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# On energy dissipation and rockfall protection.

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Experiences from nature show us that large rock can stop abrupt on softer ground. The idea that this also can be achieved with a rockfall catching dam construction is investigated. Small scale laboratory tests have been performed to study the behavior and the energy dissipation of a cylinder shaped rock rolling into a ditch with granular material in front of a steep gabion wall.

The results show that a large amount of the rocks total kinetic energy dissipates when the rock hits the ditch and the gabion wall. The energy dissipation increases with steeper slope in front of the ditch. The tests show a total energy loss between 70% - 90% after hitting both the ditch and the gabion wall.

The experiments are in agreement with the theory indicating low reflection angles due to a low restitution coefficient of the material in the ditch and on the dam side. The experiments show low reflection angles in the pit, giving low impact heights on the wall. The rebound on the gabion wall also gives low reflection angles and a movement up along the gabion wall side. On gentler dam slopes less of the rotational energy is lost, causing higher jumps of the cylinder.

The small scale tests indicate that rock falls can be effectively stopped, combining energy dissipation material in front of a catching dam with a steep front.