

## Surveying Energy Dissipation in Stepped Spillway Using Finite Element Modeling

**Authors :** Mehdi Fuladipناه

**Abstract :** Stepped spillway includes several steps from the crest to the toe. The steps of stepped spillway could cause to decrease the energy with making energy distribution in the longitude mode and also to reduce the outcome speed. The aim of this study was to stimulate the stepped spillway combined with stilling basin-step using Fluent model and the turbulent superficial flow using RNG, K- $\epsilon$ . The free surface of the flow was monitored by VOF model. The velocity and the depth of the flow were measured by tail water depth by the numerical model and then the dissipated energy was calculated along the spillway. The results indicated that the stilling basin-step complex may cause energy dissipation increment in the stepped spillway. Also, the numerical model was suggested as an effective method to predict the circular and complicated flows in the stepped spillways.

**Keywords :** stepped spillway, fluent model, VOF model, K- $\epsilon$  model, energy distribution

**Conference Title :** ICSE 2015 : International Conference on Structural Engineering

**Conference Location :** Singapore, Singapore

**Conference Dates :** July 04-05, 2015