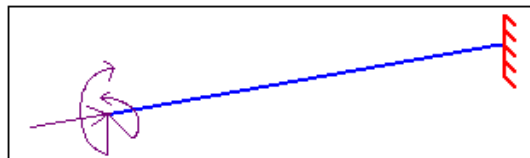


TEST SCHEDULE R 43	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
RESISTANCE	COMPRESSION + BENDING 2 + BENDING 3	EC3.RES.NNM2M3.004



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=2.000.000Nmm		LEFT END		
Type		Value		Point of application		
BENDING MOMENT M ₃		M=1.500.000Nmm		LEFT END		
Type		Value		Point of application		
COMPRESSION		N=120.000N		LEFT END		
MATERIAL		A572/60				
f _y [N/mm ²]	f _u [N/mm ²]	E [N/mm ²]	ν	γ _{M0}	γ _{M1}	γ _{M2}
414	517	2,000e+05	0,3	1,1	1,1	1,25
CROSS SECTION						
O 54x3,2		CLASS: N ⁻ →1 M ₂ →1 M ₃ →1 N ⁻ + M ₂ + M ₃ →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]	
510,7	1,654e+05	1,654e+05	3,308e+05	6,126e+03	6,126e+03	
W _{pl2} [mm ³]	W _{pl3} [mm ³]	i ₂ [mm]	i ₃ [mm]	i _t [mm]		
8,269E+03	8,269E+03	18	18	0		
OTHER DATA						
N _{pl} =Af _y /γ _{M0} [N]	M _{pl2,3} =W _{pl2,3} f _y /γ _{M0} [Nmm]		M _s =√(M ₂ ² +M ₃ ²) **		η=√(1-(T/V _{pl}) ²) **	
192.209	3.112.140		2.500.000		1	

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

$$T_v = \frac{M_s}{M_{pl} \eta \cos\left(\frac{N}{\eta N_{pl}} \frac{\pi}{2}\right)} \quad **$$

Tv
1,444E+00

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

Cv	(Cv-Tv)/Tv
1,444E+00	2,718E-04

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

(**) formulae given in J. Rondal, K.-G. Wurker, D.Dutta, J. Wardenier, N. Yeomans, *Structural stability of hollow sections*, Verlag TUV Rheinland, 1992