

# Eurocodes Plus – Making Eurocodes Simple

John Tomlinson  
Director of Sales, BSI Standards

1. Who are BSI?
2. What are the Eurocodes?
3. Eurocodes in the EU
4. Eurocodes in the UK
5. The transition
6. A solution – Eurocodes Plus

# Our experience

For over 100 years BSI has shaped standards of excellence adopted by organizations world-wide

BSI began in **1901** with the 1<sup>st</sup> meeting of the engineering Standards Committee, convened by John Wolfe-Barry, designer of London's Tower Bridge.

In 1903 our **Kitemark** was registered and as such is one of the oldest Trustmarks still in use today.

BSI was the first **National Standards Body** and a founding member of the International Organization for Standardization (**ISO**).

During the last 100 years we've shaped many of the worlds most important standards to enhance organizational performance

ISO 9001 was based on BSI's BS 5750 and has become the **world's most adopted standard**. Furthermore, BSI shaped the original standards that led to:

Information Security (ISO/IEC 27001)  
Environment Management (ISO 14001)  
Health & Safety (OHSAS 18000)  
Business Continuity (ISO 22301)

BSI not only shapes standards for **products** and **business processes**.

Our 3<sup>rd</sup> Generation of Standards are centred around **behaviour and values** to help organizations reach their full potential through their people.



Product Specifications

1900



Business Processes

1950



Business Potential

2000

**Table A1. Top 30 Standards Providers by Revenue, 2012**

Company Name	Standards Revenue (\$000)			Estimated Market Share		
	2011	2012	% Change	2011	2012	Point Change
IHS, Inc.	247,076	260,078	5.3%	19.4%	20.1%	0.7
SAI Global Limited	136,710	142,666	4.4%	10.7%	11.0%	0.3
Beuth Verlag GmbH (DIN)	80,000	78,500	-1.8%	6.3%	6.1%	-0.2
BSI Group	73,159	76,000	3.9%	5.7%	5.9%	0.2
National Fire Protection Association (NFPA)	50,050	44,396	-11.3%	3.9%	3.4%	-0.5
American Petroleum Institute	39,600	41,880	5.8%	3.1%	3.2%	0.1
ASTM International	36,800	39,754	8.0%	2.9%	3.1%	0.2
Association Francais de Normalization (AFNOR)	35,000	33,683	-3.8%	2.7%	2.6%	-0.1
American Society of Mechanical Engineers (ASME)	35,892	32,740	-8.8%	2.8%	2.5%	-0.3
Techstreet	27,809	30,600	10.0%	2.2%	2.4%	0.2
Japanese Standards Association	33,158	28,750	-13.3%	2.6%	2.2%	-0.4

# Current British Standards Customers in Hong Kong



# BSI helps organizations embed excellence and reap the benefits

We share our standards in the **format you need**, from paper to interactive digital content

Our assessors understand your business and give you **proven ways of measuring excellence**, so you can promote it confidently

Shape

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Together with **independent experts** we shape the standards of excellence across products, processes and business potential

Our trainers **transfer the knowledge** your people need to embed our standards into your organization

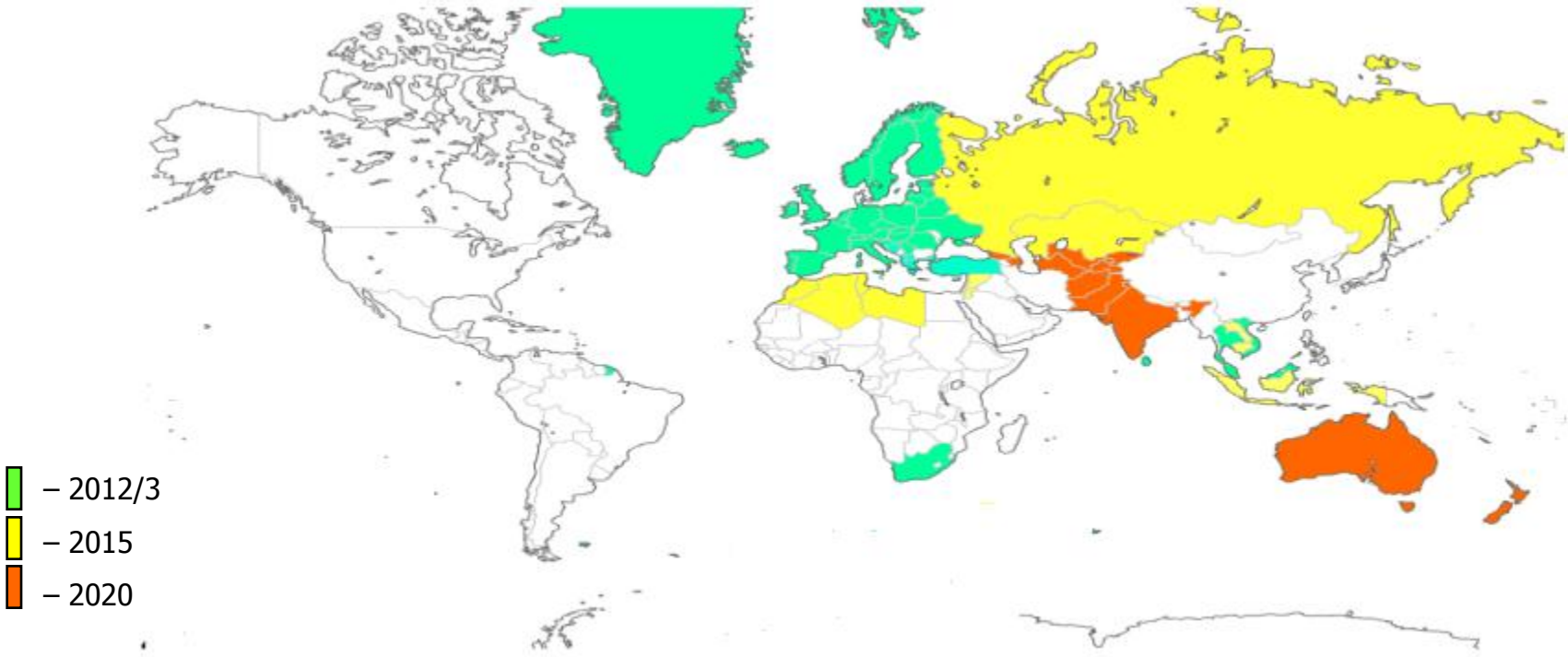
We support you with the knowledge and tools you need to recognize excellence and **continually improve...**

