

RESEARCH ON THE EFFICIENCY OF AERATION PROCESS AND ENERGY CONSUMPTION IN A VERTICAL SILO

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Abstract

The objective of this study was to examine the efficiency of the grain aeration process in a vertical silo and the energy consumption required for aeration. Aeration of cereal seed for long-term storage is a widely used method in agriculture. By understanding the aeration process and the physical problems that arise from it, the results indicate that by eliminating factors that lead to inadequate aeration and introducing an automation system, significant savings in aeration energy consumption can be achieved. In addition to this energy advantage, the cereal seeds are maintained in quality parameters for a longer time, avoiding weight loss. Comparing the experimental results of energy consumption in a vertical silo and the time needed for aeration with other energy consumption in the world, a reduction can be observed by introducing automation and preconditioning of the grain before it is placed in the silo. Also, by automating the aeration of silos, excess aeration is avoided due to the need to remove excess moisture from the seeds and high temperature kernels formed in the silo.

Key words: (aeration, cereal, silo, energy consumption)