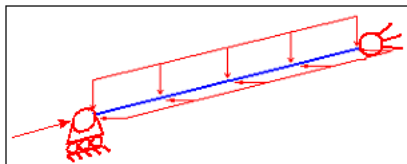


TEST SCHEDULE B 43	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
BUCKLING	COMPRESSION + BENDING 2 + BENDING 3	EC3.BUC.NNQ2Q3.002



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	
1000	$\beta_2=1$	$\beta_3=1$	SIMPLY SUPPORTED		HINGE	
LOAD						
Type		Value		Point of application		
COMPRESSION		N=10.000N		LEFT END		
Type		Value				
DISTRIBUTED LOAD q_2		q=15N/mm				
Type		Value				
DISTRIBUTED LOAD q_3		q=15N/mm				
MATERIAL		S275				
f_y [N/mm ²]	f_u [N/mm ²]	E [N/mm ²]	ν	γ_{M0}	γ_{M1}	γ_{M2}
275	430	2,10E+05	0,3	1,1	1,1	1,25
CROSS SECTION		O 54x3,2 CLASS: N ⁻ →1 M ₂ →1 M ₃ →1 N ⁻ + M ₂ + M ₃ →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]	
510,7	1,654e+05	1,654e+05	3,308e+05	6,126e+03	6,126e+03	
W _{pl2} [mm ³]	W _{pl3} [mm ³]	i ₂ [mm]	i ₃ [mm]	i _t [mm]		
8,269E+03	8,269E+03	18	18	0		
OTHER DATA*						
	k _{yy}	k _{yz}	k _{zy}	k _{zz}		
Method 1	1,006	0,604	0,604	1,006		
Method 2	0,987	0,592	0,592	0,987		

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

$$\begin{aligned}
 Tv_{1,j} &= N / (\chi_2 A f_y / \gamma_{M1}) + k_{yy} M_2 / (W_{pl2} f_y / \gamma_{M1}) + k_{yz} M_3 / (W_{pl3} f_y / \gamma_{M1}) \\
 Tv_{2,j} &= N / (\chi_3 A f_y / \gamma_{M1}) + k_{zy} M_2 / (W_{pl2} f_y / \gamma_{M1}) + k_{zz} M_3 / (W_{pl3} f_y / \gamma_{M1})
 \end{aligned}
 \left. \vphantom{\begin{aligned} Tv_{1,j} \\ Tv_{2,j} \end{aligned}} \right\} Tv_{\text{method } j} = \max(Tv_{1,j}, Tv_{2,j})$$

Tv_{method1}^{**}	$Tv_{\text{method2}}^{***}$
1,550E+00	1,523E+00

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

Cv_{method1}	$(Cv_1 - Tv_1) / Tv_1$	Cv_{method2}	$(Cv_2 - Tv_2) / Tv_2$
1,551E+00	3,700E-04	1,523E+00	2,737E-04

(*) 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

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