# Introduction



- “Eurocodes are the biggest single change in construction standards ever”
- Now being used by civil & structural engineers in Europe and around the world
- A new approach to engineering design
- Adopted in UK on 01/04/2010

# Forecast of global acceptance of Eurocodes

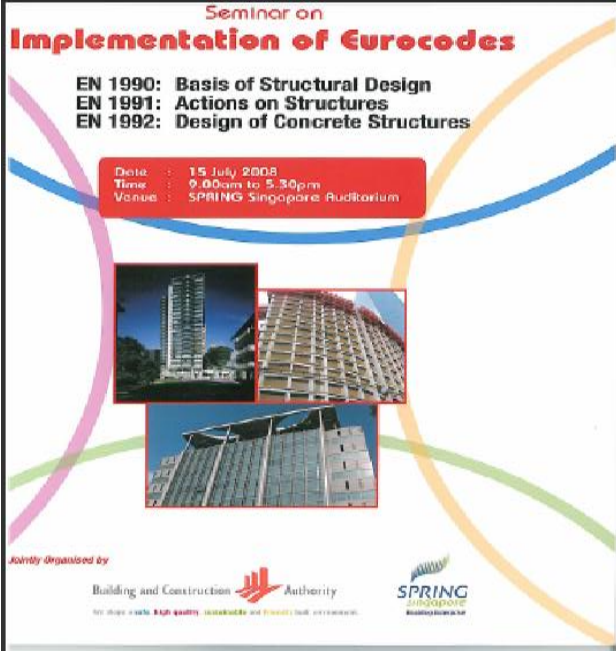


- 2012/3
- 2015
- 2020



# Eurocodes Adoption in Asia Pacific

- Singapore (2012)
- Hong Kong (2013)
- Sri Lanka (2013)
- Vietnam (2013)
- Malaysia (2013)
- Indonesia (2015)
- Australia (2020)
- New Zealand (2020)
- India (2020)



Seminar on  
**Implementation of Eurocodes**

**EN 1990: Basis of Structural Design**  
**EN 1991: Actions on Structures**  
**EN 1992: Design of Concrete Structures**

Date : 15 July 2008  
Time : 9.00am to 5.30pm  
Venue : SPRING Singapore Auditorium

Jointly organised by

Building and Construction Authority  
for more details: [B&C](#) [quality](#) [standards](#) and [projects](#) look [enquiries](#).

SPRING  
Singapore  
Building Research Centre

The poster features three photographs of modern buildings: a tall skyscraper, a multi-story residential or commercial building, and a large industrial or office building with a glass facade. The background is decorated with colorful curved lines in shades of blue, green, and orange.

## EN 1990 Basis of design

### EN 1991 Actions on Structures

**EN 1992  
Design of  
concrete  
structures**

**EN 1993  
Design of  
steel  
structures**

**EN 1994  
Design of  
composite  
structures**

**EN 1995  
Design of  
timber  
structures**

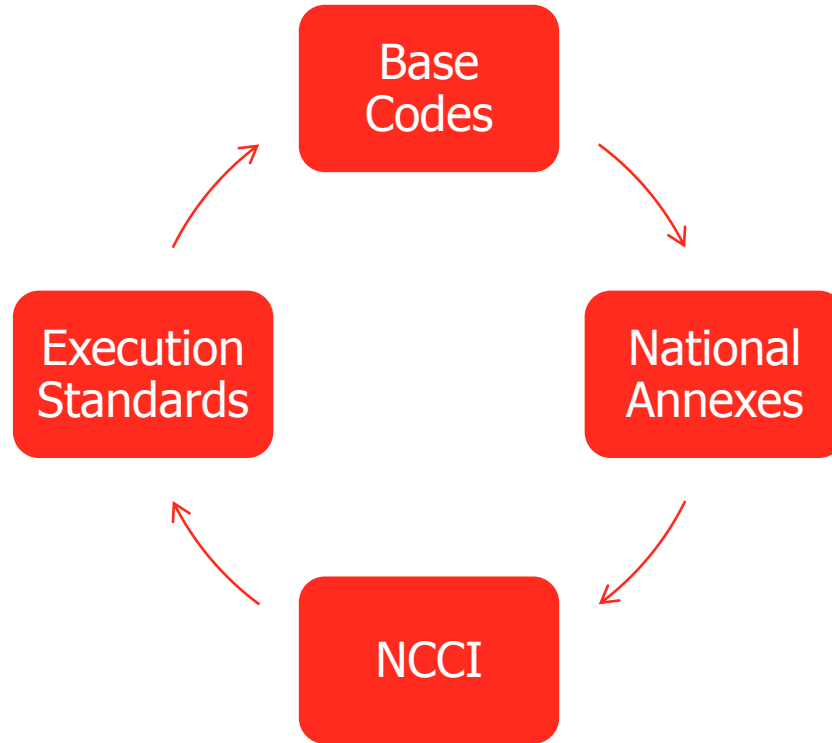
**EN 1996  
Design of  
masonry  
structures**

