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Experimental Study of Block Geometry on Aeration and Energy Dissipation at Baffled Chutes

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In the present study, tests were performed on the chute with five different geometric shapes of baffles and at four different distances of baffles rows under different hydraulic conditions. The results showed that the baffles on the chute creates the flow resistance and with increasing turbulence causes the transfer of the inception point to the upstream of the chute and increases the rate of energy dissipation compare to the chute without baffles. Baffle chutes increased the aeration length by 5.8 times and increases the energy dissipation rate by 21 to 61 percent compared to the chute without baffles. In all models, the rate of energy dissipation in low discharges is higher and with increasing discharge, the energy dissipation decreases. By increasing the spaces between the baffles on the chute, the energy dissipation rate decreased in all models. In the M2 model as the superior model, increasing the spaces between the baffle reduces by 3.1% and 4.57% in the energy dissipation rate, respectively. The effect of longitudinal spaces between the baffles on the aeration and the energy dissipation rate is greater than its transverse spaces.

Keywords: Baffled Chutes, Energy Dissipation, Inception point, Spaces between the baffles, Physical model.

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