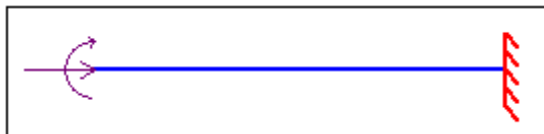


TEST SCHEDULE R 37	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
RESISTANCE	COMPRESSION + BENDING 2	EC3.RES.NNM2.002



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]	Left end	Right end
5000	FREE	FIXED

LOADS		
Type	Value	Point of application
BENDING MOMENT M_2	$M=100.000.000\text{Nmm}$	LEFT END
Type	Value	Point of application
COMPRESSION	$N=850.000\text{N}$	LEFT END

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 240 A	CLASS: N →1 M₂ →1 N + M₂ →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]
7684	7,763E+07	2,769E+07	4,155E+05	6,751E+05	2,307E+05
W_{pl2} [mm ³]	W_{pl3} [mm ³]	i_2 [mm]	i_3 [mm]	i_t [mm]	
7,446E+05	3,517E+05	100,5	60	69,28	
h	b	t_w	t_f	r	
230	240	7,5	12	21	

OTHER DATA				
$a=(A-2bt_f)/A$	N_{pl} [N]	$n=N_{sd}/N_{pl}$	$M_{pl}=W_{pl}^*f_y/\gamma_{M0}$ [Nmm]	$M_N=M_{pl}(1-n)/(1-0,5a)$ [Nmm]
0,250	1,642E+06	0,518	1,591E+08	8,768E+07

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

$T_v = M_2 / M_N$
1,140E+00

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

C_v	$(C_v - T_v) / T_v$
1,140E+00	-4,024E-04

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