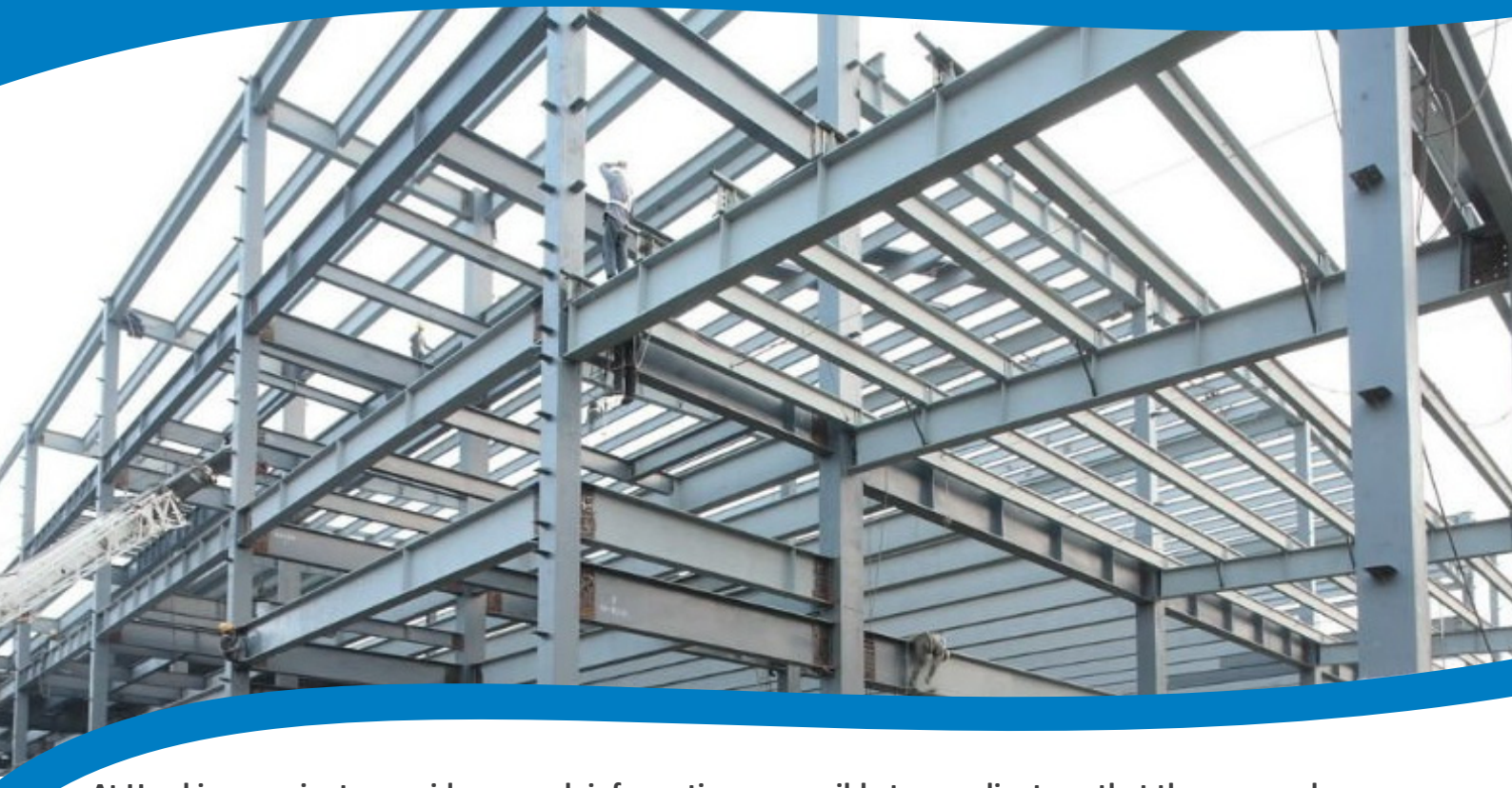
Your Guide to CE Marking



At Hawkins we aim to provide as much information as possible to our clients so that they can make informed decisions and choose the best solution to their needs.

CE Marking of Structural Steelwork to an Execution Class

Construction products which fall within the scope of a harmonised European Standard should now carry CE marking under the EU Construction Products Regulation.

For masonry support systems, windposts and other fabricated structural steel components, the harmonised standard is BS EN 1090-1 Execution of steel structures and aluminium structures: Requirements for conformity assessment of structural components.

Hawkins Steel complies with all CE marking requirements of this Standard, including designs to BS EN 1993 (Eurocode 3) and external certification of its factory production controls by an approved body.

