Steve Denton

EUROCODE Conference | Berlin | 24 May 2023
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1. Background
2. Why design standards matter
3. Aims for the evolution of Structural Eurocodes
4. Programme, status and next steps
1. Background

2. Why design standards matter

3. Aims for the evolution of Structural Eurocodes

4. Programme, status and next steps
My background

- Chairman of CEN/TC 250 Structural Eurocodes
- WSP’s Head of Civil and Bridge Engineering
- Visiting Professor at the University of Bath
- Advisor to Clients and Government
- Fellow of Royal Academy of Engineering (and FICE, FIstructE)
2nd Generation Structural Eurocodes

Structural safety, serviceability and durability

Actions on structures

Design and detailing

Geotechnical and seismic design

EN 1990
EN 1991
EN 1992
EN 1993
EN 1994
EN 1995
EN 1996
EN 1997
EN 1998
TS 19100
TS 19101
TS 19102
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Why design standards matter

Impact
Why design standards matter

Impact

Verification of adequacy
Why design standards matter

Impact Verification of adequacy Feedback
Why design standards matter

Impact Verification of adequacy Feedback

New Societal demands
Why design standards matter

Impact Verification of adequacy Feedback

New Societal demands Research to application
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EUROCODE Conference I Berlin I 24 May 2023
Aims for the evolution of Structural Eurocodes
Aims for the evolution of Structural Eurocodes

✓ Enhanced Ease of Use
Aims for the evolution of Structural Eurocodes

- Enhanced Ease of Use
- Exemplary levels of international consensus
Aims for the evolution of Structural Eurocodes

- Enhanced Ease of Use
- Exemplary levels of international consensus
CEN/TC 250’s vision on the second generation of the Structural Eurocodes

“Whilst respecting the achievements of the past, our vision for the second generation of Structural Eurocodes is to create a more user-orientated suite of design standards that are recognised as the most trusted and preferred in the world.”
Five pillars to enhance ease of use of the Eurocodes

1. Statements of intent to meet users’ needs
2. Principles and related priorities
3. Examples
4. Strategic performance measures
5. Management, governance and support
Clear definition of our primary audience

**PRIMARY TARGET AUDIENCE**

Practitioners – Competent engineers

**DEFINITION**

Competent civil, structural and geotechnical engineers, typically qualified professionals able to work independently in relevant fields
**Statements of intent to meet our users needs (1 of 2)**

<table>
<thead>
<tr>
<th>CATEGORIES OF EUROCODES’ USERS</th>
<th>CEN/TC 250 STATEMENTS OF INTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practitioners – Competent engineers [Primary target audience]</td>
<td>We will aim to produce Standards that are suitable and clear for all common design cases without demanding disproportionate levels of effort to apply them</td>
</tr>
<tr>
<td>Practitioners – Graduates</td>
<td>We will aim to produce Eurocodes that can be used by Graduates where necessary supplemented by suitable guidance documents and textbooks and under the supervision of an experienced practitioner when appropriate</td>
</tr>
<tr>
<td>Expert specialists</td>
<td>We will aim not to restrict innovation by providing freedom to experts to apply their specialist knowledge and expertise</td>
</tr>
<tr>
<td>Product Manufacturers</td>
<td>Working with other CEN/TCs we will aim to eliminate incompatibilities or ambiguities between the Eurocodes and Product Standards</td>
</tr>
</tbody>
</table>
### CATEGORIES OF EUROCODES' USERS

<table>
<thead>
<tr>
<th>Category</th>
<th>CEN/TC 250 STATEMENTS OF INTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software developers</td>
<td>We will aim to provide unambiguous and complete design procedures. Accompanying formulae will be provided for charts and tables where possible</td>
</tr>
<tr>
<td>Educators</td>
<td>We will aim to use consistent underlying technical principles irrespective of the intended use of a structure (e.g. bridge, building, etc.) and that facilitate the linkage between physical behaviour and design rules</td>
</tr>
<tr>
<td>National regulator</td>
<td>We will endeavour to produce standards that can be referenced or quoted by National Regulations</td>
</tr>
<tr>
<td>Private sectors businesses</td>
<td>We will continue to promote technical harmonization across European markets in order to reduce barriers to trade</td>
</tr>
<tr>
<td>Clients</td>
<td>We will produce Eurocodes that enable the design of safe, serviceable, robust and durable structures, aiming to promoting cost effectiveness throughout their whole life cycle, including design, construction and maintenance</td>
</tr>
<tr>
<td>Other CEN/TCs</td>
<td>We will engage proactively to promote effective collaboration with those other CEN/TCs that have shared interests</td>
</tr>
</tbody>
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## Principles and priorities

### General principles (primary)

1. Improving clarity and understandability of technical provisions of the Eurocodes
2. Improving accessibility to technical provisions and ease of navigation between them
3. Improving consistency within and between the Eurocodes
4. Including state-of-the-art material the use of which is based on commonly accepted results of research and has been validated through sufficient practical experience
5. Considering the second generation of the Eurocodes as an “evolution” avoiding fundamental changes to the approach to design and to the structure of the Eurocodes unless adequately justified

### Specific principles (secondary)

6. Providing clear guidance for all common design cases encountered by typical competent practitioners in the relevant field
7. Omitting or providing only general and basic technical provisions for special cases that will be very rarely encountered by typical competent practitioners in the relevant field
8. Not inhibiting the freedom of experts to work from first principles and providing adequate freedom for innovation
9. Limiting the inclusion of alternative application rules
10. Including simplified methods only where they are of general application, address commonly encountered situations, are technically justified and give more conservative results than the rigorous methods they are intended to simplify
11. Improving consistency with product standards and standards for execution
12. Providing technical provisions that are not excessive sensitive to execution tolerances beyond what can be practically achieved on site
Guidance, management, support, measurement

- Appointment of Technical Reviewer
- Detailed review of deliverables
- Development of TC 250 document N1250 ‘Policy Guidelines and Procedures’
- Provision of examples and advice
Aims for the evolution of Structural Eurocodes

- Enhanced Ease of Use
- Exemplary levels of international consensus
The chairman shall do everything possible to obtain a unanimous decision of the Technical Committee. If unanimity on a subject is not obtainable, the chairman shall try to seek consensus rather than rely simply on a majority decision.