**EN 1999  
Design of  
aluminium  
structures**

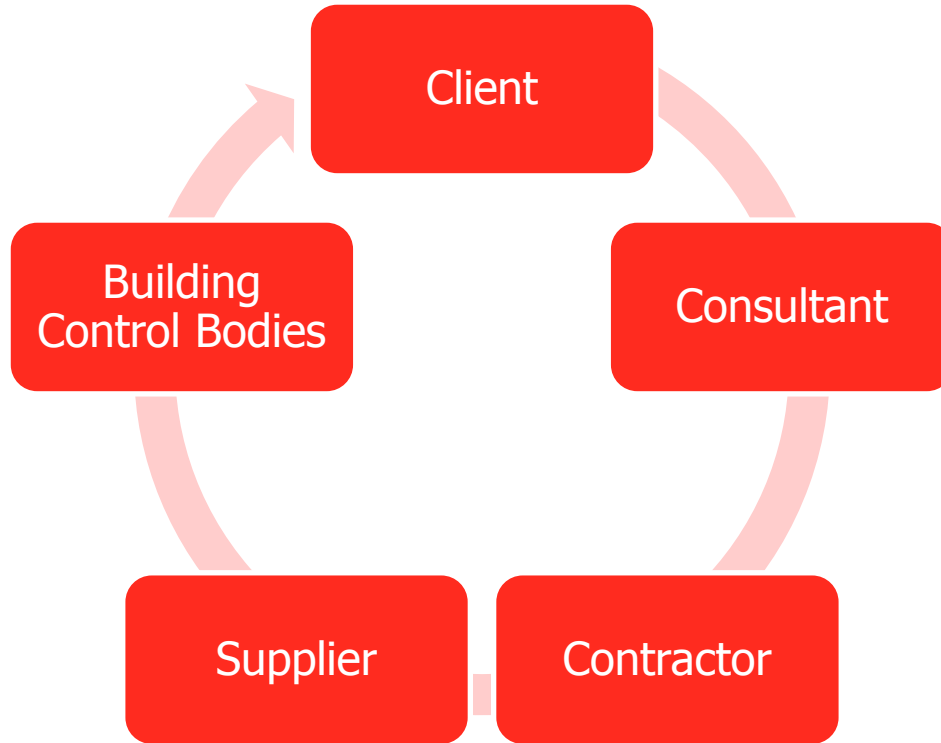
**EN 1997 Geotechnical design**

**EN 1998 Design of structures for  
earthquake resistance**

# Code Hierarchy



# Who is using Eurocodes in the UK?



# Public Procurement Projects



# UK Client Standards

## UK Highways Agency Specs

- The use of Eurocodes for the design of new Highways Structures
- IAN 124/11



## UK Highways Agency Specs

- Design Manual for Roads and Bridges (DMRB)
- Eurocodes referenced in BD2, BD51, HA56 and HA66
- Manual of Contract Documents for Highway Works (MCHW) are being updated to make reference to the execution standards (BS EN 13670 for concrete and BS EN 1090 for steel)

## UK Network Rail Civil Eng Standard

- NR/CS/CIV/044 Managing Structures Works
- NR/L3/CIV/030 Platform components and prefabricated construction systems
- NR/L2/CIV/003 Engineering Assurance of Building and Civil Engineering Works
- NR/L3/CIV/020 Design of Bridges
- NR/L3/CIV/071 Geotechnical Design

