

# Current status and further development of eurocodes in the Western Balkans Region

## Eurocodes in Croatia

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# Croatian Standards Institute (HZN)

## 2005-07-01

### National Standards Body – public institution

- Law on Standardization (NN 80/2013)
- Decree of the Government of the Republic of Croatia on the establishment of the Croatian Standards Institute (NN 154/2004; NN 44/2005; NN 30/2010; NN 34/2012; NN 79/2012)
- 2010-01-01 became full member of CEN&CENELEC

# Adoption and Implementation of the Eurocodes – Croatian approach (1)

## *Agreement on Cooperation in the Process of Adoption of the Eurocodes as Croatian Standards*

signed on 2007-09-05 by

**Ministry of Construction and Physical Planning,  
Croatian Chamber of Civil Engineers  
and Croatian Standards Institute**

# Adoption and Implementation of the Eurocodes – Croatian approach (2)

Agreement on Cooperation in the Process of Adoption of the Eurocodes as Croatian Standards



Work Plan on Adoption of the Eurocodes as Croatian Standards for the Period 2008 – 2010



annual bilateral contracts

# Work Plan on Adoption of the Eurocodes (1)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
9 godina		2007							2008									
10 mjesec			sij	velj	ožu	tra	svi	lip	srp	kol	ruj	lis	stu	pro	sij	velj	ožu	tra
11 proj. mjesec			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
12 početak/kraj projekta		početak																
13 provedba projekta																		
14 upravljanje projektom																		
15 sastanak operativnog povjerenstva (OP)			X															
16 sjednica nadzornog odbora (NO)																		
17 izvještavanje																		
18 završni sastanak																		
19 planiranje za tekuću godinu (OP)																		
20 prihvatanje plana za tekuću godinu (NO)																		
21 ugovaranje za tekuću godinu (HZN-MZOPUG, HZN-RIG)																		
22 praćenje																		
23 Eurokod 0 (EN 1990) Odbor TO548, <i>Konstruktivski eurokodovi; Eurokod 0: Osnove projektiranja</i>																		
24 prijevod (prevedeno: 1990 i 1990/A)																		
25 lektoriranje (HZN)																		
26 recenzija i prihvatanje prijevoda (skupina za prijevod*** + TO)																		
27 utvrđivanje postupaka za određivanje NDP (TO + skupina za NDP)																		
28 provedba postupaka određivanja NDP (eksperti)																		
29 utvrđivanje NDP (TO + skupina za NDP)																		
30 utvrđivanje teksta za javnu raspravu (TO)																		
31 upućivanje na javnu raspravu (TO)																		
32 javna rasprava (HZN)																		
33 obrada i rasprava primjedbi (TO)																		
34 finalizacija teksta (HZN + Sigmund*, Aničić**)																		
35 objava u glasilu HZN (HZN)																		
36 Eurokod 1 (EN 1991) Pododbor TO548/PO 1, <i>Konstruktivski eurokodovi; Eurokod 1: Djelovanja na konstrukcije</i>																		
37 prijevod i lektoriranje (prevoditelji i HZN)																		
38 recenzija i prihvatanje prijevoda (skupina za prijevod*** + PO1)																		

# Work Plan on Adoption of the Eurocodes (2)

- **Work Plan was not realized on time for various reasons:**
  - lack of awareness at the high level
  - insufficient capacity (human resources)
  - reaching consensus on some NDPs
  - time consuming work on new maps for actions on structures and seismic impact
- **finalization was postponed several times**

# HZN/TO 548, *Structural Eurocodes* (1)

- **NMC to CEN/TC 250**
- **established 2006-11-28**
- **chairman: Prof. Ivica Džeba PhD., CEng.**
- **structure based on the structure of CEN/TC 250**
  - **9 SCs**
  - **3 WGs**
- **conditions for organized and planned work on all Eurocodes within one TC provided**
- **decisions:**
  - **ENs to be adopted in original (en) immediately**
  - **adoption to be followed by translation into Croatian**
  - **NAs – to be published as separate documents**

# **HZN/TO 548, *Structural Eurocodes* (2) SCs**

- **PO 1, *Eurocode 1: Actions on structures***
- **PO 2, *Eurocode 2: Design of concrete structures***
- **PO 3, *Eurocode 3: Design of steel structures***
- **PO 4, *Eurocode 4: Design of composite steel and concrete structures***
- **PO 5, *Eurocode 5: Design of timber structures***
- **PO 6, *Eurocode 6: Design of masonry structures***
- **PO 7, *Eurocode 7: Geotechnical design***
- **PO 8, *Eurocode 8: Earthquake resistance design of structures***
- **PO 9, *Eurocode 9: Design of aluminium structures***



# HZN/TO 548, *Structural Eurocodes* (3) WGs

- **RS 1, *Translation***
- **RS 2, *National Annexes***
- **RS 3, *Eurocode 0***  
(not active any more)

# **HZN/TO 548, *Structural Eurocodes* (4)**

## **new SCs (2016-02-08)**

- **PO 10, *EN 1990 Basis of structural design***
- **PO 11, *Structural Glass***

