

Agricultural Buildings – The Future

Today's Presentation

- Rural & Industrial Design & Building Association (RIDBA)
- Tony Hutchinson
- National Secretary
- Today we will be talking about CE Marking and the implications for agricultural framed buildings.

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Today's Presentation

RIDBA – A short history

What RIDBA is doing to help its members CE Mark their frames at a lower cost than going it alone.

- Dr. David Payne of BM TRADA Certification Ltd will explain why the CPR will enforce CE Marking in the UK and also something about factory quality control
- Dr. Martin Heywood of the Steel Construction Institute will discuss design issues and why they are so important
- Then I will finish.

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RIDBA

- Started in 1956
- Farm Buildings Association, based at Stoneleigh
- RIDBA now led by Frame Manufacturers
- Market size 4.4 million m² or nearly 6000 buildings per annum
- RIDBA Members supply and erect nearly 50%

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Agricultural Buildings now

- Should be designed to BS 5502
- Allows loadings to be reduced to 72% of the loadings on an industrial building.
- There is no Building Control in England & Wales and so:
 - No one checks on the design or construction
 - Very few buildings fully comply with BS 5502
- January 2010 over 4500 buildings collapsed
 - In December 2010 more collapses possible even more ?
- Ag buildings becoming more sophisticated and larger

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Typical problems seen in December 2010



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Future Standards

- Eurocodes & CE Marking
- CPD changing to CPR
- CE Marking mandatory from 2013
 - Steel frame standard BS EN 1090 in force and if we do nothing agricultural buildings could be designed to industrial standards.
 - Timber Frame not yet complete, due late 2012
- RIDBA is working with SCI and BM TRADA to ensure that agricultural buildings do not have to be designed to industrial building standards
- Once in force non compliance is a criminal offence

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David Payne

- David Payne is Product Certification Manager - Technical Approvals for BM TRADA Certification Ltd
- RIDBA has contracted with TRADA Technology for them to provide a Factory Quality Control Manual in accordance with BE EN 1090
- BM TRADA Certification Ltd is a Notified Body and we recommend that Members use them to certify their ability to CE Mark their frames.
- David will now explain in more detail what this will entail and why CE Marking will be mandatory.

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Introduction to CE marking and the Construction Products Directive and Regulation.

March 2011

David Payne - BM TRADA Certification

Product Certification Manager



What is the Construction Products Directive (CPD)?

- In 1985 the "New Approach to technical harmonization" was introduced through the European Council (EC) resolution 85/C136/01.
- The CPD is one of these "New Approach Directives".
- It is not intended to "raise standards" for construction products, but as a device to promote free trade and to remove technical barriers.
- CE Marking is not a quality mark



What is the Construction Product Regulation (CPR)?

- The CPR builds upon the CPD and adds detail, weight and responsibility.
- Critically the CPR makes CE marking a legal requirement in ALL EU member states.
- It aims to increase market surveillance (enforcement) by member states.



What does the CPD-CPR apply to?

- Any product which is produced for incorporation permanently into works. i.e. building, civil engineering, highways etc.
- all construction products that are covered by regulations somewhere in Europe i.e. at least one Essential Requirement (ER) applies to them in their end use. The 7 ER's are:
 1. mechanical resistance and stability
 2. safety in case of fire
 3. hygiene, health and environment
 4. safety and accessibility in use
 5. protection against noise
 6. energy economy and heat retention
 7. Sustainable use of natural resources



What are the time frames?

- The CPD was adopted into UK Law as the UK Construction Products Regulations on the 27th December 1991!
- At present the UK, Eire and Sweden stop short of making application of the mark compulsory.
- The EU Construction Product Regulation was adopted on 28th Feb 2011 and will be fully implemented on 1st July 2013.



What is CE marking?

The CE mark on a product is a manufacturer's declaration that their product meets the minimum requirements of a harmonised technical specification.

As these harmonised technical specifications have been produced in line with the Construction products Directive (CPD) it also shows compliance with the CPD and the minimum requirements of EU & EFTA member states.

It therefore acts as a 'passport' and enables a manufacturer to legally place the product on the construction market in all member states.



How does QMS differ from product certification?

A Quality management system documents a company's existing procedures and ensures they consistently meet them. It may be certified in accordance with ISO9001.

Product certification looks at the technical properties of the component, element, or system and its end use to show that the product is fit for its intended use.

It also includes a factory production control system to ensure the consistent performance of the product.



What are the routes to CE marking?

The only document a manufacturer can CE mark to is called a harmonised technical specification.

Only two types of harmonised technical specification:

1. Harmonised European standard (hEN) - produced by the European Committee for Standardisation (CEN)

2. European Technical Approval / Assessment (ETA) - produced by an ETA Approval Body through EOTA (European Organisation for Technical Approvals).



The three main areas for assessment and certification

- Initial Type Testing/Calculation (ITT/ITC)
 - This provides initial compliance and provides characteristic values
- Factory production Control (FPC)
 - This proves continued compliance to the technical specification
 - This includes an initial inspection and annual surveillance visits
- On going test programme
 - The minimum requirements will be stated in the technical specification and this will then be incorporated into the FPC manual



What needs doing to permit CE marking?

