DESIGN OF A FLEXIBLE ROCKFALL BARRIER USING EXPLICIT DYNAMIC MODELS IN FEM SOFTWARE

Speaker
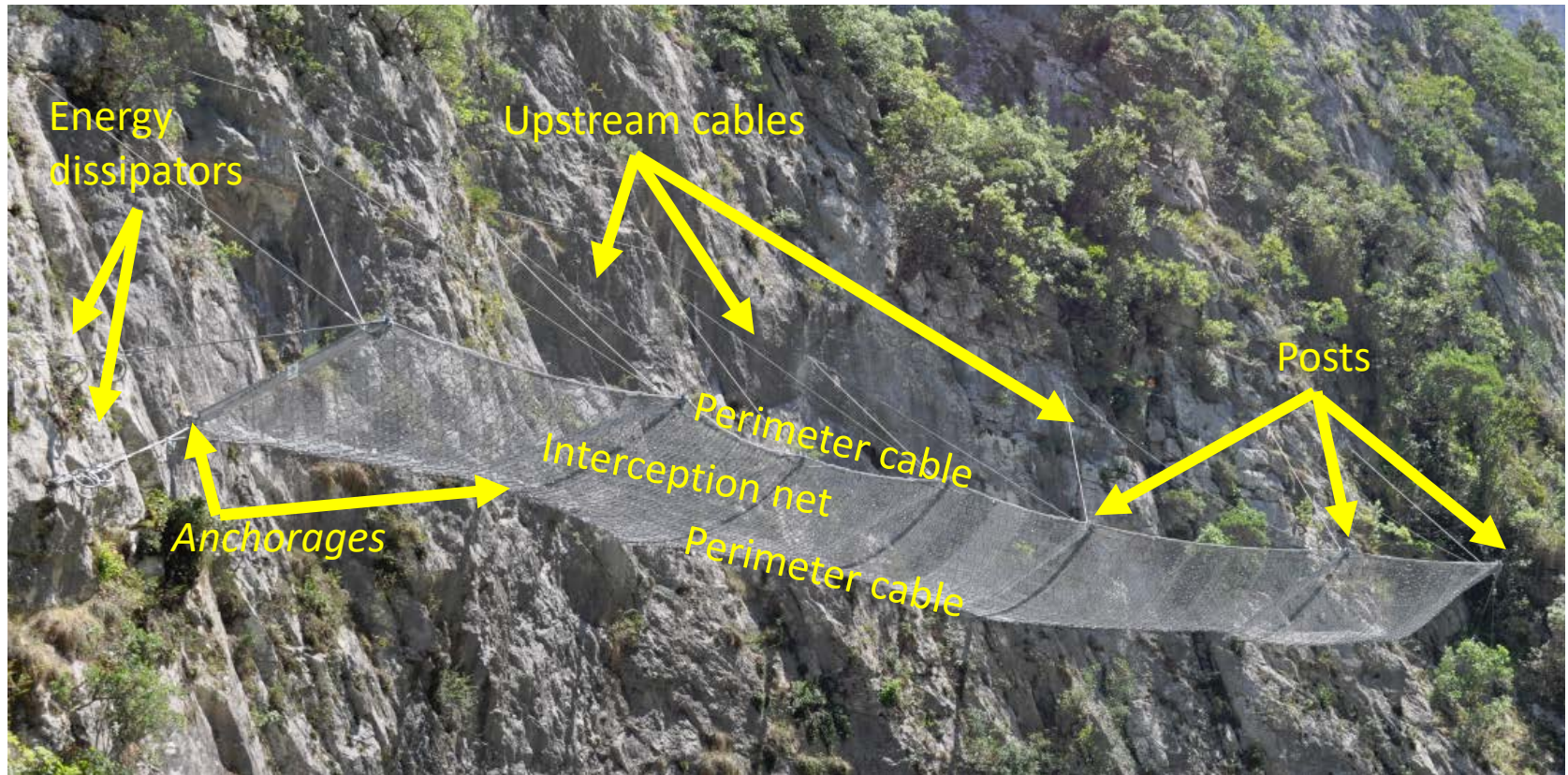
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Directors

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# INTRODUCTION

- What is a flexible barrier?

INTRODUCTION

- Inchalam Bekaert wants to include flexible barriers in its range of products.

