5.12.2013

Finnish comments on EN 1090-1+A1:2011 – harmonised product standard for structural steel and aluminium components and kits

Finland has noticed the following problems in the implementation of EN 1090-1+A1:2011 due to its very open and unclear scope. The scope of EN 1090-1+A1 is presented in Annex 1. We refer also to our letter "Unclear scopes in harmonised product standards and gaps in standardization under the CPR" dated 24.4.2013. This document was on the agenda of the latest SCC meeting (See item 18.3)

Declaration of performance (DoP) is one of the main elements of the CPR. According to CPR article 6.3 the declaration of performance shall in addition contain:

"(a) the intended use or uses for the construction product, in accordance with the applicable harmonised technical specification;

(b) the list of essential characteristics, as determined in the harmonised technical specification for the declared intended use or uses;"

In 4th paragraph of Annex ZA.1 in EN 1090-1+A1 it is stated "*This Annex establishes the conditions for the CE-marking of structural metallic construction components intended for the use in steel and aluminium structures or in composite steel and concrete structures, where the components can be made from hot rolled, cold-formed or with other technologies produced sections/profiles with various shapes, flat products (plates, sheet, strip), bars, castings, forgings made of steel and aluminium materials."* And in Table ZA.2 of EN 1090-1+A1 the intended use is given "*For structural use in all types of construction works*". This covers both buildings and civil engineering works.

There are many structural steel components for which the list of essential characteristics given in EN 1090-1+A1 is not enough from the regulators point of view. EN 1090-1+A1 needs more specific intended uses for which the relevant essential characteristics have to be specified.

In addition, there are many ETAs for construction products based on ETAGs or CUAPs which can be considered to be in the scope of EN 1090-1+A1.

According to the CPR article 17.5 5th paragraph "*Without prejudice to Articles 36 to 38, from the date of the end of the coexistence period, the harmonised standard shall be the only means used for drawing up a declaration of performance for a construction product covered by it."* And in article 19 there is given the exceptions when the EAD may be prepared even the product is under the scope of harmonised product standard.

The coexistence period of EN 1090-1+A1 will end 1.7.2014. What to do with these ETAs and ETAGs which are "covered" by EN 1090-1+A1? According to our understanding analysis is need by EOTA which ETAs and ETAGs have to be withdrawn 1.7.2014 since they do not fulfil the criteria a), b) or c) in article 19 of the CPR compared to EN 1090-1+A1.

There exists unfair playing field if the same product may be CE marked based on EN 1090-1+A1 by some manufacturers and based on ETAs by other manufacturers. The methods used to declare the performance of the construction products are not the same. This would also create an impossible situation to national authorities when they are giving their national requirement levels for the construction product concerned in its different intended uses.

In addition we have noticed CE markings of foreign manufacturers based on EN 1090-1+A1 where values of essential characteristics are based on national design codes. It is not possible to accept these kinds of DoPs and CE markings in Finland.

Our analysis on cases which needs clarification is the following, but the list is not exhaustive:

1) Structural steel parts (e.g. beams and columns) used in composite steel-concrete structures

a) CE marking Methods M2 and M3b are not applicable for these products since the steel work shop i.e. manufacturer is not able to take responsibility for the whole composite steel concrete structure.

b) Method M1 is applicable for those structural steel parts for which declared values and classes are adequate for the further calculation of load-bearing capacities of composite structures according to EN 1994-series.

Composite structures using structural steel parts, CE-marked according Method 1 for which EN 1994 standards are not applicable as such, cannot be CE-marked based on EN 1090-1+A1. There are structural steel parts where interaction between steel and concrete has to be verified separately. Thus EN 1090-1+A1 cannot be used for these products for the CE-marking. We ask CEN TC 135 to clarify the scope of EN 1090-1+A1 also in this respect.

c) Method M3a is applicable for all structural steel parts.

