BS EN 1090 CE Marking for structural steel and aluminium fabricators

What is the Construction Products Regulation (CPR) and how does it affect manufacturers of constructional steelwork and aluminium?

The Construction Products Regulation became mandatory in July 2013, and aims to break down technical barriers to trade in construction products within the European Economic Area (EAA).

Replacing the Construction Products Directive (CPD), the most significant change is that CE Marking has become mandatory for all construction products in which:

1. The product is being released to market within the European Economic Area (EAA), which includes the UK.
2. The product is covered by a harmonised European standard (hEN) or European Technical Assessment (ETA).

BS EN 1090 is one such harmonised standard which covers constructional steel and aluminium. Since July 2014, products within the scope of this standard must be CE Marked when released to market.

If you are producing a steel or aluminium construction product which is being sold in the UK or the wider EAA, there is a legal requirement for you to CE Mark this product. In order to do this you need help from what's called a Notified Body (NB).

(The CPR can be freely downloaded from the European Commission).

What is CE Marking and how can BSI, a Notified Body (NB), help you?

CE Marking

If it has been established that your product(s) meets the above two requirements then this product must be CE Marked when released to market.

This means that when the product is complete and delivered to your client, whether in return for payment or free of charge, it must be accompanied by a physical document, with the CE logo, which has specific information relating to both the individual product, as well as you the manufacturer. As this CE Mark is specific to the product onto which it is attached, there will naturally be a unique CE Mark produced for each distinct product, or kit, manufactured. This also reflects the fact that, as most products within this industry are bespoke, the design and structural characteristics will differ accordingly.

CE Marking, with respect to EN 1090-1, is a self-declaration and so it must be signed by a representative who takes responsibility for the stated information within the Mark. In order for you to produce this CE Mark there is also a third-party component that must be fulfilled which is the assessment and certification of your Factory Production Control (FPC).

Your FPC is a collective term for all of the activities that influence the conformity of your product. As part of the FPC, all of the procedures, inspections and processes need to be carried out to a documented system. This means that there must be written evidence that states how you produce your products from design to delivery.

Notified Body

As part of achieving a CE Mark, you will require third-party certification for your FPC that includes all of the activities which you as a manufacturer carry out and it is only a NB that can do this. The reason for this is that the CE Marking process is based on the CPR requirements, which itself supersedes all other national standards and so, when a certification body carries out assessments for CE Marking activities, it does so on behalf of the European Commission (EC).

In order to regulate this assessment activity, the EC mandates that all assessment bodies carrying out FPC assessment must themselves by accredited by UKAS (in the UK) upon which they are given NB status: Only NBs can assess and certificate your FPC in accordance to EN 1090.

Therefore, in order for you to produce your own CE Mark, you are required to first have your FPC assessed and gain certification from a NB.

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Which are the relevant standards?

EN 1090 consists of three parts:

1. **EN 1090-1:2009+A1:2011**

This first part covers the requirements for conformity assessment giving the outline of your FPC requirements, which references heavily to parts 2 and 3. Contained within its Annex ZA, it gives instructions on how to CE Mark your products including exactly what information should be stated, complete with examples.

2. **EN 1090-2:2008+A1:2011**

This second part covers the technical requirements for steel.

3. **EN 1090-3:2008**

Covers the technical requirements for aluminium structures.

If you are CE Marking in accordance with EN 1090 it is strongly advised that you obtain EN 1090-1 and the relevant parts 2 and 3, depending on the material(s) of which your products are made. These are the standards the explicitly outline the requirements for compliance and so will be your core reference in ensuring that your FPC is suitable. It is this set of standards that any NB will be using for their assessment schemes.

What action do you need to take?

Request the services of BSI as a Notified Body to assess you against EN 1090 to confirm whether you have met the requirements to go forward and achieve FPC certification.

We will carry out an assessment of your FPC against the requirements of EN 1090. The FPC is largely akin to a quality management system and the requirements are covered in the standard EN 1090-1. If your organization already has a certificate for ISO 9001, for quality management, these requirements may be partly fulfilled by that system and forms a great foundation onto which you can build.

We can provide you with a self-assessment questionnaire should you choose BSI as your NB, allowing you to determine what aspects of your FPC need to be focused on in order to fulfill its requirements.

In addition to a CE Mark, you will also need to produce a Declaration of Performance (DoP) for your products which you retain and make available on request. This document's content is very similar to that of the corresponding CE Mark all of which is outlined within the Annex ZA of EN 1090-1.

You can find these standards on our BSI shop

What are the steps to take to achieve CE Marking?

Step 1:

Determine whether your product falls within the scope

The first step that must be taken is to determine, based on the intended use, whether or not your product(s) fall into the scope of EN 1090, and so need to be CE Marked in accordance to this standard.

This activity is the responsibility of themanufacturer - not the NB, as it is the manufacturer that is releasing the product to market.

Due to the nature of the steel and aluminium construction industry, an exhaustive list of every product that falls into the scope of EN 1090, and so must be CE Marked, is not possible. Most products are bespoke and have multiple/partial indented uses and cannot be defined neatly.

The standard itself has a scope which defines the products which it covers including components made of hot rolled or cold formed constituent products (as defined in EN 1993-1-3 ad E 1999-1-4).