- Complexity of the problem
    - High number of elements moving and interacting among them at the same time.
    - Experimental tests imply high costs of material and labour and a big place to carry them out.

- Solution
    - Finite Element Software /Discrete Element Software

RESULTS

- Full-barrier tests were successfully simulated using Ansys Workbench LS-DYNA

- Starting point for development of a new barrier, changing wire net, upstream or lateral cables or brakes performance
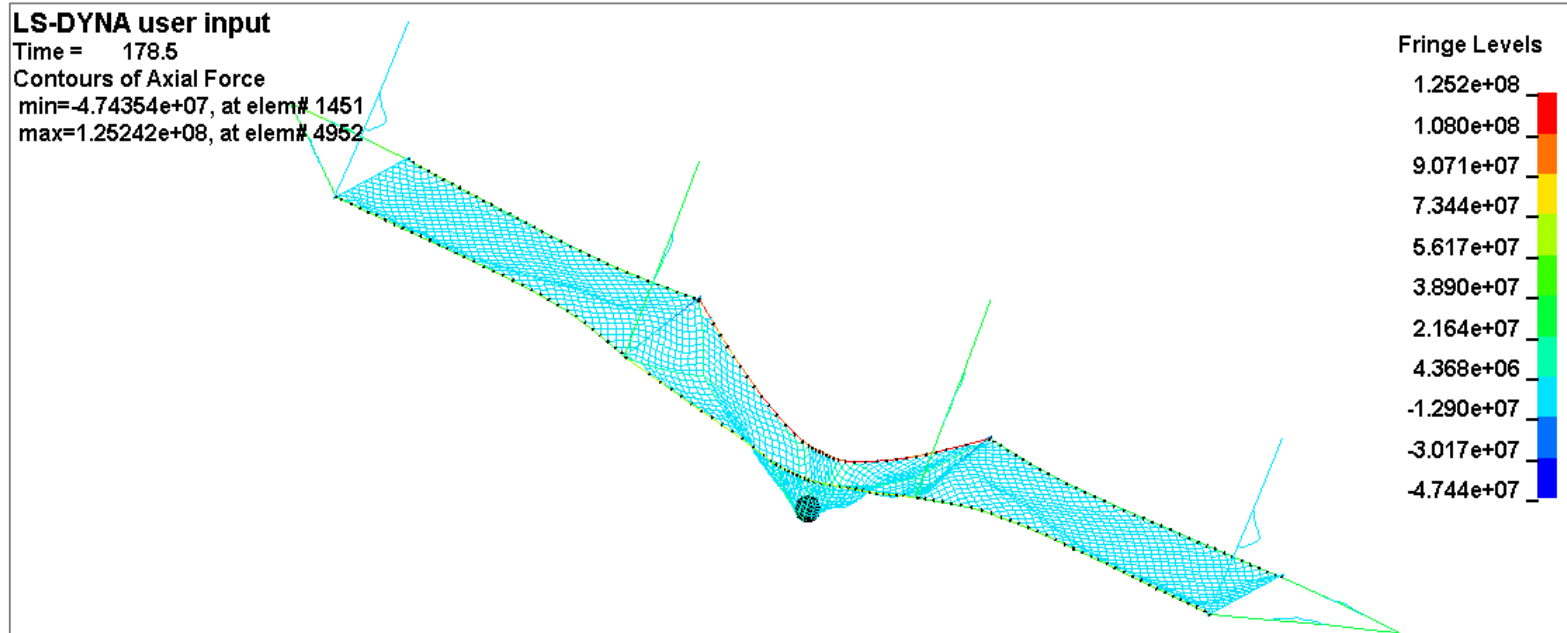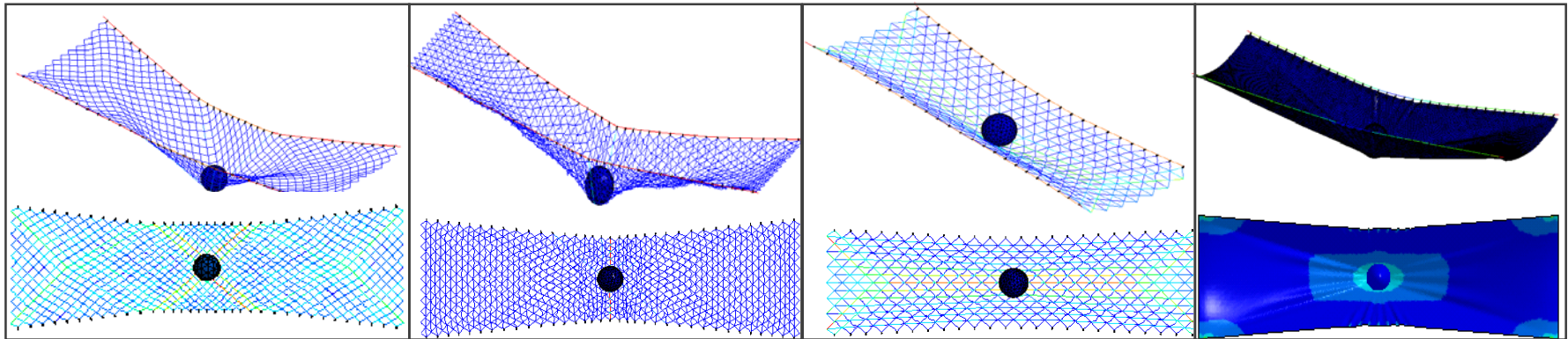
RESULTS

