## عنوان مقاله:

A Study of the Conditions of Energy Dissipation in Stepped Spillways with -shaped step Using FLOW-3D

## محل انتشار:

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## خلاصه مقاله:

In the present study, energy dissipation was investigated in a specific type of stepped spillways. The purpose was to achievethe highest level of energy dissipation in downstream of the spillway. It was performed by providing a specific type ofgeometry for step as a great roughness. Here, steps were recognized as great roughness against flow. Their shape andnumber were designed in such a way that the maximum flow energy can be minimized in this stage, i.e. over steps beforereaching to downstream. Accordingly, it can be stated that the highest energy dissipation rate will be obtained in thestructure at downstream. Moreover, thereby, heavy costs imposed by designing and constructing stilling basin on projectcan be minimized. In this study, FLOW-3D was employed to analyse and obtain energy dissipation rate. The best geometryof the steps, through which the maximum energy dissipation can be achieved, was determined by reviewing relatedliterature and inventing the proposed model in FLOW-3D. To evaluate the proposed method, analyses were performedusing trial and error in mesh networks sizes as well as the mentioned methods and the results were compared to otherstudies. In other words, the most optimal state was obtained with -shaped step at angel of 25 degree with respect to energydissipation rate compare to smooth step.

## کلمات کلیدی:

Stepped Spillway; Energy Dissipation; FLOW-3D; -Shaped Step; Staircase Geometry