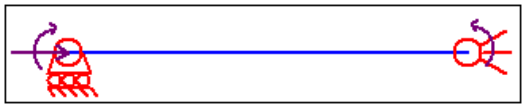
TEST SCHEDULE B 26	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
BUCKLING	COMPRESSION + BENDING 3	EC3.BUC.NNM3.001



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

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BEAM			
Length [mm]	Buckling factors	Left end	Right end
1000	β_1=0 β_2=1 β_3=1	SIMPLY SUPPORTED	HINGE

LOAD		
Type	Value	Point of application
COMPRESSION	N=100.000N	LEFT END
Type	Value	Point of application
BENDING MOMENT M_3	M=1.000.000.000Nmm	LEFT END
BENDING MOMENT M_3	M=-1.000.000.000Nmm	RIGHT END

MATERIAL	S275					
f_y [N/mm^2]	f_u [N/mm^2]	E [N/mm^2]	ν	γ_{M0}	γ_{M1}	γ_{M2}
275→255	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	/	0,677	/	0,996
Method 2	/	0,599	/	0,998

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

$$Tv_{1,j}=N/(\chi_2 A f_y/\gamma_{M1})+k_{yz}M_3/(W_{pl3}f_y/\gamma_{M1})$$

$$Tv_{2,j}=N/(\chi_3 A f_y/\gamma_{M1})+k_{zz}M_3/(W_{pl3}f_y/\gamma_{M1})$$

$$Tv_{method\ j}=\max(Tv_{1,j},Tv_{2,j})$$

$Tv_{method1}$ **	$Tv_{method2}$ ***
3,157E-01	3,163E-01

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

$Cv_{method1}$	$(Cv_1-Tv_1)/Tv_1$	$Cv_{method2}$	$(Cv_2-Tv_2)/Tv_2$
3,156E-01	**-2,984E-04**	3,162E-01	**-3,828E-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

According to table 3.1 when cross section thickness is higher than 40mm yield stress should be decreased. Here a yield stress equal to 255N/mm^2 has been used.