CEN Internal Regulations - Responsibility of the Chairman of a CEN TC
Achieving exemplary levels of international consensus

**Issue / disagreement identified**

Different perspectives fully understood (including underlying concerns)

Points of agreement noted and then disagreement isolated

Options set out (and refined)

Decision taken based on options
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Mandate M/515 and CEN/TC 250 programmatic response
Mandate M/515 and CEN/TC 250 programmatic response

- Mandate M515 Work Programme
- Eurocode Systematic Review Comments
- Evolution of Eurocodes
Mandate M/515 and CEN/TC 250 programmatic response

EN 1990  
EN 1991  
EN 1992  
EN 1993  
EN 1994  
EN 1995  
EN 1996  
EN 1997  
EN 1998  
EN 1999  
Glass  
FPC (FRP)  
Membrane

Robustness, Assessment, Climate Change

Ease of use
Mandate M/515 and CEN/TC 250 programmatic response

First generation
- 1975: Eurocodes started
- 1990: ENVs started
- 1992: Publication of ENVs
- 1998: Conversion of ENV to EN
- 2007: Publication 1st generation of the Eurocodes

Preparatory work on second generation
- 2010: Response to Programming Mandate
- 2011: Specific Mandate
- 2012: Specific Mandate
- 2013: Response to Specific Mandate

Work on the second generation
- 2015: Start PT Phase 1
- 2017: Start PT Phase 2
- 2018: Start PT Phases 3 & 4
- 2020: End PT Phase 1
- 2020: First standards made available to NSBs
- 2021: End PT Phase 2
- 2024: End PT Phases 3 & 4
- 2026: Last standards made available to NSBs
- 2028: Latest date of withdrawal of 1st Gen Standards

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Mandate M/515 and CEN/TC 250 programmatic response

- Start PT work
- 1st draft
- 2nd draft
- 3rd draft
- Production of final deliverable, end of PT work
- Opportunity to start working on NAs
- Standard made available by CEN to NSBs
- Date of withdrawal

Legend:
- Project Team work
- SC/WG work
- CEN work
- Work at national level

- Potential input from other PTs in the same phase or in other phases of the work programme
National Implementation

Definitions

- Date of availability (DAV): Date when the definitive text in the official language versions of an approved CEN/CENELEC publication is distributed by the Central Secretariat

- Date of withdrawal (DoW): Latest date by which national standards conflicting with an EN have to be withdrawn
National Implementation

- **Oct 2021**: Expected first FV for 2nd generation EN Eurocode
- **March 2022**: Expected first DAV for 2nd generation EN Eurocode
- **Oct 2025**: Confirm final FV for 2nd generation EN Eurocode
- **March 2026**: Confirm final DAV for 2nd generation EN Eurocode
- **Sept 2027**: DoP for all 2nd generation EN Eurocode
- **March 2028**: DoW for all 2nd generation EN Eurocode

CEN members can determine national strategy for publication and implementation, provided these are done within overall timeframe established by fixed DoP and DoW.

- **Date before which NSBs must withdraw Gen 1 Eurocodes**
- **Date before which NSBs must publish Gen 2 Eurocodes**
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023-05-24</td>
<td>09:00</td>
<td>Registration</td>
<td>Berlin</td>
<td>Welcome and introduction</td>
</tr>
<tr>
<td>2023-05-24</td>
<td>09:30</td>
<td>Plenary Session 1</td>
<td>Berlin</td>
<td>Keynote speech</td>
</tr>
<tr>
<td>2023-05-24</td>
<td>10:30</td>
<td>Session 1: Eurocode Basics</td>
<td>Berlin</td>
<td>Overview of Eurocodes</td>
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<tr>
<td>2023-05-24</td>
<td>12:00</td>
<td>Lunch Break</td>
<td>Berlin</td>
<td></td>
</tr>
<tr>
<td>2023-05-24</td>
<td>14:00</td>
<td>Session 2: Design of Structures</td>
<td>Berlin</td>
<td>Case studies of building designs</td>
</tr>
<tr>
<td>2023-05-24</td>
<td>16:00</td>
<td>Networking Event</td>
<td>Berlin</td>
<td>Networking opportunities</td>
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<tr>
<td>2023-05-24</td>
<td>18:00</td>
<td>Conference Dinner</td>
<td>Berlin</td>
<td>Formal dinner</td>
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<tr>
<td>2023-05-25</td>
<td>09:00</td>
<td>Session 3: Advanced Topics</td>
<td>Berlin</td>
<td>Specialized sessions on Eurocodes</td>
</tr>
<tr>
<td>2023-05-25</td>
<td>12:00</td>
<td>Lunch Break</td>
<td>Berlin</td>
<td></td>
</tr>
<tr>
<td>2023-05-25</td>
<td>14:00</td>
<td>Session 4: Post-conference Panel</td>
<td>Berlin</td>
<td>Final reflections and Q&amp;A</td>
</tr>
<tr>
<td>2023-05-25</td>
<td>16:00</td>
<td>Conference Closing</td>
<td>Berlin</td>
<td>Closing remarks and adjournment</td>
</tr>
</tbody>
</table>
Latest status

Number of ENs and TSs to be processed by the NSBs for ENQ and FV

ENQ  FV

Today