- Performance analysis of the nets: square net, triangle net (two different orientations) and a wire mesh MT15000.

- Focused on the study of the area of the rock impact.
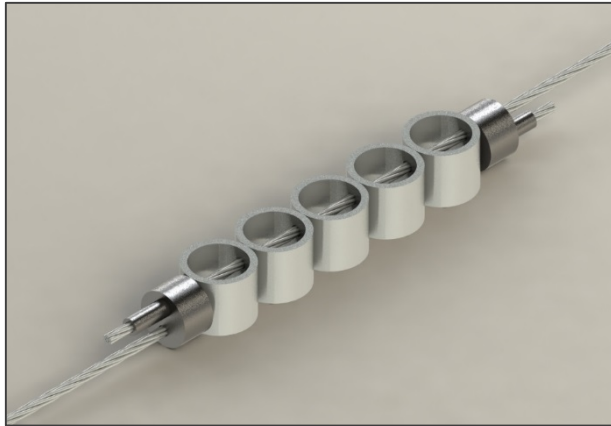
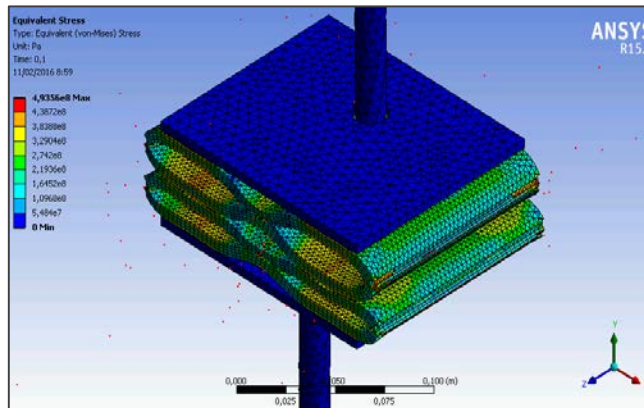| Square net	Triangle net O1	Triangle net O2	MT15000

- ❖ Percentage of energy in cable nets
- ❖ Percentage of energy in the perimeter ropes
- ❖ Critical element

RESULTS

1. Design of the brake

2. Numerical simulation

3. Dynamic tests in small prototypes

Before

After

TRAINING COURSES

- Patents: all that researchers should know. 9-11 March 2016. 9 h. PFPU.

- Statistics for research in construction engineering. 18-22 January 2016. 20 h. GITECO.

- EDUC Advanced course on the future career of the PhD student. 16-27 November 2015. 40 h. EDUC

- EDUC Basic course training. 24Nov-15Dec 2014. 40 hours. EDUC

PUBLICATIONS

- Energy dissipating devices in falling rock protection barriers: a review. Rock Mechanics & Rock Engineering (Q1). In revision.

CONFERENCES

- Future attendance to the conference "Rock Slope Stability 2016". 15th-17th November 2016 in Lyon (France)

PATENTS

- Energy dissipating device for flexible rockfall barriers. In process.

THANK YOU FOR YOUR ATTENTION