The technical specification will give each product an 'Attestation of Conformity' or AoC level

In simple terms the Attestation of Conformity is basically the "who does what" to allow CE marking

AoC will dictate who takes responsibility for:

- initial type testing (ITT)
- factory production control (FPC) and
- an on-going test programme



Table showing AoC tasks

	1+	1	2+	2	3	4
Tasks for the manufacturer						
Factory production control	✓	✓	✓	✓	✓	✓
Further testing of samples taken at factory according to prescribed test plan	✓	✓	✓			
Initial type testing			✓	✓		✓
Tasks for the notified body						
Initial type testing	✓	✓			✓	
Certification of FPC	✓	✓	✓	✓		
Surveillance of FPC	✓	✓	✓			
Audit testing of samples	✓					



Some harmonised standards available now

Tech Spec	Product	AoC
EN 10025-1	Hot rolled products of structural steel	2+
EN 1090-1	Execution Of Steel Structures and Aluminium Structures	2+
EN14782	Self supporting metal sheet for roofing, external cladding and internal lining.	3/4
EN14783	Fully supported metal sheet and strip for roofing, external cladding and internal lining.	3/4



Some ETAGs available now

Tech Spec	Product	AoC
ETAG 025	Metal frame building kits	1



Why should a manufacturer CE mark?

If a harmonised technical specification exists for a product and the manufacturer sells to all bar 3 member states it is a legal requirement.

Before the CPD a manufacturer had to satisfy the requirements of EU member states on an individual basis. Now they satisfy them ALL with one product and/or production assessment.

CE marking is proof a product is fit for its intended end use. If a manufacturer cannot prove this fitness should they be selling the product?



Summary

- BM TRADA are a notified body under the CPD/R
- We can offer CE marking for a wide range of construction products.
- CE marking in all member states will be a legal requirement.
- For assessment of steel products we have a partnership with SCI.



BM TRADA Certification

Thank you very much.



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David Payne

- Thank you David I am sure we all found that most interesting and useful.
- I suggest that we do not ask questions at this time but ask Martin Heywood to talk about design and why this is such an important part of a frame manufactures responsibility.
- Plenty of time will be available for questions at the end.

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Martin Heywood

- Martin is an Associate Director of the Steel Construction Institute and will give details of the design protocol he is developing for RIDBA.
- And why the correct design is so important.

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Agricultural building design and CE marking

Dr Martin Heywood
Associate Director, SCI

Key issues

- Construction Products Regulation (CPR)
 - CE Marking of construction products
- Eurocode design
- Collapses under snow loading

CE Marking

- Compulsory in the UK in 2013
- Applies to frames
- Agricultural buildings not exempt
- Eurocode design

Which products?

- Whole buildings
- Bare frames and steelwork
- Cladding products
- Ancillary construction products
- Silos, tanks and grain stores
- All will need to be CE marked

Routes to CE marking

- Harmonised Standard – ENs
- European Technical Approval (ETA):
 - ETAG
 - CUAP

CE marking of steel buildings

- EN 1090
 - Steel components and kits
 - Appropriate for structural steelwork
- ETAG 25
 - Metal building kits
 - Clad or bare steel

CE marking of steel buildings

- Which one?
 - Overlap between EN 1090 and ETAG 25
 - EN 1090 will apply to all manufacturers
 - Some might require ETAG 25

What about design?

- Options in EN 1090 on how to declare mechanical resistance, but:
 - Steelwork sold to clients is ‘designed’, so need confidence in its structural capability
 - Design process needs to be recognised somewhere in CE mark
 - Requires design to Eurocodes
- ETAG 25:
 - Must declare Eurocode resistance

Why do we need design?

- “I have a standard shed, why do I need design calcs?”
- “The codes are too complicated for farm buildings”.
- “I’ve not had a building collapse in over 20 years.”

Why do we need design?

- Loadings are location specific
- Loadings depend on building use
- Safety margin?
- Economy
- Buildings do collapse when not designed and detailed properly



Current design process

- BS 5502-22:2003
- Covers loading and design for agricultural buildings
- Relies heavily on BS 5950, 8110 etc. but with relaxations and special rules where appropriate
- BS 5950 (and other national standards) were withdrawn in March 2010.

Eurocodes

- Eurocodes replace national design standards
- Cover loading (including agricultural) and design to all common materials
- Implications for agricultural buildings:
 - Designers need to be familiar with Eurocodes
 - Need to cater for relaxations in BS 5502-22

SCI project with RIDBA

- EC3 design guide for agricultural buildings
 - Design protocol to assist with CE marking
 - Guidance to structural engineers
- Simplified design rules for agricultural buildings – simple but backed by EC3
- Design protocol will form the basis of the CE Marking structural assessment



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Conclusion

- The Changes caused by the move to Eurocodes and CE Marking are an ideal opportunity to ensure that agricultural buildings, in future, are designed, fabricated and erected correctly and safely.
- Any Questions?

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