Note: Methods M1, M2, M3a and M3b for declaring the mechanical and fire resistance performances in hENs for structural elements/components and/or structural kits are explained in Annex A of document TF 623 (2013-10-18) still under discussion in CEN Construction Sector Network. Annex A is presented in Annex 2.

2) Structural steel connections cast into concrete

Interaction between steel and concrete (anchorage capacity of steel connection in concrete) is not covered by EN 1090-1+A1. There are CE markings based on EN 1090-1 and national design codes. There is no European design method so far but prEN 1992-4 Design of concrete structures- Part 4: Design of fastenings for use in concrete is in enquiry of CEN. In Finland CE-marking based on appropriate ETAs or national product approvals are applicable.

3) Rock shoes and splices for foundation piles

Dynamic effects caused during pile driving to the ground are not covered by EN 1090-1+A1. In Finland CE-marking based on appropriate ETAs or national product approvals are applicable.

4) Ancillary steel products for masonry

a) Semi structural lintels are CE-marked in accordance with EN 845-2 and structural independent steel beams in accordance with EN 1090-1+A1.

b) Steel joist hangers or brackets are CE-marked in accordance with EN 845-1 when part of the product includes incorporated fixing device to the masonry or special metal anchorages (not covered by ETAG 001) are used for fixing. Steel joist hangers or brackets where fixings according to ETAG 001 to the supporting structure are used, shall be CE-marked according to EN 1090-1+A1.

5) Railing

Structural railings (which are designed against actions) are covered by EN 1090-1+A1.

6) Lighting columns in traffic areas

Harmonised product standard EN 40-5 is for steel lighting columns in circulation areas having height less than 20 m for post top lanterns and 18 m for side entry lanterns. Higher lighting columns in circulation areas cannot be CE-marked according to EN 40-5. Also lighting columns in other areas than circulation areas shall not be CE-marked according to EN 40-5.

These lighting columns outside the scope of EN 40-5 are to be CE-marked according to EN 1090-1+A1.

7) Steel stairs

Prefabricated steel stair kits can be CE-marked according to ETAG 008 Prefabricated stair kits. But EN 1090-1+A1 covers also kits. Are prefabricated steel stair kits covered by EN 1090-1+A1?

Made to measure steel stairs (and stiffening the building) shall be CE-marked according to EN 1090-1+A1.

Conclusion:
There is a lot of confusion among manufacturers, market surveillance authorities, local building inspectors and other stakeholders concerning EN 1090-1+A1. We have noticed that the manufacturers are interpreting the scope of EN 1090-1+A1 differently. Also Member States seem to be interpreting the scope of EN 1090-1+A1 differently. We ask the Commission together with the Member States and CEN TC 135 to agree on common European position on the scope of EN 1090-1+A1 as soon as possible. The borderline between obligatory CE-marking and when there is no obligation to CE-mark the construction product shall be clear. It is important that EOTA-bodies also know this borderline.

This is an urgent matter since manufacturers are already CE-marking their steel and aluminium structural components and kits according to EN 1090-1+A1 and its CE-marking coexistence period will end 1.7.2014.

Note. It is important to recognize that these steel and aluminium construction products are exported and imported a lot between Member States. CE-marking accepted in one Member State may not be accepted in another Member State due to different interpretations of the scope of EN 1090-1+A1 in those Member States.

Additional confusion is creating the fact that EN 1090-1+A1 is not in line with the CPR. Thus the manufacturers and notified bodies have to follow the CPR when the standard is in conflict with the CPR especially concerning Annex ZA. We support the ongoing work in CEN TC 135 to revise EN 1090-1+A1 to be in accordance with the CPR and also taking into account the soon coming delegated acts on the website DoP and on the new content of the DoP.

In the meanwhile Finland has to decide nationally how to interpret the scope of EN 1090-1+A1 and what kind of DoPs and CE-markings are accepted in Finland until recognized common European positions are available.

