

GNB-CPD SG17	Guidance from the Group of Notified Bodies for the Construction Products Directive 89/106/EEC	NB-CPD/SG17/09/069 Issued: 7 September 2009 APPROVED – GUIDANCE
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GNB-CPD position paper from SG17 - EN 1090-1:2009 (Certification of FPC of steel and aluminium structural components)

General scope, limitations and aim of this guidance for notified bodies

This position paper contains guidance for notified bodies (NBs) involved in the attestation of conformity of the FPC of steel and aluminium structural components according to EN 1090-1. The purpose is to help NBs work equivalently and come to common judgments. This guidance contains informative material (which NBs should or may follow) and/or normative guidance (which NBs shall follow or at least work equivalently to as circumstances demand).

This guidance is thought necessary to provide clarity and completeness for NBs so that they can work equivalently. It **supplements and makes practical for NBs** the harmonized standard EN 1090-1, approved Advisory Group guidance, and Standing Committee guidance in the form of GPs, which also apply - unless otherwise explicitly stated in this guidance. This position paper should **not** contradict nor extend the scope of the work and role of a NB, nor impose additional burdens on the manufacturer, beyond those laid down in the CPD and EN 1090-1.

This guidance should be considered valid until the relevant standards are amended to include the guidance (as thought fit by the CEN/TC); or until guidance from Commission, SCC, and AG has changed on relevant matters. Whereupon, the paper should be considered for withdrawal/revision and be replaced by new guidance as necessary.

This position paper was considered approved by SG17 on 6 July 2009 and by Advisory Group on 5 September 2009.

1 Introduction

The aim of this document is to give notified bodies (NB) guidance for the assessment of FPC according to Annex B of EN 1090-1. In addition to Annex B of EN1090-1 this document identifies the tasks of the NB both for the initial inspection and for continuous surveillance.¹

This guidance applies to factories undertaking either series or non-series production.²
Initial inspection of the factory and FPC

¹ A check-list made by the NB and specific to EN 1090-1 and to this document is strongly recommended as a tool for the assessment.

² Series production may be taken as batch sizes of 10 or more identical components.

1.1 General

The manufacturer shall demonstrate that the FPC fulfils the requirements given in clause 6.3 of EN 1090-1. The tasks for the NB for the initial inspection are given in Table B.1 of EN 1090-1.

The FPC system shall cover all processes, production lines, units or departments including those outsourced or operated by subcontractors (see NB-CPD/AG/07/008).

The NB shall ensure that the certificate identifies the scope of the manufacturer's operation that has been included in the certification. The manufacturer may be selective in its declaration of the structural characteristics for products provided that the manufacturer's declaration is unambiguous in this respect.³

The certificate issued by the NB shall make it clear whether the FPC includes design process control or not.

As specified in 6.3.5 of EN 1090-1, if constituent products or structural components are incorporated into finished products during the manufacturing of EN 1090-1 products, they shall be traceable in accordance with the provisions for the relevant execution class given in EN 1090-2 or -3 as appropriate.

The factory covered by a single FPC system may comprise several production units, production lines and/or departments. The NB shall define the scope of certification in terms of processes, units, lines and departments in all records issued to verify that the FPC system has been certified.

If the manufacturer is performing any testing in its own laboratory, the testing facilities shall be included in the assessment. The capability of the laboratory shall be demonstrated to the NB according to one of the following possibilities:

- direct check of the performance of the manufacturer's own laboratory testing operations within the scope of the FPC;
- independent accreditation of the laboratory under EN ISO/IEC 17025 or equivalent accreditation; the accreditation shall be specific for the tests carried out;
- assessment of a subcontracted laboratory by the NB.

After a new ITT program based on physical testing has been undertaken the manufacturer shall inform the NB. The NB should review the FPC to ensure that it is capable of controlling the production of the new product. The NB does not need to undertake a supplementary assessment visit if the method of production is covered by the existing certified FPC system. This requirement does not apply where a product type is developed by calculation (ITC).

If the FPC is part of a system certified according to EN ISO 9001 and/or EN ISO 3834 and the NB has satisfied itself that the system is compliant with the requirements of EN 1090-1 and this document then the NB may use any EN ISO 9001 or EN ISO 3834 certification information in support of the FPC certification according to the CPD.

