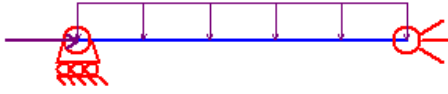


TEST SCHEDULE B 33	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescopius ©
BUCKLING	COMPRESSION + BENDING 3	EC3.BUC.NN2.001



Program: WEURO © version October 2007 for Sargon and Cescopius
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	$\beta_1=0 \quad \beta_2=1 \quad \beta_3=1$	SIMPLY SUPPORTED	HINGE			
LOAD						
Type	Value	Point of application				
COMPRESSION	N=1.000.000N	LEFT END				
Type	Value					
DISTRIBUTED LOAD q_2	q=2.000N/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		HSH 600X828		CLASS: N ⁻ → 1 M ₃ → 1 N ⁻ + 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]	
1,055E+05	6,544e+09	2,737e+09	1,813e+08	2,181e+07	9,124e+06	
W _{pl2} [mm ³]	W _{pl3} [mm ³]	i ₂ [mm]	i ₃ [mm]	i _t [mm]		
2,550e+07	1,379e+07	149	161	173,2		
h	b ₁ =b ₂	t _w	t _{f1} =t _{f2}			
600	600	32	76			
OTHER DATA*						
	k _{yy}	k _{yz}	k _{zy}	k _{zz}		
Method 1	/	0,653	/	0,962		
Method 2	/	0,559	/	0,932		

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

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

Tv _{method1} **	Tv _{method2} ***
1,161E-01	1,138E-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
1,161E-01	-6,223E-05	1,137E-01	-6,855E-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