Studying the effect of insert position on wall pressure for steel barrel silo*

Eng. Farzat Askifi** **Dr. Hala Hamadeh*****

Abstract

The aim of this paper is to present a recent experimental investigation of the wall pressure distribution observed during the emptying of a modeling silo, with and without, inserts, for three different heights h_i of the insert base above the hopper outlet. The experiments were carried out with corn, at the concrete lab. in faculty of civil engineering in Damascus university in Syria. The results show that the upper-cone with downer-cone trunk insert had a strong influence on the pressures in the silo.

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

*For the paper in Arabic see pages (39-50).

** Department of Transportation – Faculty of Civil Eng. – Damascus University.

*** Department of Structural – Faculty of Civil Eng. – Damascus University

References:

1. Rotter j.m (2001), " **Guide For The Economic Design Of Circular Metal Silos**“, Spon Press, London.
2. Jintao Wu, Jiang Binbo, Jizhong Chen, Yongrong Yang (2008)." **Multi-scale study of particle flow in silos**“, Journal of advanced Powder Technology 20 (2009) pp.62-73 .
3. Carson J.W, Troxel T.J & Bengston K.E (2008). “ **Scaling up solids handling processes and equipment: limits of theory and scale modeling**”, in: Chen J.F, Ooi J.Y & Teng J.G, editors. "**Structures and Granular Solids**", Taylor & Francis Group, London, UK.
4. Michał Wójcik, Johannes Härtl, JinY. Ooi, Michael Rotter, Songxiong Ding,GisleG. Enstad (2007). "**Experimental Investigation of the Flow Pattern and Wall Pressure Distribution in a Silo with a Double-Cone Insert**.",Journal of Part .Part .Syst .Charact . 24 (2007), pp.296-303
5. Q. Zhang, B. Hao and M.G. Britton (2002).” **Flow patterns of cohesive feed in a model bin with flow-corrective inserts**”, Canadian Biosystems Engineering. University of Manitoba, Winnipeg, Manitoba, Canada.
6. Mutaz Daas, Rajiv Srivastava, Norman Munroe (2006). “**Designing and Operating Reliable Gasifiers**”. Fourth LACCEI International Latin American and Caribbean Conference for Engineering and Technology (LACCET’2006), “Breaking Frontiers and Barriers in Engineering: Education, Research and Practice”. 21-23 June 2006, Mayagüez, Puerto Rico
7. Dareen Gerges (2009), “**Studying the change of the flow pattern and wall pressure in silos due to centric and eccentric discharge**”, Damascus University, Syria.
8. Wael Mualla, Amjad Zeno, Wissam Nakhleh, Youssef Marai (2009). "**Applied Hydraulics**", Damascus University publication, Syria.