

Project Title: Development of a prototype of wedge shaped block and the methodology for use as protection against erosion in dams or loose materials ponds.

Acronim: ACUÑA

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Coordinator: PREHORQUI, S.A.

Partners: U.P.M., CIMNE, ALATEC.

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The increasing demand for safety in modern societies has resulted in the drafting of new regulations and technical manuals to protect critical infrastructures in several countries around the world, such as dams. As a result, it will be necessary in the forthcoming years to act on plenty of existing dams or irrigation ponds, some of them still underway, all over the world. So there is a need of cost-effective measures.

Although different protection techniques for embankment dams have already been successfully applied all over the world, some of them have not yet been properly tested and the technology is still in progress. It is the case of wedge-shaped blocks protections (WSB) technology, that with the help of a additional researches series to improve current design criteria could be integrated to the possibilities that the engineer must consider when designing the earth dam spillway.

The technology for design and construction of a WSB spillway has a long history and has proven its practical reliability, but had a slow development through decades. The final objectives of ACUÑA research project are to complete the body of knowledge needed to dissipate the theoretical uncertainties and improve on the design of the WSB, developing and validating a methodology for the design, analysis, construction and exploitation of stepped spillways lined with WSB for the placement on the downstream shoulder of embankment dams or irrigation ponds.

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Physical and numerical models of spillway with wedge-shaped blocks.