With best regards,

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Annex 1

Scope of EN 1090-1 +A1

Scope

This European Standard specifies requirements for conformity assessment of performance characteristics for structural steel and aluminium components as well as for kits placed on the market as construction products. The conformity assessment covers the manufacturing characteristics, and where appropriate the structural design characteristics.

This European Standard covers also the conformity assessment of steel components used in composite steel and concrete structures.

The components can be used directly or in construction works or as structural components in the form of kits.

This European Standard applies to series and non-series structural components including kits.

The components can be made of hot rolled or cold formed constituent products or constituent products produced with other technologies. They may be produced of sections/profiles with various shapes, flat products (plates, sheet, strip), bars, castings, forgings made of steel and aluminium materials, unprotected or protected against corrosion by coating or other surface treatment, e.g. anodising of aluminium.

This European Standard covers structural cold formed members and sheeting as defined in EN 1993-1-3 and EN 1999-1-4.

This European Standard does not cover conformity assessment of components for suspended ceilings, rails or sleepers for use in railway systems.

NOTE For certain steel and aluminium components, particular specifications for performance and other requirements have been developed. The particular specifications may be issued as an EN or as Clauses within an EN. An example is given in EN 13084-7 for single wall steel chimneys and steel liners. Such particular specifications will take precedence in case of non-compliance with the requirements of this European Standard.

Annex A Methods for declaring the mechanical and fire resistance performances in hENs for structural elements/components and/or structural kits

A.1 This Annex A specifies the way in which the different methods for declaring the mechanical and fire resistance performances of the structural elements/components or structural kits in European harmonised standards have to be applied.
NOTE These methods for declaring the mechanical and fire resistance characteristics of the structural elements/components or structural kits correspond to those included in the Commission Guidance Paper L to which the letter M has been prefixed in order to avoid possible confusion with the AVCP systems.

A.2 This annex presents a model clause to be incorporated in clause 4 “Performance characteristics” *[4.n to be adapted in accordance with other subclauses in the standard]* in all harmonised standards for structural elements/components or structural kits. Its content has to be adapted to each standard in accordance both with the number of methods the standard provides for and the number of the mechanical resistance and fire resistance clauses in the standard.

A.3 Clause to be added to hENs for structural elements/components and/or structural kits

4.n Methods for declaring the mechanical and fire resistance performances

4.n.1 Declaration methods

Manufacturers may declare both in the DoP and in the CE marking the mechanical resistance and fire resistance characteristics of the structural elements/components (or structural kits) covered by the scope of this standard accordance with one of the methods given in this Annex in accordance with the business model chosen.

4.n.2 Method M1

Declaration of data allowing the subsequent determination of the mechanical and fire resistance performances by reference to both:
- detailed graphic information on the geometrical features (dimensions and detailed cross sections, including tolerances and arrangement of constituent products, where relevant) of the structural product or structural kit, and
- properties of the structural material(s) and of the structural constituent(s), if any, used so that these may enable the purchaser (or the end user) the assessment and verification of the mechanical and fire performance characteristics (including aspects of durability and serviceability) of the structural elements/components or the structural kits. before their final use

NOTE 1 There is no design method applied. The standard should allow this possibility.
NOTE 2 The information in the DoP and accompanying the CE marking includes specific reference to the geometrical features of the structural element, or the structural kit, and to the characteristics of the structural material(s) and the structural constituent(s), if any, used and not the mechanical and the fire resistance performances of the structural product or the structural kit as such.
NOTE 3 This declaration method may be applied to structural products or kits manufactured in long series, (e.g. off-the-shelf or catalogued structural products) grouped into product families, according to the manufacturer’s specification and placed on the market, (e.g. for retail or made available in a web page) when the final place of destination is not known and the manufacturer finds it difficult to provide information on the mechanical and fire performance of his/her products without knowing the final structural requirements and conditions of use.
NOTE 4 The responsibility of the manufacturer is limited to the manufacturing of the structural product as well as to the declared geometrical features of the product and of the mechanical and fire related characteristics of the material(s) used allowing a subsequent calculation of such performance characteristics if necessary.

