Air Entrainment in Skimming Flow on Stepped Spillways: the Effect of an Abrupt Slope Change

M.J. Ostad Mirza

Benjamin Dewals

M. Pfister

Sébastien Erpicum

A.J. Schleiss

Pierre Archambeau

J. Matos

Michel Pirotton

Abstract

Numerous stepped spillways were built during the last decades. In particular, a stepped spillway may be integrated economically into the downstream face of a RCC gravity dam, or on valley flanks besides embankment or rockfill dams, where slope changes may naturally be implemented due to topography and economic reasons. This paper presents and discusses preliminary results on the air entrainment in the vicinity of an abrupt change chute slope, namely the air concentration distribution and the mean air concentration. A significant influence was observed on the air entrainment pattern, with a decrease of the mean air concentration immediately upstream of the slope change, followed by a marked increase immediately downstream, and a subsequent decrease further down the flatter chute, approaching a practically constant value. Considerable larger air entrainment was observed shortly downstream of the slope change cross-section, in comparison with that found upstream, in the quasi-uniform flow.

Pour citer cet article

M.J. Ostad Mirza, M. Pfister, A.J. Schleiss & J. Matos, «Air Entrainment in Skimming Flow on Stepped Spillways: the Effect of an Abrupt Slope Change», *5th IAHR International Junior Researcher and Engineer Workshop on Hydraulic Structures* [En ligne], URL : https://popups.uliege.be:443/IJREWHS2014/index.php?id=96.