Studying the effect of the opening discharge diameter in cylindrical silo on the flow pattern and wall pressure

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Abstract

This paper presents an experimental investigation of the flow pattern and wall pressure due to the change of the opening discharge diameter in cylindrical silos. The experiments were performed on a metal silo prototype using corn as a granular material. The silo prototype used in the study was built of a metallic cylinder, which can be opened longitudinally allowing the observation of the flow pattern through a plexi-glass wall, and the wall pressure distribution was measured using a special granular pressure transducer. The present study revealed unexpected results to what might be expected through current theoretical knowledge.

Keywords: flow pressure, flow pattern, funnel flow, granular flow, silo, orifice discharge .

* For the paper in Arabic see pages (13-22).
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