts), *Specification and qualification of welding procedures for metallic materials - Welding procedure specification*

EN ISO 15614 (part 1) *Specification and qualification of welding procedures for metallic materials – Welding procedure test*

- Describes general rules for the specification and approval of welding for metallic materials.
- Refers to several other standards.
- Assumes the welding procedure specifications are used in production by competent welders.
- Applies when approval of the welding procedure is required.
- Covers normative references, definitions, specification of welding procedures and approval of welding procedure.

EN 287-1, *Qualification test of welders – Fusion welding – Part 1: Steels*

- Describes essential requirements, ranges of approval, test conditions, acceptance requirements and certification for the approval testing welder performance for the welding of steels.
- During the approval test the welder should be required to show adequate practical experience and job knowledge.
- Applicable when the welder's approval testing is required by the purchaser, inspection authorities or other organizations.
- Applies to the approval testing welders for the fusion welding of steels.
- Includes those fusion welding processes which are designated as manual or partly mechanized welding.
- It does not cover fully mechanized for fully automatic processes (EN 1418)

EN ISO 9606-2, *Qualification test of welders - Fusion welding - Part 2: Aluminum and aluminum alloys (ISO 9606-2:2004) - Description equivalent to above EN 287-1*

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)* [Back to top](#)

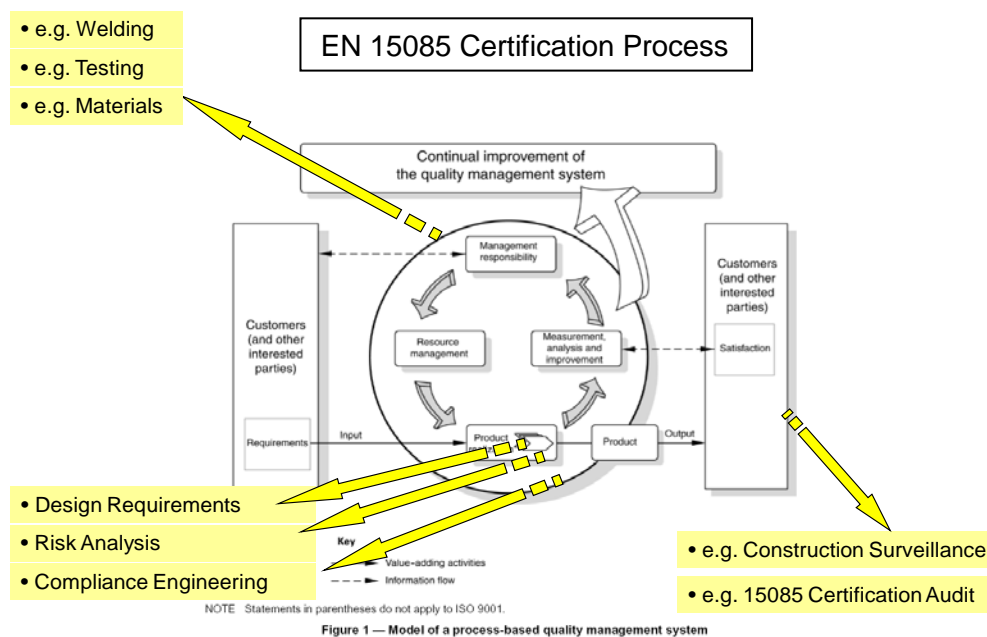
The EN 15085 Certification Process:

In general, the certification process according to EN 15085 entails:

- the certification of an implemented quality assurance system
- the approval of qualified personnel
- the certification and approval of welding processes and welders or welding operators

- auditing compliance with the requirements set down in the applicable codes and standards

Construction surveillance activities are going to be part of the process, which will progress throughout the manufacture of all defined products. Associated tests, approvals and recording of quality statuses will be implemented and executed. During the last 1/3 of the manufacturing process an official certification audit will be performed. In case of deviations, each will have to be addressed and corrective actions implemented to achieve the proper certification prior completion of the project. It is necessary that all specialty companies (weld shops) have the required approval certificate, to allow the approval and hence operation of the railway equipment. The figure below illustrates the certification process.

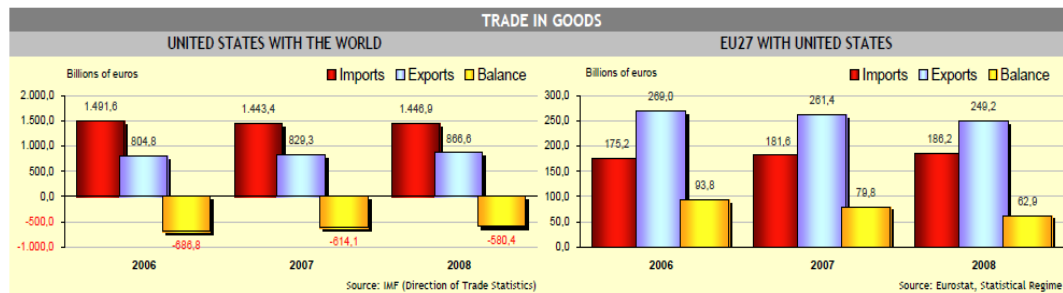
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Challenges:

- The qualification requirements of welders to EN Standards have a slightly more restrictive acceptance criterion than the AWS or ASME standards. There is usually an adjustment period before the welding experts become acclimated to the new criterion.
- There can be time management difficulties for busy weld shops with implementing the requirements per EN 15085, due to conflicts with maintaining current production and installing the new program.
- There are increased costs associated with the training of employees. However, the return on this investment is typically quite large as gains in efficiency and effectiveness are realized.