A fundamental requirement of CE marking to BS EN 1090 is the implementation of an appropriate Welding Quality Management System (WQMS) to BS EN ISO 3834. Expert auditors from SCCS Ltd have approved the suitability of Hawkins Steel's WQMS to Part 3 of ISO 3834 and certified the business accordingly to undertake welded fabrication work up to Execution Class 2 (EXC2).

Although each project should be considered individually, EXC2 will be appropriate for the majority of buildings constructed in the UK and is the default class when unspecified (EN 1090-2 Clause 4.1.2).

What is an Execution Class?
Who is responsible for specifying an Execution Class?
How is an Execution Class determined?
What key assurances does Execution Class 2 provide?
How do you know if a CE mark to BS EN 1090 is genuine?

What is an Execution Class?
BS EN 1090-2 requires the designer to specify the level of quality control in the fabrication process, known as the Execution Class.

There are four Execution Classes - 1 is the least onerous and 4 is the most onerous - to cover construction applications from a single house to a stadium located in a high seismic region. These classes are referred to throughout BS EN 1090 to differentiate between audited levels of quality, testing and qualifications at the manufacturer.

An Execution Class is specified for the structure as a whole, and for individual components and details of components. In some cases the class will remain consistent throughout and in others individual components and details may vary to that of the structure.

Who is responsible for specifying an Execution Class?
BS EN 1090 has a wide scope of application and requires engineers to make a number of project-specific decisions before the fabrication of structural components can commence. Specification of the Execution Class is one of these design issues which must be made by the engineer. Where unspecified, Execution Class 2 is the default class.

General advice to engineers is to avoid over-specification of Execution Class as this could cause unnecessary costs and construction delays. If you have additional requirements above those of Execution Class 2, it may be possible to append these to a standard EXC2 specification without requesting Execution Class 3. Contact Hawkins Steel to discuss your specific project requirements.

How is an Execution Class determined?
The recommended procedure for determining Execution Class is given in Annex B of BS EN 1090-2. It is linked to Consequence Class (risk to human life, economics and the environment from structural failure or collapse), Production Category (complexity of fabrication) and Service Category (actions and stress to be imposed).

It is a four-step process.

1. Define the Consequence Class

2. Select a Service Category

3. Select a Production Category

4. Determine the Execution Class from the results of steps 1, 2 and 3 according to a matrix

Summary of Consequence Classes

Class	Description	Examples*
CC3	High consequence	Stadiums and concert halls for 5,000+ people, buildings storing hazardous substances
CC2	Medium consequence	Most multi-storey residential and commercial buildings, hotels, hospitals, education establishments and car parks
CC1	Low consequence	Agricultural or storage buildings

**Refer to Annex A, BS EN 1991-1-7 (Eurocode 1) for more examples of building categorisation*

Summary of Service Categories

Category	Criteria
SC1	Structures/components designed for quasi actions only e.g. buildings
SC2	Structures/components designed for fatigue actions to EC3 e.g. bridges, or located in regions with medium/high seismic activity

Summary of Production Categories

Category	Criteria
PC1	Non-welded components or welded components from steel grades below S355
PC2	Welded components manufactured from steel grades from S355 and above

Summary of Execution Class Matrix

Consequence Class	CC1	CC1	CC2	CC2	CC3	CC3
Service Category	SC1	SC2	SC1	SC2	SC1	SC2
Production Category PC1	EXC1	EXC2	EXC2	EXC3	EXC3	EXC3
Production Category PC2	EXC2	EXC2	EXC2	EXC3	EXC3	EXC4

For full details refer to Annex B, BS EN 1090-2

Execution Class 2 is anticipated to be the most commonly specified in building applications as it covers standard quasi static design in both production categories.

For consistency between structural designs and the requirements for execution of fabrication work, the process detailed above assumes a project design in accordance with EN 1993 (EC3) for steel structures or EN 1994 (EC4) for the steel parts of composite structures.

Engineers can base EXC selection on another method as long as they can support their decisions. The above procedure is not mandatory.

What key assurances does Execution Class 2 provide?
The following have been audited and approved by Alcumus ISOQAR as a Notified Body:

- Design/calculation methods and engineering competencies
- Manufacturing procedures, methods and work instructions
- Quality, testing and inspection plans/records
- Weld quality management system to ISO 3834 Part 3
- Weld procedures qualified to ISO 15614/15612
- Welder approval to EN 287
- Welder operator approval to EN 1418
- Competence of Welding Coordinator role
- Welding qualifications to EN 5817 Quality Level C

How do you know if a CE mark to BS EN 1090 is genuine?
Structural steelwork should be delivered to site with a CE mark which refers back to a Declaration of Performance from the manufacturer and to a Factory Production Control (FPC) certificate and a welding certificate from an approved body.