# UK Projects Designed to Eurocodes

**London Tideway  
Improvements**



*Creating a cleaner, healthier River Thames*



Department for  
**Transport**

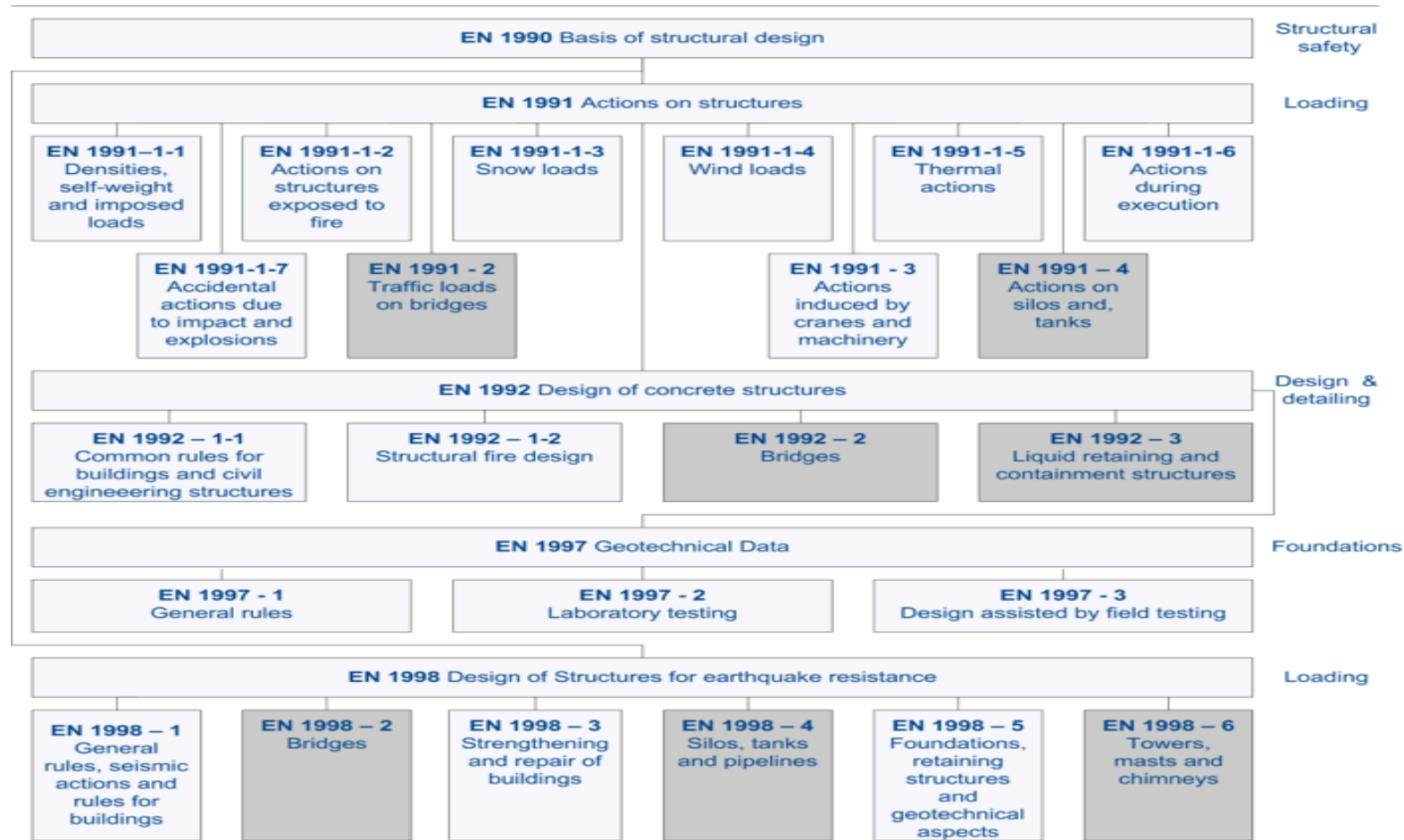


# October 2013 changes in Approved Documents - Parts A and C (England)





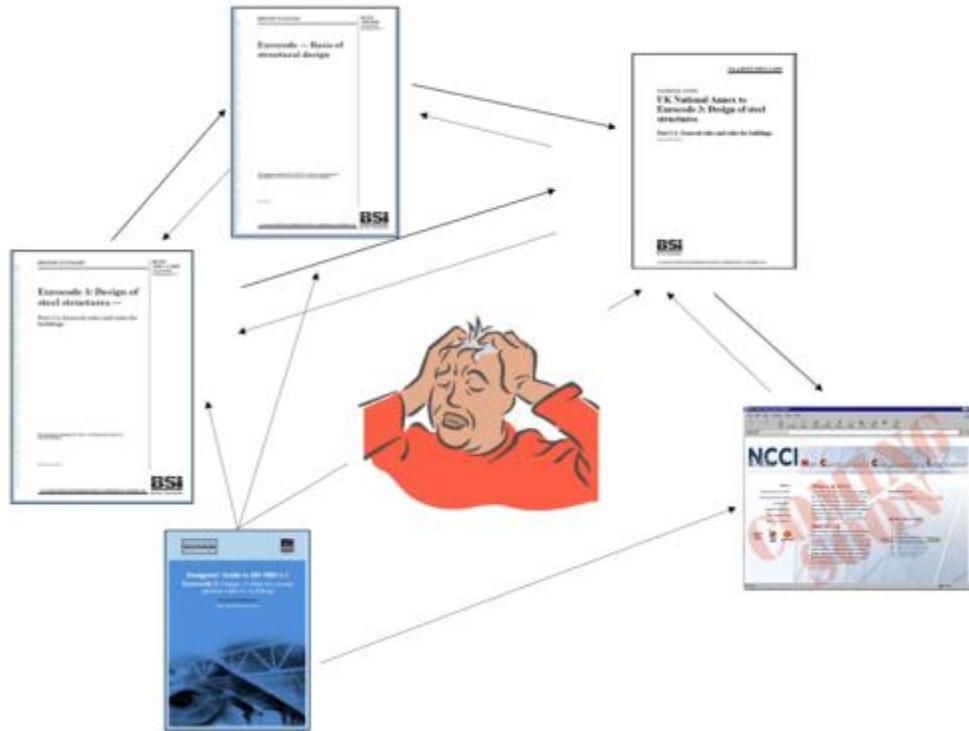
# The transition



Courtesy of H. Gulvanessian

**Package 2.1. – Concrete buildings and civil engineering structures**

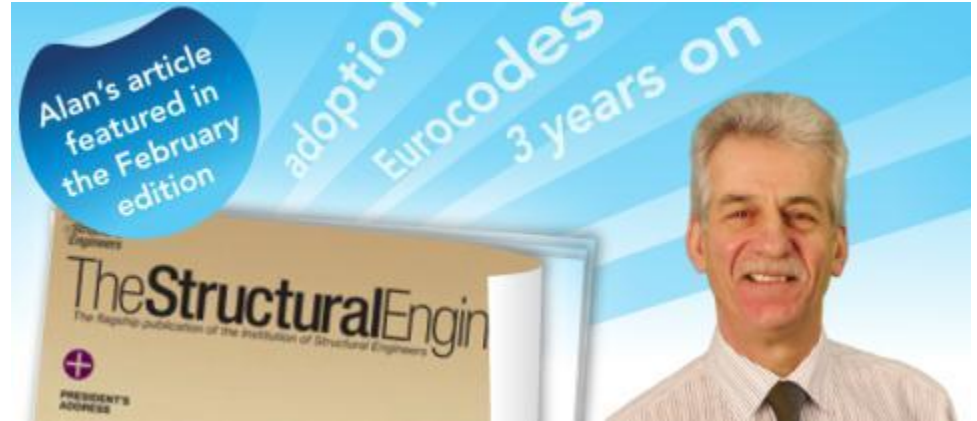
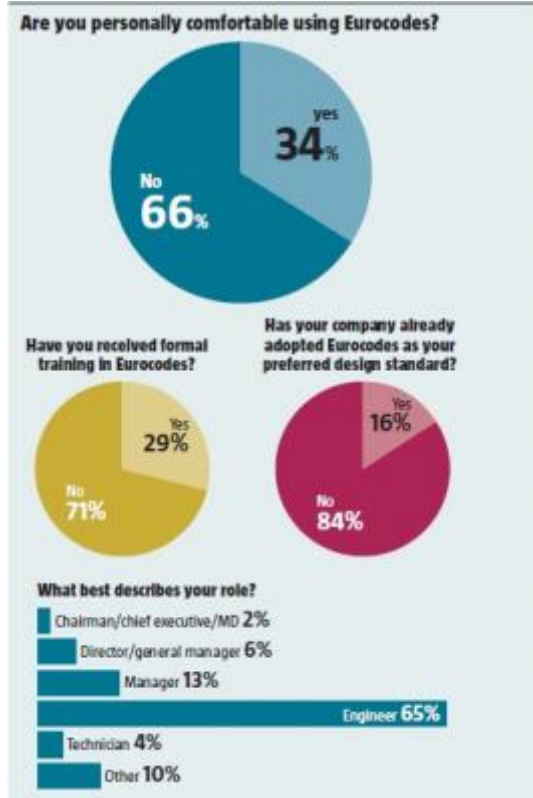
# Working with the Eurocodes



## Challenges

- Open to interpretation
- Locating relevant information
- Recording and remembering decisions that had been made
- 4 document types
- Huge number of pages
- Highly interdependent codes
- Currency
- Time consuming
- Transition can be expensive

# UK Current State of Transition



*"The proportion of engineers implementing Eurocode design is thought to be around 15-20%" CSC World 2013*

# Cost of Transition

## Updating Software

- Assumed £20,000

## Documents

- Set of Eurocodes, NA's and guidance documents
- £3,750 est

## Technical Seminars

- 3 days per person (attendance + seminars at £150 each)
- £25,200

## Familiarisation

- 12 man-days per person in the office
- £72,500

## Loss of Productivity

- 10% loss over 1600 hours
- £128,000

# Introducing Eurocodes Plus



Eurocodes<sup>™</sup>  
PLUS<sup>+</sup>

The online tool that makes  
working with Eurocodes simple

## Cue the Video

[http://www.youtube.com/watch?v=9r1seWSWNyI&feature=player\\_embedded](http://www.youtube.com/watch?v=9r1seWSWNyI&feature=player_embedded)



REDHAYES BRIDGE – Designed to Eurocodes by Parsons Brinckerhoff on behalf of Devon County Council. Images produced and provided by Parsons Brinckerhoff.

## Welcome to BSI Eurocodes PLUS

All the Eurocodes, UK National Annexes, withdrawn British Standards and NCCI published by BSI in one fully searchable and interactive solution.

