



**“Gheorghe Asachi” Technical University of Iasi, Romania**



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## **BEHAVIOUR OF SOLID PARTICLES ON A FLAT OSCILLATING SURFACE**

**Ovidiu Bontas<sup>1\*</sup>, Valentin Nedeff<sup>2</sup>, Emilian Florin Mosnegutu<sup>2</sup>,  
Mirela Panainte<sup>2</sup>, Oana Tirtoacă Irimia<sup>2</sup>**

<sup>1</sup>*“George Bacovia” University of Bacau, 96 Pictor Aman, 600164 Bacau, Romania*

<sup>2</sup>*“Vasile Alecsandri” University of Bacau, 157 Calea Marasesti, 600115 Bacau, Romania*

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### **Abstract**

In many industrial applications most of the solid particles are separated by size and for this purpose there are used the oscillating sieves. The separation process based on sieves is a complex one and it depends on several factors, such as the properties of solid particles submitted to the separation process and on the operating regimes of the separating equipment. We have studied the separation process of the behaviour of solid particles on a flat oscillating surface by drawing up a series of mathematical models aiming at identifying the solid particle trajectory.

This paper presents a study performed at the “Vasile Alecsandri” University in Bacau, aiming at determining the travel paths of the real particles compared to the ideal particle travel path. In order to determine the behaviour of the solid particles on oscillating surfaces within the experimental measurements we have used a blind screen. The experiments have been performed on a laboratory bench with flat oscillating sieves. The movement of the solid particle on the working surface has been monitored by two cameras positioned on perpendicular planes, the system aiming at obtaining the spatial trajectory of the particle on the operating surface. Films obtained from the experimental measurements have been processed using the SynthEyes software, resulting \*.txt files, which contain the necessary data in order to visualize the trajectory of a particle studied on a working plan. By combining the two paths it was possible to view the three-dimensional trajectory of the solid particle. During the study, we have aimed to determine the trajectory for different types of particles, namely: ideal spherical particle, particle with cube form, various other forms of real particles: soy, pod and grain. Within the experimental measurements, we have also studied the solid particle behaviour for different operating conditions, like different angles of work surfaces and different operating modes of the block sieves. After processing the data obtained from experimental measurements one could calculate the velocity of solid particle on a flat oscillating surface.

*Key words:* blocks sieves, friction coefficient, solid particle

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\* Author to whom all correspondence should be addressed: e-mail: [ovidiu.bontas@ugb.ro](mailto:ovidiu.bontas@ugb.ro); Phone: +(40)234562600