The number of samples used to establish product quality during ITT/ITC is defined as a single item in Table 1 of EN 1090-1. This is because many structural components are non-series items and

³ *For instance, the load bearing capacity of a beam's connections could be declared even though the manufacturer's declaration is silent about the capacity of the beam in bending.*

with a unique component specification⁴. If a new product type is developed using physical testing then suitable statistical techniques shall be used to assess product characteristics based on the number of samples tested.⁵

The sampling procedure to be used during production is given in Table 2 of EN 1090-1.

The component specification defines the initial type and is thus the primary control document that links ITT/ITC with production requirements. The NB shall check that typical component specifications issued for the manufacturer are fully definitive in terms of the characteristics that support the manufacturer's declaration of conformity.

Special processes shall be assessed according to §2.3.

1.2 Performance of the initial inspection of the factory and FPC

During the initial assessment of the factory all processes, units, lines and departments covered by a single FPC system shall be inspected individually. This shall include those outsourced or operated by subcontractors unless the NB is satisfied that their FPCs are certified by a NB for the scope of the work being undertaken.

During the initial inspection of factory and FPC the NB shall take into account the initial type calculation (ITC) and/or the initial type testing (ITT) as applicable (see 6.2 of EN 1090-1). This also applies if ITC is outsourced or done by subcontractors.⁶

The manufacturer or its subcontractors shall make available the records of the ITC if applicable and ITT. The NB shall check that the results of the ITT/ITC procedure are consistent with the scope of processes, product types, materials and production lines covered (see Annex B of EN 1090-1).

During the initial inspection the NB shall check that the factory has the necessary resources (premises, personnel and equipment) to achieve conformity of products.

Initial visits to packaging and warehouse units shall check that the FPC system ensures that products retain their traceability such that the product shall be delivered with a mark that clearly identifies it, with reference to the component specification.

The certificate issued by the NB shall be definitive in terms of the scope and execution class of product types, the applicable standards and the facilities covered.

If the product types produced in a factory do not incorporate welding, the certificate shall explicitly exclude welding.

If the product types produced in a factory incorporate welding, the certificate shall be explicit concerning the welding processes and parent materials covered. Unless the scope of certification is

⁴ *There could be a single set of calculations to verify the load bearing capacity of the component. This would be based on verification procedures given in, for example, the Eurocodes which are based on many "type tests" undertaken in support of the codified rules.*

⁵ *Annex D of EN 1990 provides a reference for structural product design assisted by physical testing.*

⁶ *The requirement to consider ITC undertaken by others only applies if the manufacturer is using that ITC as the basis for its declaration of the structural characteristics of the finished product.*

limited to execution class 1, the responsible welding coordinator (RWC) shall also be identified on the certificate. This may be by means of certification to EN ISO 3834 (see §2.3.2).

1.3 Initial inspection for special processes

1.3.1 General

Special processes are those processes where the conformity of the finished product can not be readily or economically verified.

Special processes require special consideration during the initial inspection.

Welding is the most widely used special process for products covered by EN 1090-1 and is dealt with in detail in §2.3.2.

1.3.2 Initial inspection for the special process “welding”

The quality requirements are defined in terms of the execution class according to EN 1090-2/-3 as appropriate.

EN 1090-2/-3 as appropriate also defines the quality requirements for fusion welding according to EN ISO 3834 and those relevant to the execution class for the products being manufactured.⁷

The NB shall be satisfied that the manufacturer is deploying suitable resources to ensure proper operation of the FPC for welding with respect to the following:

- Welders

For each main welding process the manufacturer shall have available welder(s) with valid qualification according to EN 287-1 for steel or EN ISO 9606-2 for aluminium. Welders for fillet welds shall have a suitable qualification for welding fillet welds.

- Operators

For each main fully mechanised or automatic welding process the manufacturer shall have available operator(s) with valid qualification according to EN 1418.

- Welding coordination

RWCs identified as managing welding coordination should be competent to manage the processes under their supervision and understand the limits of their competence.⁸ Guidance on suitable knowledge is given in EN 1090-2/-3 as appropriate in terms of EN ISO 14731 and the relevant execution class.

⁷ Certification according to EN ISO 3834 is not required but may be agreed between the manufacturer and the NB.

⁸ The RWC is permitted to rely on additional assistance from an outside specialist source of welding advice to coordinate welding operations outside his general scope of competence on a “unit verification” basis (eg wider range of parent materials to be welded).

- Qualification of welding procedures

Except where welding is undertaken to execution class 1, all welding operations shall be performed according to qualified welding procedures.

The welding procedure specifications (WPSs) to be used shall be based on a welding procedure qualification record (WPQR). The method of qualification shall be according to EN 1090-2/-3 as appropriate.