### SAVE TIME

Find what you need quickly and learn to use the Eurocodes faster with expert guidance.

### REDUCE STRESS

Always have the correct up-to-date documents.

### BUILD A KNOWLEDGE BASE

Work collaboratively – share knowledge and interpretation and retain expertise.

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## Workspace

## Search

Search across the Eurocodes Online content using keywords or enter a standard number to locate a specific document

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## My Notes

No new replies or notes have been added since 08 Jan 2014.

[View all](#)

## Active Notes

No new replies to my notes or new notes (and replies) from colleagues have been added since 08 Jan 2014.

## Recently Viewed Documents

Title	Viewed Date
BS EN 1990:2002+A1:2005, Eurocode — Basis of structural design	14 Jan 2014
BS EN 1991-1-1:2002, Eurocode 1: Actions on structures — Part 1-1: General actions — Densities, self-weight, imposed loads for buildings	16 Dec 2013
BS EN 10164:1993, Steel products with improved deformation properties perpendicular to the surface of the product. Technical delivery conditions	16 Dec 2013
BS EN 1993-1-8:2005, Eurocode 3: Design of steel structures — Part 1-8: Design of joints	16 Dec 2013

[View all](#)

## Saved Searches

No saved searches have been added.

[View all](#)

## News

**UK National Annex to BS EN 1999-1-3:2007**

13 December 2011 | 21.00

The UK National Annex to BS EN 1999-1-3:2007, Eurocode 9 – Design of aluminium structures – Structures susceptible to fatigue, is currently being amended to incorporate text from EN 1999-1-3:2007 + A1 2011; and is anticipated to be published by April 2012. Please note that the UK NA to BS EN 1999-1-3:2007 should only be used in conjunction with BS EN 1999-1-3:2007.