# **Eurocodes – ENs in Croatia (1)**

## **1<sup>st</sup> edition**

- **HRN EN 1990:2008 en**
- **HRN EN 1991:2008 en**
- **HRN EN 1992:2008 en**
- **HRN EN 1993:2008 en**
- **HRN EN 1994:2008 en**
- **HRN EN 1995:2008 en**
- **HRN EN 1996:2008 en**
- **HRN EN 1997:2008 en**
- **HRN EN 1998:2008 en**
- **HRN EN 1999:2008 en**

**(with all relating amendments and corrigenda)**

# **Eurocodes – ENs in Croatia (2)**

## **2<sup>nd</sup> edition**

- **HRN EN 1990:2011 hr**
- **HRN EN 1991:2012 hr**
- **HRN EN 1992:2013 hr**
- **HRN EN 1993:2014 hr**
- **HRN EN 1994:2012 hr**
- **HRN EN 1995:2013 hr**
- **HRN EN 1996:2012 hr**
- **HRN EN 1997:2012 hr**
- **HRN EN 1998:2011 hr**
- **HRN EN 1999:2015 hr**

**(consolidated with published amendments and corrigenda)**

# **Eurocodes – ENs in Croatia (3)**

## **(possible) problems**

- **hr versions – consolidated with published amendments and corrigenda**
- **new amendments and corrigenda published after publication of consolidated versions – "never ending story"**
- **potential to carry out that work on time (translation, consolidation, possible modifications of NAs)**
- **publication of separate documents adopting new As & ACs – not transparent enough?**

# **Eurocodes – ENs in Croatia (4) new documents**

- **publication of new documents continued**
  - **numerous amendments (14)**  
EN 1991 (2), EN 1992 (2), EN 1993 (6),  
EN 1994 (1), EN 1995 (1), EN 1997 (1), EN 1998 (1)
  - **new standards**  
FprEN 1992-4
- **all published amendments translated into Croatian and published as separate documents**

# Eurocodes – NAs in Croatia (1)

- **HRN EN 1990:2011/NA:2011 hr-en**
- **HRN EN 1991:2011/NA:2011 hr-en**
- **HRN EN 1991:2012/NA:2012 hr-en**
- **HRN EN 1992:2013/NA:2013 hr-en**
- **HRN EN 1993:2014/NA:2014 hr-en**
- **HRN EN 1994:2012/NA:2012 hr-en**
- **HRN EN 1995:2013/NA:2013 hr-en**
- **HRN EN 1996:2012/NA:2012 hr-en**
- **HRN EN 1997:2012/NA:2012 hr-en**
- **HRN EN 1998:2011/NA:2011 hr-en**
- **HRN EN 1999:2015/NA:2015 hr-en**

## Eurocodes – NAs in Croatia (2)

- **new maps for actions on structures:**
  - **snow load map (HRN EN 1991-1-3/NA)**
  - **basic wind velocity map (HRN EN 1991-1-4/NA)**
  - **air temperature maps (HRN EN 1991-1-5/NA)**
- **new maps for seismic impact – reference peak ground acceleration:**
  - **reference return period 475 years**
  - **reference return period 95 years**



# Eurocodes – NAs in Croatia (3)

## Proportion of accepted recommended values of NDPs

Eurocode	NDPs accepted [%]
EN 1990	74
EN 1991	94
EN 1992	98
EN 1993	95
EN 1994	78
EN 1995	63
EN 1996	82
EN 1997	48
EN 1998	70
EN 1999	100
Average	~ 80

# **Eurocodes – NAs in Croatia (4)**

## **new documents**

- **publication of NAs continued**
  - **updated/modified NAs (8)**  
EN 1991 (1), EN 1992 (1), EN 1993 (5), EN 1997 (1)
  - **new NAs in preparation**  
nHRN EN 1992-4/NA
- **all published NAs translated into English**

## **Eurocodes – NAs in Croatia (5)**

- **Croatian NDPs are regularly uploaded in JRC EN Eurocodes NDP Database (established by EC)**
- **upload of NDPs made by the National Authority – Ministry of Construction and Physical Planning**

# Eurocodes – Implementation in Croatia

- **implementation achieved by means of technical regulations**
- **technical regulations prepared by the Ministry of Construction and Physical Planning**
- **6 regulations – one for each type of structures (concrete, steel, composite steel and concrete, timber, masonry & aluminium) – withdrawn**
- **Technical regulation for building structures – a single regulation for all types of structures published 2017-03**

# Eurocodes

## new activities

- ***M/515 Mandate for amending existing Eurocodes and extending the scope of structural Eurocodes***
- **active participation of Croatian experts in the development of the new generation of Eurocodes (CEN/TC 250/SCs/WGs)**
  - **regularly participate in some SC meetings (SC 5, SC 7, SC 9, SC 11)**
  - **experts working in WGs (13) (timber structures, aluminium structures, structural glass)**

**Thank you very much for your  
attention!**