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Granular flow and clog in silo with moving outlet KIWING TO, HSIANG-TING TAI, Institute of Physics, Academia Sinica, 128 Sec. 2 Academia Road, Nankang, Taipei, Taiwan — When grains flow out of a silo, the flow rate increases with the outlet size d . If d is too small, an arch may form and blocks the flow at the outlet. To recover from clogging, the arch have to be destroyed. Oscillating the outlet mechanically is one simple way of destroying the arch. In this paper, we report the effect of oscillating the outlet on the processes of clogging as well as recovery from clogging in two-dimensional silo equipped with movable outlet. We measure the flow rate $Q(d)$ and find that, in the presence of outlet oscillation, $Q(d)$ may remain finite even when d is only slightly larger than the grain diameter. Transition from continuous flow to intermittent flow occurs by decreasing d or by reducing the oscillation speed. In addition, at small d when the flow is intermittent, the flow time (duration of flow before clogged) follows Poisson distribution whereas the recovery time (duration of clog before flow recovery) follows power law distribution.

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