## Construction type

- Bridges (157)
- Buildings (159)
- Chimneys (52)
- Cranes (104)
- Liquid retaining structures (92)
- Piling (87)
- Pipelines (55)
- Silos (102)
- Simplified (111)
- Tanks (104)
- Towers and masts (117)
- With fatigue (127)
- Without fatigue (119)

## Material type

- Aluminium (129)
- Composite (134)
- Concrete (133)
- Masonry (117)
- Steel (190)
- Timber (123)

## Document type

- Eurocode (116)
- Execution standard (23)
- Geotechnics (6)
- National Annex (57)
- NCCI supporting document (25)
- Test methods – Eurocode 7 (27)
- Withdrawn national standard (54)

Page 1 of 16 308 Results

Filters: None



BS EN 1990:2002+A1:2005 Eurocode. Basis of structural design

**Construction type:** Buildings, Bridges, Liquid retaining structures, Silos, Tanks, Piling, Cranes, Towers and masts, Simplified, With fatigue**Material type:** Concrete, Steel, Composite, Timber, Masonry, Aluminium**Document type:** Eurocode**Status:** Current | **Publication date:** 27 Jul 2002 | **Last updated:** 30 Jun 2009

BS EN 1990:2002+A1:2005 Eurocode. Basis of structural design

**Construction type:** Buildings, Bridges, Liquid retaining structures, Silos, Tanks, Piling, Cranes, Towers and masts, Simplified, With fatigue**Material type:** Concrete, Steel, Composite, Timber, Masonry, Aluminium**Document type:** Eurocode**Status:** Current | **Publication date:** 27 Jul 2002 | **Last updated:** 31 Jul 2010

BS EN 1991-1-1:2002 Eurocode 1. Actions on structures

General actions

**Construction type:** Buildings, Bridges, Liquid retaining structures, Silos, Tanks, Piling, Cranes, Towers and masts, Simplified, With fatigue**Material type:** Concrete, Steel, Composite, Timber, Masonry, Aluminium**Document type:** Eurocode**Status:** Current | **Publication date:** 29 Jul 2002 | **Last updated:** 28 Feb 2010

BS EN 1991-1-1:2002 Eurocode 1. Actions on structures. General actions

Densities, self-weight, imposed loads for buildings

**Construction type:** Buildings, Bridges, Liquid retaining structures, Silos, Tanks, Piling, Cranes, Towers and masts, Simplified, With fatigue**Material type:** Concrete, Steel, Composite, Timber, Masonry, Aluminium**Document type:** Eurocode**Status:** Current | **Publication date:** 29 Jul 2002 | **Last updated:** 15 Dec 2004

Items per page: 10 |

Sort by: Document type (Asc)

## Search Results

Selected Search Terms

axial compression

Search within results

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Page 1 of 17 334 Results

Items per page: 10 | 20 |

Search: axial compression

 Group by document Sort by: Relevance

## Content type

Clauses (315)

Figures (2)

Tables (17)

## Status

Confirmed (22)

Current (277)

Project Underway (17)

Superseded (53)

Under review (8)

Withdrawn (57)

## ICS category

Aluminium products (34)

Bridge construction (40)

Buildings and installatio... (23)

Buildings in general Incl... (3)

Chimneys, shafts, ducts l... (1)

Concrete structures Incl... (59)

Construction equipment In... (9)

Construction materials in... (1)

Cranes Including mobile c... (2)

Earthworks. Excavations. ... (29)

Fire-resistance of buildi... (42)

Masonry (5)

Metal structures (204)

Pipeline components and p... (1)



5.5 Uniform members in bending and axial compression  
BS EN 1993-1-4:2006 Eurocode 3. Design of steel structures - General rules

**Content type:** Clauses | **Publication date:** 30 Nov 2006 | **Last updated:** 30 Nov 2006

5.5 Uniform members in bending and axialcompression...Axial compression and uniaxial major axis moment... Axial compression and uniaxial minor axis moment:... Axial compression and biaxial moments:



8.4 Calculations  
BS 1377-8:1990 Methods of test for soils for civil engineering purposes - Shear strength tests (effective stress)

**Content type:** Clauses | **Publication date:** 31 Oct 1990 | **Last updated:** 21 Dec 1994

Axial strain,... is the change in length (from the initial length) during **compression**, as determined from the deformation gauge (in mm)...Volumetric strain due to **compression**...the start of **compression**



1.6 Symbols  
BS EN 1994-1-2:2005 Eurocode 4. Design of composite steel and concrete structures - General rules

**Content type:** Clauses | **Publication date:** 05 Dec 2005 | **Last updated:** 28 Feb 2010

design value of the resistance of a member in **axialcompression** ( $\equiv$  design **axial** buckling load) and in the fire situation



A.1 Permissible stresses  
BS 5975:2008+A1:2011 Code of practice for temporary works procedures and the permissible stress design of falsework

**Content type:** Clauses | **Publication date:** 31 Dec 2008 | **Last updated:** 31 Oct 2011

2) for parts in **compression**, the permissible bending stress, ... is the effective length of the **compression** flange (see ...**axial** tensile stress pt on the net 9 area of the section should



1.6 Symbols  
BS EN 1994-1-2:2005 Eurocode 4. Design of composite steel and concrete structures - General rules

**Content type:** Clauses | **Publication date:** 05 Dec 2005 | **Last updated:** 28 Feb 2010

**compression** force in the slab...or **axial** load...equivalent **axial** load...design value of the plastic resistance to **axial** compression of the total cross-section in the fire situation

and only cross sectional checks apply.

