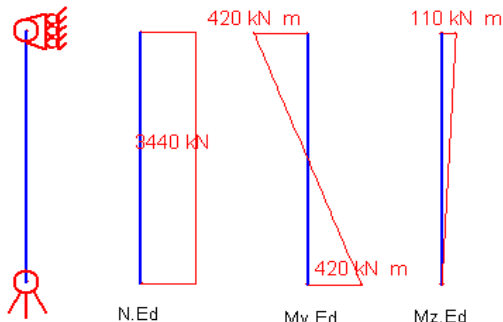


TEST SCHEDULE B 50	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
BUCKLING	COMPRESSION + BENDING 2 + BENDING 3 (with LT)	EC3.BUC.NNM2M3.009



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			Upper end	Lower end	
4200	$\beta_1=1$	$\beta_2=0,7$	$\beta_3=1$	SIMPLY SUPPORTED	HINGE	
LOAD						
Type			Value		Point of application	
COMPRESSION			N=3440kN		UPPER END	
Type			Value		Point of application	
BENDING MOMENT M_2			M=420kNm		UPPER END	
BENDING MOMENT M_2			M=-420kNm		LOWER END	
Type			Value		Point of application	
BENDING MOMENT M_3			M=110kNm		UPPER END	
MATERIAL						
S275		CLASS: $N \rightarrow 1$ $M_2 \rightarrow 1$ $M_3 \rightarrow 1$ $N + M_2 + M_3 \rightarrow 1$ (reclasses method**)				
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	1,0	1,0	1,25
CROSS SECTION		305x305x240 H				
A [mm ²]	J_2 [mm ⁴]	J_3 [mm ⁴]	J_t [mm ⁴]	W_2 [mm ³]	W_3 [mm ³]	
30579E+04	6,420E+08	2,031E+08	1,287E+07	3,643E+06	1,276E+06	
W_{pl2} [mm ³]	W_{pl3} [mm ³]	i_2 [mm]	i_3 [mm]	i_t [mm]		
4,247E+06	1,951E+06	144,90	81,51	91,91		
h	b	t_w	t_f	r		
352.5	318.4	23	37.7	15.2		

TARGET VALUES FROM [1]

k_{yy}	k_{yz}	k_{zy}	k_{zz}	$Tv_{method2}^*$
0,41	0,47	0,79	0,78	9,643E-01

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

k_{yy}	k_{yz}	k_{zy}	k_{zz}	$Cv_{method2}$	$(Cv_2 - Tv_2)/Tv_2$
0,406	0,470	0,795	0,783	9,647E-01	3,829E-04

(*) Target value was re-computed from equation 6.62 of [1] in order to have a more accurated value for comparison.

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

Note: there are some differences in computation of Area and J_T between Sargon and Designers' Guide (i.e. $A_{Sargon}=30579mm^2$, $A_{D.G.}=30600mm^2$; probably the last one was rounded up)

[1] L.Gardner and D.A. Nethercot, *Designer's Guide to EN 1993-1-1*, Thomas Telford Publishing, 2005

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