1.3.3 Performance of the initial inspection for the special process “welding”

The requirements for the FPC of the manufacturer’s factory where welding is performed are given in clause 6.3 of EN1090-1.

The NB shall assess whether the personnel, procedure qualifications and equipment of the manufacturer meet the requirements of EN 1090-2/-3 as appropriate.

During the initial inspection of the welding factory it shall be demonstrated that the production process is under control in accordance with the requirements for welding given in EN 1090-2/-3 as appropriate.

The audit and the independent assessment of the RWC’s competence and knowledge shall be performed by experienced auditors.⁹

With respect to the processes being used, the execution class for the products being produced, the constituent products being welded and the welding consumables being used, the assessment of the RWC’s competence shall include the following checks with respect to the RWC’s ability to coordinate the processes within the FPC system:

- During a technical discussion, check the knowledge of the welding coordinator(s) about the relevant standards, regulations and specifications to be observed.
- Check the ability of the welding coordinator(s) to detect and assess defects, to instruct repairs and to know how to avoid defects.

With respect to the processes being used, the execution class for the products being produced, the constituent products being welded and the welding consumables being used, the audit of the FPC system shall include the following checks:

- Check that the certificates of welders, operators and NDT-Personnel are appropriate.
- Check that the WPSs are based on appropriate WPQRs.¹⁰
- During an inspection tour through the plant, check that suitable equipment is available for joint preparation, welding, heat treatment (if necessary) and treatment after welding, and that the equipment is suitably maintained.
- Check that the quality of welding works is being monitored in accordance with the specified requirements.

⁹ EA 6/02 gives guidelines for certification to EN ISO 3834.

¹⁰ WPQRs and associated WPSs are the equivalent of Initial Type Tests for welds executed within the “family” defined by the range of qualification given in the WPQR. In this context, the process control of welding defined in EN 1090-2/-3 may be seen as suitable for series production.

- Check that relevant standards, regulations and specifications, necessary for the production are available.

2 Continuous Surveillance, Assessment and Approval of the FPC

The frequency of surveillance visits shall be in accordance with B.4 of EN 1090-1. The FPC system in every unit, line and department covered by a single FPC system shall be included in a surveillance visit at least once every three years.

Subject to inspection of non-conformance reports or irregularities identified during the NB audit, the NB may request more frequent visits than are required by table B.3 of EN1090-1. The issues to be considered include:

- irregularities in the performance and evaluation of the welder or welding operator, or the welding procedure qualification tests;
- irregularities in welding procedure specifications and production weld tests;
- incomplete or wrong material inspection documents;
- incomplete necessary standards, specifications and regulations for the production;
- incomplete technical knowledge of the welding coordinator;
- significant defects in products.

An additional surveillance audit may be required due to one of the following reasons:

- new or changed essential facilities;
- change of responsible welding coordinator;
- new welding processes, parent materials and associated WPQRs;
- new essential equipment.

If the NB becomes aware that one of the above reasons applies but the manufacturer has not informed the NB promptly, then an additional surveillance audit shall be undertaken.

The tasks of the NB during the surveillance audit are given in Table B.2 of EN 1090-1.

The audit of the special process “welding” shall check the following in accordance with the requirements of EN 1090-2/-3:

- the commissioning of new WPSs into production;
- plans for the control of production welding are being properly implemented;
- the methods and frequency of inspection and testing being undertaken.

3 References

EN 287-1:2004, *Qualification test of welders - Fusion welding - Steels*

prEN 1090-1:2007, *Execution of steel structures and aluminium structures - Part 1: Requirements for conformity assessment of structural components*

prEN 1090-2, *Execution of steel structures and aluminium structures - Part 2: Technical requirements for steel structures*

EN 1090-3:2008, *Execution of steel structures and aluminium structures Technical requirements for aluminium structures*

EN 1418:1998, *Welding personnel - Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

EN ISO 3834, *Quality requirements for fusion welding of metallic materials — (Parts 1 to 5)*

EN ISO 9001:2000, *Quality management systems - Requirements (ISO 9001:2000)*

EN ISO 9606-2:2004, *Qualification test of welders - Fusion welding - Aluminium and aluminium alloys*

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

EN ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories*

NB-CPD/AG/07/008, *GNB-CPD AG position paper - Guidance to NBs on their duties in certifying (system 1+, 1, 2+ and 2) own brand labelled products and those involving significant subcontract manufacturing*