## 5.5 Uniform members in bending and axial compression

- (1) Members which are subjected to combined bending and axial compression should satisfy:

**Axial compression and uniaxial major axis moment**

To prevent premature buckling about the major axis:

$$\frac{N_{Ed}}{(N_{b,Rd})_{\min}} + k_y \left( \frac{M_{y,Ed} + N_{Ed} e_{Ny}}{\beta_{W,y} W_{pl,y} f_y / \gamma_{M1}} \right) \leq 1 \quad (5.13)$$

To prevent premature buckling about the minor axis (for members subject to lateral-torsional buckling):

$$\frac{N_{Ed}}{(N_{b,Rd})_{\min1}} + k_{LT} \left( \frac{M_{y,Ed} + N_{Ed} e_{Ny}}{M_{b,Rd}} \right) \leq 1 \quad (5.14)$$

**Axial compression and uniaxial minor axis moment:**

To prevent premature buckling about the minor axis:

$$\frac{N_{Ed}}{(N_{b,Rd})_{\min}} + k_z \left( \frac{M_{z,Ed} + N_{Ed} e_{Nz}}{\beta_{W,z} W_{pl,z} f_y / \gamma_{M1}} \right) \leq 1 \quad (5.15)$$

**Axial compression and biaxial moments:**

All members should satisfy:

$$\frac{N_{Ed}}{(N_{b,Rd})_{\min}} + k_y \left( \frac{M_{y,Ed} + N_{Ed} e_{Ny}}{\beta_{W,y} W_{pl,y} f_y / \gamma_{M1}} \right) + k_z \left( \frac{M_{z,Ed} + N_{Ed} e_{Nz}}{\beta_{W,z} W_{pl,z} f_y / \gamma_{M1}} \right) \leq 1 \quad (5.16)$$

Members potentially subject to lateral-torsional buckling should also satisfy:

$$\frac{N_{Ed}}{(N_{b,Rd})_{\min1}} + k_{LT} \left( \frac{M_{y,Ed} + N_{Ed} e_{Ny}}{M_{b,Rd}} \right) + k_z \left( \frac{M_{z,Ed} + N_{Ed} e_{Nz}}{\beta_{W,z} W_{pl,z} f_y / \gamma_{M1}} \right) \leq 1 \quad (5.17)$$

and only cross sectional checks apply.

## 5.5 Uniform members in bending and axial compression

- (1) Members which are subjected to combined bending and axial compression should satisfy:

### UK NATIONAL ANNEX

To Clause para5.5\_1

PUBLISHED : February 2009

[View full NA document](#)

The recommended equations should be used.

#### Axial compression and uniaxial major axis moment

To prevent premature buckling about the major axis:

$$\frac{N_{Ed}}{(N_{b,Rd})_{\min}} + k_y \left( \frac{M_{y,Ed} + N_{Ed} e_{Ny}}{\beta_{W,y} W_{pl,y} f_y / \gamma_{M1}} \right) \leq 1 \quad (5.13)$$

To prevent premature buckling about the minor axis (for members subject to lateral-torsional buckling):

$$\frac{N_{Ed}}{(N_{b,Rd})_{\min}} + k_{LT} \left( \frac{M_{y,Ed} + N_{Ed} e_{Ny}}{M_{b,Rd}} \right) \leq 1 \quad (5.14)$$

#### Axial compression and uniaxial minor axis moment:

To prevent premature buckling about the minor axis:

$$\frac{N_{Ed}}{(N_{b,Rd})_{\min}} + k_y \left( \frac{M_{z,Ed} + N_{Ed} e_{Nz}}{M_{b,Rd}} \right) \leq 1 \quad (5.15)$$

## 5 Ultimate limit states

### 5.1 General

- (1) The provisions given in Sections 5 and 6 of EN 1993-1-1 should be applied for stainless steels, except where modified or superseded by the special provisions given in this Part 1.4.
- (2) The partial factors  $\gamma_M$  as defined in 2.4.3 of EN 1993-1-1 are applied to the various characteristic values of resistance in this Section as follows, see Table 5.1.

Table 5.1: Partial factors

Resistance of cross-sections to excessive yielding including local buckling	$\gamma_{M0}$
Resistance of members to instability assessed by member checks	$\gamma_{M1}$
Resistance of cross-sections in tension to fracture	$\gamma_{M2}$
Resistance of bolts, rivets, welds, pins and plates in bearing	$\gamma_{M2}$

- NOTE**  $\gamma_M$  values may be determined in the National Annex. The following values are recommended

$$\begin{aligned}\gamma_{M0} &= 1,1 \\ \gamma_{M1} &= 1,1 \\ \gamma_{M2} &= 1,25\end{aligned}$$

- (3) No rules are given for plastic global analysis.
- NOTE** Plastic global analysis should not be used unless there is sufficient experimental evidence to ensure that the assumptions made in the calculations are representative of the actual behaviour of the structure. In particular there should be evidence that the joints are capable of resisting the increase in internal moments and forces due to strain hardening.
- (4) Joints subject to fatigue shall also satisfy the principles given in EN 1993-1-9.
- (5) Where members may be subjected to significant deformation, account may be taken of the potential for enhanced strength gained through the work hardening properties of austenitic stainless steel. Where this work hardening increases the actions resisted by the members, the joints should be designed to be consistent with the increased member resistance, especially where capacity design is required.

