Static examination

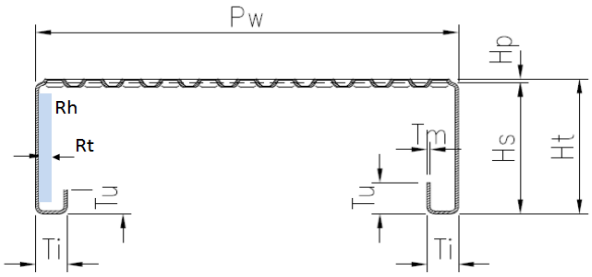
Data sheet

Date: 24/07/2019
Doc. No.: B-Cube
Project: Stock Panels

Subject: **PcP. ´B-Cube´ Gratings**
Dimensions: **type Cube W:500 x H:40 x Ti:15 x t:2 mm**
Comments: **Loading Calculation**

Standards and norms

EN 1990	Design
EN 1991	Loads / Actions
EN 1993	Steel constructions
EN 1999	Aluminium constructions
EN 14122	Safe access to machinery



Material	*Mechanical properties*					
Grade:	St 240 YP			Tensile stress:	440	MPa (min)
Yield stress:	240	MPa (min)		Youngs module:	210000	MPa
				Poisson's ratio:	0.3	

Section properties	*Qk affected*		*qk affected*	
Center of gravity, Ty:	25.70	mm	26.00	mm
Moment of inertia, Ix:	1.520E+05	mm4	2.220E+05	mm4
Moment of resistance, Wx:	5.913E+03	mm3	8.542E+03	mm3

Load requirements				
Standard/Norm:	Industry - EN14122			
Concentrated load, Qk:	1.5	kN	on 200 x 200 mm	
Uniform load, qk:	5.0	kN/m2		

Max. allowable elastic deflection, Umax:	1 over 200 of the free span

Safety	
Partial coefficient, live loads, yf:	1.60
Partial coefficient, material, ym:	1.00
Partial coefficient, self weight, yg:	1.00

Free span:	**1500** mm
Support form:	*Simple supported*

Calculation methods

UDL: $M = \frac{1}{8} * ((Qk + Sw) * \gamma f * \gamma m) * A * Lcc$

$U = \frac{5}{384} * \frac{(qk + Sw) * A * Lcc^{3}}{(E * I)}$

CL: $M = \frac{1}{4} * (Qk * \gamma f * \gamma m) * (Lcc - \frac{c}{2})$

$U = \frac{1}{384} * \frac{Qk * (8 * Lcc^{3} - 4 * Lcc * c^{2} - c^{3})}{(E * I)}$

Results					
Load case #1: Max. moment M_cl:	8.40E+05	N/mm2	59%	=>	**OK!**
Load case #1: Max. deflection U_cl:	3.27	mm	44%	=>	**OK!**
Load case #2: Max. moment M_udl:	1.45E+06	N/mm2	71%	=>	**OK!**
Load case #2: Max. deflection U_udl:	7.29	mm	97%	=>	**OK!**

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