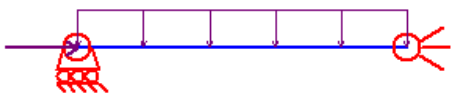


TEST SCHEDULE B 30	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
BUCKLING	COMPRESSION + BENDING 2	EC3.BUC.NN3.003



Program: WEURO © version October 2007 for Sargon and Cescoplus
Keywords: EN 1993, Eurocode 3, example, validation, benchmark, reliability, quality control, error measure. **Parole chiave:** Eurocodice 3, esempio, validazione, test, affidabilità, controllo di qualità, misura dell'errore
Tv=exploitation target value, **Cv**=exploitation computed value
Authors: Ing. Marco Croci, Ing. Paolo Rugarli

BEAM						
Length [mm]	Buckling factors			Left end	Right end	
4000	$\beta_1=0$	$\beta_2=1$	$\beta_3=1$	FREE	FIXED	
LOAD						
Type			Value	Point of application		
COMPRESSION			N=1.000.000N	LEFT END		
Type			Value			
DISTRIBUTED LOAD q_3			q=300N/mm			
MATERIAL						
S235						
f_y [N/mm ²]	f_u [N/mm ²]	E [N/mm ²]	ν	γ_{M0}	γ_{M1}	γ_{M2}
235	360	2,10E+05	0,3	1,1	1,1	1,25
CROSS-SECTION						
HE 300 M		CLASS: N ⁻ →1 M ₂ →1 N ⁻ + M ₂ → 1 (reclasses method****)				
A [mm ²]	J ₂ [mm ⁴]	J ₃ [mm ⁴]	J _t [mm ⁴]	W ₂ [mm ³]	W ₃ [mm ³]	
30308	5,920E+08	1,940E+08	1,408E+07	3,482E+06	1,252e+06	
W _{pl2} [mm ³]	W _{pl3} [mm ³]	i ₂ [mm]	i ₃ [mm]	i _t [mm]		
4,078E+06	1,913E+06	139,8	80	89,49		
h	b	t _w	t _f	r		
340	310	21	39	27		
OTHER DATA*						
		k _{yy}	k _{yz}	k _{zy}	k _{zz}	
Method 1		0,990	/	0,531	/	
Method 2		0,966	/	0,580	/	

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

$$\left. \begin{aligned} Tv_{1,j} &= N / (\chi_2 A f_y / \gamma_{M1}) + k_{yy} M_2 / (\chi_{LT} W_{pl2} f_y / \gamma_{M1}) \\ Tv_{2,j} &= N / (\chi_3 A f_y / \gamma_{M1}) + k_{zy} M_2 / (W_{pl2} f_y / \gamma_{M1}) \end{aligned} \right\} Tv_{method\ j} = \max(Tv_{1,j}, Tv_{2,j})$$

Tv _{method1} **	Tv _{method2} ***
8,423E-01	8,257E-01

CHECKER'S RESULTS (COMPUTED VALUES) AND COMPARISON WITH THE TARGET

Cv _{method1}	(Cv ₁ -Tv ₁)/Tv ₁	Cv _{method2}	(Cv ₂ -Tv ₂)/Tv ₂
8,425E-01	2,913E-04	8,258E-01	8,372E-05

(*) formulae given in EN 1993-1-1 6.3.3, annex A and annex B

(**) more accurated

(***) easier to use

(****) P. Rugarli, *Strutture in acciaio, La classificazione delle sezioni, Commento all'Eurocodice 3*, EPC Libri, 2007

Copyright © 2007 Castalia srl – Milan – Italy – All rights reserved: data may be used but citing the source and informing Castalia srl.

<http://www.castaliaweb.com>
staff@castaliaweb.com