### 5.2 Classification of cross-sections

#### 5.2.1 Maximum width-to-thickness ratios

Notes
✕

Add a note to "5 Ultimate limit states"

All (0)
Add Note

Title:

Description:

**B** *I* U ~~S~~ ↻ **A** ▾

Private ▾
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Cancel








## 5 Ultimate limit states

### 5.1 General

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- NOTE**  $\gamma_M$  values may be determined in the National Annex. The following values are recommended

$$\gamma_{M0} = 1,1$$

$$\gamma_{M1} = 1,1$$

$$\gamma_{M2} = 1,25$$

- (3) No rules are given for plastic global analysis.
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### 5.2 Classification of cross-sections

#### 5.2.1 Maximum width-to-thickness ratios

- (1) The provisions for design by calculation given in this Part 1.4 may be assumed to apply to cross-

#### Dynamic Documents

Add "5 Ultimate limit states" to a dynamic document, please select a dynamic document from the list below or create a new one

New Dynamic Document

- dd test doc
- dd333
- Load test document S
- Load test document SA
- SADEE TEST
- sdbaji
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## Section 3 Materials

### E 3.1 Concrete

- ▼ (1) Unless otherwise given by Eurocode 4, properties should be obtained by reference to [EN 1992-1-1, 3.1](#) for normal concrete and to [EN 1992-1-1, 11.3](#) for lightweight concrete.
- ▼ (2) This Part of EN 1994 does not cover the design of composite structures with concrete strength classes lower than C20/25 and LC20/22 and higher than C60/75 and LC60/66.
- ▼ (3) Shrinkage of concrete should be determined taking account of the ambient humidity, the dimensions of the element and the composition of the concrete.
- A ▼ (4) Where composite action is taken into account in buildings, the effects of autogenous shrinkage may be neglected in the determination of stresses and deflections.
- ▼ *NOTE Experience shows that the values of shrinkage strain given in [EN 1992-1-1](#) can give overestimates of the effects of shrinkage in composite structures. Values for shrinkage of concrete may be given in the National Annex. Recommended values for composite structures for buildings are given in [Annex C](#).*

### 3.2 Reinforcing steel

- ▼ (1) Properties should be obtained by reference to [EN 1992-1-1, 3.2](#).
- ▼ (2) For composite structures, the design value of the modulus of elasticity  $E_s$  may be taken as equal to the value for structural steel given in [EN 1993-1-1, 3.2.6](#).

### 3.3 Structural steel

- ▼ (1) Properties should be obtained by reference to [EN 1993-1-1, 3.1](#) and [3.2](#).
- ▼ (2) The rules in this Part of EN 1994 apply to structural steel of nominal yield strength not more than 460 N/mm<sup>2</sup>.

### 3.4 Connecting devices

#### 3.4.1 General

- ▼ (1) Reference should be made to [EN 1993-1-8](#) for requirements for fasteners and welding consumables.



- (1) The reliability format for the verification of static equilibrium for buildings, as described in EN 1990, Table A1.2(A), also applies to design situations equivalent to (EQU), e.g. for the design of hold down anchors or the verification of uplift of bearings of continuous beams.

## Section 3 Materials

### 3.1 Concrete

#### EXPERT COMMENT



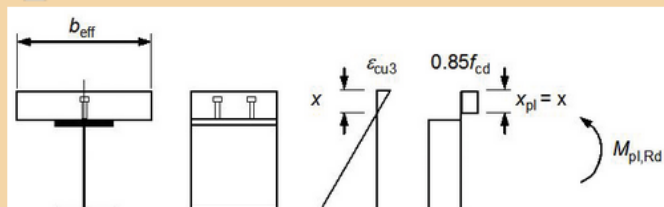
To Clause section 3.1

PUBLISHED: 2011-02-18; AUTHOR:

Stephen Hicks, Manager, Structural Systems, Heavy Engineering Research Association, New Zealand

The treatment of the effective strength of the concrete and the effective height of the compression zone in BS EN 1992-1-1, 3.1.7 is different to that given in BS EN 1994-1-1 for rectangular stress blocks. As can be seen in the Figure below, the effective strength of the concrete is taken as  $0.85f_{cd}$  in BS EN 1994-1-1 (the only exception to this is concrete filled tubes in BS EN 1994-1-1, 6.7.3.2(1)). Conversely, in BS EN 1992-1-1, it is taken as  $\eta f_{cd}$  (where the value of  $\eta$  is a function of  $f_{ck}$ ).

For the effective height of the concrete in the compression zone, rather than use the depth  $\lambda x$  given in BS EN 1992-1-1, 3.1.7, BS EN 1994-1-1 permits the depth of the stress block to extend to the neutral axis position (see Figure below). This simplification introduces an error that is unconservative. Although this error is negligible when considering the plastic moment resistance of composite beams, it is not negligible for composite columns, which results in the introduction of the coefficient  $\alpha_M$  in BS EN 1994-1-1, 6.7.3.6(1).



## Advantages of using Eurocodes

- Single suite of standards based on state of the art research
- Common design criteria and a common understanding and vocabulary
- Enhanced scope for innovation
- Commercial opportunities from removal of barriers to trade of products and services
- If your national or international clients require them, you need to be transitioning now

## Benefits of Eurocodes PLUS

- BSI has a solution that “makes Eurocodes simple”
  - Capture organisational IP and share and manage knowledge
  - Greater design consistency across engineers – “right first time approach”
  - Better management of technical risk
  - Reduce the cost of transition and improve utilisation/profit
  - Essential internal training tool
  - Create project files and your own common design structures templates
- It is not an information system - it is transformational tool that makes it easier for engineers to implement and embed the new codes

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Live demos available at lunch