

Type approval of safety nets for protection against rockfall

Test Certificate No. S 04-8

System designationAddress of designer		ROCCO RXI-100 GEOBRUGG Fatzer AG Schutzsysteme, Hofstrasse 55, 8590 Romanshorn				
						System description
 Energy class 		1000 kJ				
– Posts:	profile	HEB 160				
	length a _l	4.24 m				
	interval a _s	10 m				
 Support ropes: 	type	6 x 36 W-Seale + SE, DIN 3	064			
	diameter	20 mm				
– Net:	type	ROCCO ring net 12 windings				
	diameter	Ring diameter 350 mm, wire diameter 3 mm				
	mesh	-				
	height h_v	4.18m				
- System drawing	S					
Description			No.	C	Date	
System handbook RXI-100			106-N-FO	/ 01 /	19.10.04	
Maintenance handbook RXI-100			108-N-FO		19.10.04	
Fechnical documenta	ation RXI-100		07/2004	4	22.07.04	
Basic documer	ntation					
Field test						
WSL test report				Report no. 04-8		
WSL test report		Date 30 September 2004		Report n		
WSL test report Overall assessme	ent	Date 30 September 2004		Report in		
•		Date 30 September 2004 Date 29 November 2004		Report n		
Overall assessme						
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 Preliminary energy test (50%) 	500 kJ
 Penetration of test body 	yes 🗌 / no 🔀
 Braking time t_s 	0.26 s
 Braking distance b_s 	4.20 m
 Sum of the tensile forces in the 3 upper cables 	325 kN
 Sum of the tensile forces in the 2 lower cables 	198 kN
 Maximum of the tensile forces in a stay cable 	96 kN
 List of damaged elements 	

List of damaged elements

No damage to load-bearing parts of the structure. 13 out of 16 braking components were deformed.

- Assessment of repairs

Six braking components were replaced. This work took 5.5 man-hours.

Main energy test (100%)	1000 kJ	
 Penetration of test body 	yes 🗌 / no 🖂	
 Braking time t_s 	0.30 s	
– Maximum permissible braking distance b _s	8.0 m	
 Measured braking distance b_s 	4.60 m	
– Minimum permissible residual braking height h _n	2.0 m	
 Measured residual braking height h_n 	2.64 m	
 Sum of the tensile forces in the 3 upper cables 	350 kN	
 Sum of the tensile forces in the 2 lower cables 	220 kN	
 Maximum of the tensile forces in a stay cable 	135 kN	

- List of damaged elements

No damage to load-bearing parts of the structure. All 16 braking components were deformed.

Assessment of special criteria

- Comments on assembly and on the assembly instructions

No particular difficulties were encountered with assembly.

- Comments on adaptability to the terrain

Adaptability to the terrain is normal.

- Comments on design complexity

The documentation enables safe, simple assembly.

- Comments on anticipated life cycle

The parts of the installation are supplied with corrosion resistance corresponding to the service life requirements. The net has an aluminium-zinc coating (150 g/m2).

The anticipated service life is ascertained to be adequate.



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Overall assessment

Test passed

Test passed with reservations

Examined based on the following guidelines: GERBER, W. 2001: Guideline for the approval of rockfall protection kits. Environment in practice. Swiss Agency for the Environment, Forests and Landscape (SAEFL), Swiss Federal Research Institute WSL. Berne, 39 pages. Revised June 2006.

RESERVATION: Should deficiencies arise following certification of the safety net, FOEN may revoke product release and delete it from the type approval list.

Date

Name, position

Signatures



Andreas Götz, Vice Director



Replaces the Certificate No. S 04-8 of 16 December 2004

Federal Office for the Environment FOEN Risk Prevention Division 3003 BERN http:// www.umwelt-schweiz.ch/typenpruefung