4.n.3 Method M2 9/31

Declaration of the mechanical and fire resistance performance characteristics (including applied NDPs, safety factors, load values and assumptions, etc.) of the structural element or the structural kit (with the results expressed as characteristic values or design values), determined by the manufacturer applying

the calculation methods given in the EN Eurocodes and referred to in this European standard or given herein.

NOTE 1 The design method is the Eurocodes. The standard should allow this possibility. Additional information, relevant for the design of the structural elements/components and structural kites using Eurocodes (e.g Nationally Determined parameters) for placing the products on different national markets, may be obtained in the Eurocodes National Annexes or through the National Product Contact Points for Construction.
NOTE 2 The information in the DoP and accompanying the CE marking includes specific reference to the performance of the mechanical and fire resistance characteristics based on calculation results based on Eurocodes.
NOTE 3 This declaration method may be applied to structural products or structural kits manufactured in long series, (e.g.. off-the-shelf or catalogued structural products) grouped into product families, according to the manufacturer's specification and placed on the market, (e.g. for retail or made available in a web page) when the final place of destination is not known but the manufacturer wishes to provide information of the mechanical and fire performance, under certain assumptions, of his/her products using the calculation methods given in the specific EN Eurocodes are used.
NOTE 4 The responsibility of the manufacturer covers the declared mechanical performance characteristics including the fitness of the materials used.

4.n.4 Method M3a

Declaration of the mechanical and fire resistance performance by reference, in an unambiguous way, to both:
- the design documentation of the structural element(s), or the structural kit(s), (drawings, material specifications, etc) provided by the client; and
- the production documentation prepared by the manufacturer on the basis of the relevant design documentation.
In addition, reference has to be made in the declaration to the specific position of the structural element, or structural kit in the works.
This European standard provides appropriate indications in clause *[X]* regarding the content of the production documentation.

NOTE 1 The design method is he one chosen by the client or the designer of the works. The standard should allow this possibility.
NOTE 2 The information in the DoP and accompanying the CE marking does not refer to the mechanical and fire resistance performance characteristics of the structural element(s), or the structural kit(s,) but to the above mentioned documentation since the values of the characteristics are part of the design documentation provided by the client.
NOTE 3 This declaration method may be applied when the intended place of destination is known, the design documentation of the product prepared by the designer of the works of destination is made available to the manufacturer by the client and the manufacturer has to elaborate only the relevant production documentation.
NOTE 4 The responsibility of the manufacturer is limited to the manufacturing of the product in accordance with the production documentation, its adequacy to the design documentation and the fitness of the materials and constituent products used.

4.n.5 Method M3b

Declaration of the mechanical and fire resistance performance by reference, in an unambiguous way, to both:
- the design documentation prepared by the manufacturer, on the basis of data (e.g. drawings, including specific geometric details, loads, safety factors, etc.) provided by the client and using the design method (EN Eurocodes, or others) required in the contract by the client; and
- the production documentation prepared also by the manufacturer on the basis of the relevant design documentation. 10/31
In addition, reference has to be made in the declaration to the construction works of destination
This European standard provides in clauses *[X and Y]* appropriate indications regarding the content of both the design and the production documentation, respectively.

NOTE 1 The design method is the one established in the order or contract and chosen by the client or the designer of the works. The standard should allow this possibility.
NOTE 2 The information in the DoP and accompanying the CE marking does not refer directly to the mechanical and fire resistance performance of the structural element(s), or of the structural kit(s) but to the above mentioned documentation since the values of these characteristics are part of the design documentation provided by the manufacturer.
NOTE 3 This declaration method is relevant when the intended place of destination is known and the manufacturing order requires design and production documentations of the product to be prepared by the manufacturer for a specific works of destination.
NOTE 4 The responsibility of the manufacturer covers the design and manufacturing of the product, its adequacy to the design and production documentation and the fitness of the materials used.