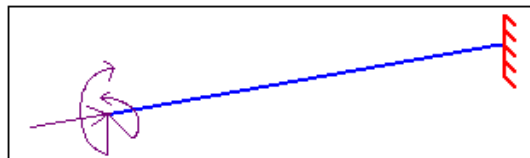


TEST SCHEDULE R 41	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
RESISTANCE	COMPRESSION + BENDING 2 + BENDING 3	EC3.RES.NNM2M3.002



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
1000	FREE	FIXED

LOADS		
Type	Value	Point of application
BENDING MOMENT M_2	$M=15.000.000\text{Nmm}$	LEFT END
Type	Value	Point of application
BENDING MOMENT M_3	$M=8.000.000\text{Nmm}$	LEFT END
Type	Value	Point of application
COMPRESSION	$N=1.000.000\text{N}$	LEFT END

MATERIAL	A441/40					
f_y [N/mm ²]	f_u [N/mm ²]	E [N/mm ²]	ν	γ_{M0}	γ_{M1}	γ_{M2}
276	414	2,000e+05	0,3	1,1	1,1	1,25

CROSS-SECTION	HE 100 M	CLASS: N° →1	$M_2 \rightarrow 1$	$M_3 \rightarrow 1$	$N + M_2 + M_3 \rightarrow 1$ (reclasses metod*)
A [mm ²]	J_2 [mm ⁴]	J_3 [mm ⁴]	J_t [mm ⁴]	W_2 [mm ³]	W_3 [mm ³]
5324	1,143e+07	3,992e+06	6,821e+05	1,904e+05	7,531e+04
W_{pl2} [mm ³]	W_{pl3} [mm ³]	i_2 [mm]	i_3 [mm]	i_t [mm]	
2,358e+05	1,163e+05	46,3	27,4	30,6	
h	b	t_w	t_f	r	
120	106	12	20	12	

OTHER DATA				
$a=(A-2bt_f)/A$	$N_{pl}=Af_y/\gamma_{M0}$ [N]	$M_{pl2}=W_{pl2}f_y/\gamma_{M0}$ [Nmm]	$M_{pl3}=W_{pl3}f_y/\gamma_{M0}$ [Nmm]	$n=N/N_{pl}$
0,204	1.335.840	59.166.873	29.183.236	0,75
α	$\beta=5n$	$M_{N2}=M_{pl2}(1-n)/(1-0,5a)$ [Nmm]	$M_{N3}=M_{pl3}[1-((n-a)/(1-a))^2]$ [Nmm]	
2	3,74	16.560.943	15.516.996	

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

$$Tv=(M_2/M_{N2})^\alpha+(M_3/M_{N3})^\beta$$

Tv
9,041E-01

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

Cv	(Cv-Tv)/Tv
9,041E-01	-4,860E-05

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