

Zukunft Bau (Future Building)

SHORT REPORT

Title

Improving Eurocodes through pre-normative research – Phase 2: Design phase for quality assurance and quality control of the Eurocode drafts

Reason / Initial Situation

The large amount, the confusion and the complexity of the current Eurocodes increase the risk for design engineers to make mistakes much easier than in the past. Many regulations are misleading. Even experienced "Eurocode users" need significant more working time than using previous standards. This leads to high extra costs. The project helps to improve the design rules of the construction sector in the new Eurocodes.

Theme of the research project

The research project is a part of a longer-term major project in order to improve the Eurocodes, which will be the relevant design rules for civil engineering in the future. The present project contains the second of a total of four phases, which are subdivided as follows. The four phases have been adapted to the official timetable of the CEN with regard to the dates of the Eurocodes according to mandate M/515 of the European Commission, which in the meantime has been extended for several years:

Phase 1 (pre-normative phase – 2012 to 2015):

Development of own proposals for the next generation of Eurocodes within the pre-normative research process – ambition achieved: beginning of 2015

Phase 2 (drafting phase – 2013 to 2021):

Introduction of the proposals into the European discussions and examination of the other countries' proposals (in the context of the so-called "systematic review" of the Eurocodes, i.e. the regular five-year review of these existing standards); consideration of the alternatives (eventually based on comparative calculations on pilot projects, etc.)

Phase 3 (objection phase – 2021 to 2023):

Examination of the (official) drafts of the next Eurocode generation, which are given in the European enquiry ("CEN enquiry") – ambition: draw up well-founded statements – eventually on the basis of comparative calculations on pilot projects.

Phase 4 (introduction phase – 2023 to 2025):

Preparation of the National Annexes based on the published next generation of Eurocodes – preferably in common with Austria and Switzerland ("D-A-CH annex"); the 4th phase will be less complex leading to more possibility of working successfully in the 2nd and 3rd phase.

In the first phase of the project, within the pre-normative research process the Eurocodes were analysed by the "Initiative Practice-oriented Rules in Building Construction – PRB" in three steps ("anamnesis", "diagnosis" and "therapy"). Based on this analysis, proposals were made to improve verification concepts and structures. As a result of this three-step process, improved structures and texts for the Eurocodes have been developed as a "therapy".

In the second phase ("drafting phase"), the proposals developed by the PRB have been included in the revision of the Eurocodes under mandate M/515 of the European Commission. Comments have been made on fundamental changes in the preliminary drafts of the revised Eurocodes of the Project Teams in order to be able to counteract possible developments that are not compatible to the "Ease of Use".

Subject were selected parts of the Eurocodes EN 1990, EN 1991, EN 1992, EN 1993, EN 1994, EN 1995, EN 1996 and EN 1997 and some related interface documents, e.g. EN 206, EN 13670, EN 1090.

Conclusion

As a result, the scientific basis has been developed for compromise proposals and necessary additions based on analyses in the previous fields. This work was flanked by an interaction in the context of standardization work, which, however, did not form the focus of this research project.

The purpose is, that German engineering firms and German construction companies can benefit from the use of the Eurocodes, because they are formulated more practicable and – in contrast to the current version – correspond better to interface documents (e.g. European harmonized construction product standards).

Project data

Short title:	Improving Eurocodes Phase 2
Researches:	Dr.-Ing. Lars Meyer Prof. Dr.-Ing. Frank Fingerloos Dr.-Ing. Enrico Schwabach Dr.-Ing. Alexander Lindorf Dipl.-Ing. Anett Ignatiadis Dr.-Ing. Udo Wiens Dr.-Ing. Ines Prokop Dipl.-Ing. Christian Klein Dr.-Ing. Eric Brehm Dipl.-Ing. Manfred Tiedeman Dipl.-Ing. (FH) Johannes Niedermeyer Dipl.-Ing. Anke Blume Prof. Dr.-Ing. Carl-Alexander Graubner Dr.-Ing. Bernd Schuppener Prof. Dr.-Ing. Martin Ziegler Dipl.-Ing. Volker Hüller Dipl.-Ing. Gregor Machura Prof. Dr.-Ing. Wolfram Jäger Dr. Ronald Rast Dr.-Ing. Thorsten Faust
Project management:	Deutscher Beton- und Bautechnik-Verein E.V. 10785 Berlin, Kurfürstenstraße 129
Total costs:	800.020 €
Part of Federal grant:	400.000 €
Project term:	06/2015 – 12/2017