A better appreciation of the scope of EN 1090 may be achieved by considering the following:

- Is the construction product, as defined by the CPR, made from steel or aluminium?
- Is the product load-bearing?
- Has the product been installed in a permanent manner?
- Is the product within the scope of EN 1090?
- Does the product fall into a scope of another harmonised standard, other than EN 1090?

This last points states: If the product falls into another harmonised standard, then then CE Marking in accordance to this standard takes precedence over EN 1090.

Step 2:

Identify which Execution Class you need.

Once it has been established that you will need to CE Mark one or more of your products, the next task for you as a manufacturer is to determine which Execution Class (EXC) you require.

The EXC of a particular product is a measure related to the nature of the product covering its materials, manufacturing processes, mechanical performance and, crucially, what would be the impact in the invent of its failure, all of which establish the level of risk involved.

EN 1090-2 gives guidance on how to determine a given EXC.

This EXC ranges from 1 to 4, ranging from barns to stadia respectively. By far the most common class is EXC 2, which covers the vast majority of structural projects that fall into the scope of EN 1090.

How does EXC relate to your FPC and assessment? Due to the fact that EXC4 structures, such as stadia, are more safety-critical than barns, one would expect the design and manufacture of the former to be more rigorous to reflect this fact and indeed this is the case: The higher the EXC, the more stringent the FPC must be in order to produce and CE Mark the product. There are clauses in EN 1090 that

are EXC-specific and so the way in which a NB assesses your FPC will depend on your declared EXC.

This means that when choosing your EXC, you should choose the appropriate Class that will cover all of your EN 1090 product range. The standard gives guidance on the differences across the 4 EXCs.

Step 3:

You will now be in a position whereby you can have your Factory Production Control assessed against your stated Execution Class.

There are seven main clauses against which you will be assessed, these are:

- Personnel
- Equipment
- Structural Design Process
- Constituent Products Used in Manufacture
- Component Specification
- Product Evaluation
- Non-Conforming Products

Collectively, the above form a set of procedures that ensure that all activities that affect the conformity of the product, or future products, are done in a competent manner, using personnel who are suitably experienced and qualified and that there are appropriate quality inspections throughout production.

Do you already have a robust factory production control system or ISO 9001? You're already on your way to achieving CE Marking.

You can simply document this process. Crucially, as stated above, these procedures must be done in accordance to a documented system and any mandated inspections, corrective action etc. must be recorded. It is this task that may be seen as the most daunting, however this need not be the case: If you already have a good and robust FPC system in practice, this requirement is simply an activity in documenting what you already do. You can then augment this documented system to include any requirement that is mandated from EN 1090 missing from your system.

It should be stressed that if you already hold ISO 9001 certification, there is much cross-over between the two sets of requirements and so you will have already satisfied many of those prescribed in EN 1090.

If you don't currently hold ISO 9001 certification and would like to find out more, please visit **www.bsigroup.com/iso9001**

Welding requirements

One of the requirements of your FPC is that the manufacturer must employ what is known as a responsible welding coordinator (RWC).

A RWC is someone who is employed (or subcontracted) by the manufacturer that has the required technical knowledge and experience to be able to oversee all of the welding aspects of the manufacturer's FPC. It is the RWC that determines the competency of the welding staff, the equipment used in fabrication and designs/validates the welding procedure, including the inspection criteria, that is employed for a given product that is appropriate to the declared Execution Class (EXC).

What is required in order to become a RWC is to have the level of technical expertise and experience required in order to coordinate all welding procedures needed for a given product that has a given EXC. This knowledge requirements is given in EN 1090-2.

In addition to this, EN 1090 requires that welders be qualified in accordance with the qualification procedure, outlined in BS EN 287-1:2011 Qualification test of welders.(EN ISO 9606-1).

These welding requirements must be fulfilled in order for your FPC to be compliant and so satisfying these, which will most likely involve another third-party certification body, should be addressed as a matter of priority. This is due to the fact that welding forms such an integral part of EN 1090 and so fulfilling the requirements relating to welding activities can potentially take time.

So what's the CE Marking process in full?

Below are some of the key activities and decision points that must be made if you, as a manufacturer of steel and/or aluminium products need to CE Mark in accordance with EN 1090:

Do your products fall into the scope of EN 1090?

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Buy relevant parts of EN 1090

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Decide on Execution Class

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Contact BSI

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Self-assess your own factory production control against the requirements of EN 1090
(Procedures & documentation & qualifications)

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Have BSI assess and certificate your Factory Production Control

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Start CE Marking and producing your Declaration of Performance for each product

Why BSI?

Our knowledge, expertise and drive can make a difference to your business:

- As a Notified Body for many key European Regulations and Directives, we have the experience and technical capability to help our clients achieve CE Marking
- You can enjoy the benefits of working with BSI teams who have decades of experience helping businesses of all sizes
- We are the pioneers of many of the world's first standards
- We are renowned for our innovative work in many fields
- We continue to lead the way with ongoing developments in various industries
- We provide end-to-end support, helping you monitor and maintain your excellence throughout.

If you have any further questions regarding EN 1090 and the CE Marking process, one of our BSI specialists can help you.

Call us on **++974 40 29 9001/4** or email us at**bsi.me@bsigroup.com** or visit **bsigroup.com/EN_1090**

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