

"Free-Surface Vortex Formation in the Pump Sumps of Vertical Suction Pipes"¹

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Abstract

The formation of free-surface vortex in pump sumps permits air to be drawn into the pump, and that causes reduction in the head, in discharge and in pump performance.

This paper presents an experimental study conducted on a variety of pump sump models in the hydraulics laboratory - Faculty of Civil Engineering - Damascus University. The effect of parameters (Dimensions, Submergence and discharge) on Free-Surface vortex formation where investigated in the pump sumps of vertical suction pipes. It was found that the strength of vortex ξ is related to Froud Number Fr_H , back-wall clearance l/D and the bottom clearance z/D .

¹ For the paper in Arabic see pages (167 -204).

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