Benefits:

- EN 15085 Certification is a significant demonstration to existing and potential customers of an organizational commitment to quality.
- EN 15085 Certification provides access to an enormous new market that is heavily invested and committed to rail transportation.



- EN 15085 is a relatively new standard and there are a comparatively few businesses in the US that are certified. This is a ground floor opportunity to establish business relationships with European partners.

Business Excellence &
European Competitiveness

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The ECE Advantage:

ECE Global supports its clientele with all aspects of his EN 15085 projects. Depending on your company strategies, availabilities and commitment, we strive to limit, or eliminate entirely, the need for our involvement with your operation, with helping you achieving the required certification (guaranteed).

In addition, we provide expert services with the development and implementation of the required quality systems, weld management programs, inspection management programs, construction surveillance management, as well as the processes for the approval and certification of welding procedures and welder/welding operators.

If your organization is an engineering and design company without fabrication, or if you sub-contract work to other professional organizations, we can bring in our vendor management expertise in addition to the above.

Our professional engineers, welding, non-destructive and quality system experts actively support you with the knowledge and tools necessary to achieve your goals. ECE Global provides its expertise to the railway market from the first step all the way through the process. Your independence for designing, manufacturing, testing and self-declaring compliance can be our goal.

EN 15085 White Paper
Reference Only - Rail Equipment

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Conclusion:

Competition within the rail equipment industries is now global and your business is at significant risk if it chooses to stand still. The cost of doing nothing in today's hyper-competitive environment is extinction. Achieving EN 15085 certification may be an excellent way for your business to expand its customer base and stay on the cutting edge of the global quality revolution that is transforming the rail industry. At a minimum, it will support improvements in fabrication and quality and result in cost reductions.

Contact ECE Global today at: infoece@ecglobal.com or (847) 250 -5240 and arrange for a consultation and gap analysis to determine where your company stands with EN 15085 requirements; or, plan on attending our EN 15085 Seminar.

ECE Global also offers a full array of inspection services for Rail Equipment industries in North America. Our services include on-site inspection of Rail Equipment for Owner/Operators of rolling stock as well as inspection services for Rail Equipment manufacturers. Each of ECE Global's highly trained staff of inspectors has a minimum of 15 years experience in Rail Equipment inspection. Please visit our website: www.ecglobal.com for more information about ECE Global and the services we provide.

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The ticket to Excellence in Railway Services



North America

AAR Interchange Rules
DOT Rules and Regulations

New Construction

- ⊖ Engineering support
- ⊖ Pre-fabrication assessments
- ⊖ Welding support

Vendor Inspection Services

- ⊖ Vendor Auditing
- ⊖ Vendor Surveillance

Equipment Lease Return or Sale

- ⊖ Joint Inspection
- ⊖ Can represent either party to the transaction

Monitor Shop Repair Programs

- ⊖ Certified Welding Inspectors (CWI)
- ⊖ Welder Approval / Training

Inspection Services

- ⊖ HM-201 Re-qualification
- ⊖ Non-Destructive Examination (NDE)
- ⊖ NDE Approval / Training

Advanced Inspections

- ⊖ Phased Array UT
- ⊖ Glass Lined Equipment

Europe

EN 15085 Approval / Certification
NDE (EN 473), EU Welding Engineer

Fabrication

- ⊖ Inspection services (NDE, CWI)
- ⊖ Construction surveillance
- ⊖ As-built inspections

Pre-Lease & Pre-Acquisition Inspections

- ⊖ AAR Rule 88.B.2 Inspection
- ⊖ Railcar Interchange/ Condition Inspection

Asset Appraisal

- ⊖ Inspections Standard third-party inspections
- ⊖ Comprehensive inspections provide reconditioning data

Truck/ Brake Inspection

- ⊖ Side Frames, Beams, Springs etc.
- ⊖ Brake Shoes, Rods & Levers etc.

Provide Inspection of Damaged Railcars

- ⊖ Prior to Authorizing Repairs
- ⊖ Follow-up Inspections to insure Repairs are done correctly and completely

Legal Authority

- ⊖ Liaison with Legal Authority
- ⊖ European Welding Engineer Service

All of our professional staff has a minimum of 15 years in Railroad Services

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