Journal of applied science and engineering innovation Vol.1 No.1 2014
ISSN (Print): 2331-9062
ISSN (Online): 2331-9070

Design of Community Drying equipment of grains

Linrong Shi[a], Jianming Wu[b,*], Wuyun Zhao[c], Wei Sun[d]

College of Engineering, Gansu Agricultural University, Lanzhou, Gansu 730070, China
[a]getmao@vip.qq.com, [b]wujm@gsau.edu.cn, zhaowy@gsau.edu.cn, [d]Sunw@gsau.edu.cn

Keywords: Drying oven, Design.

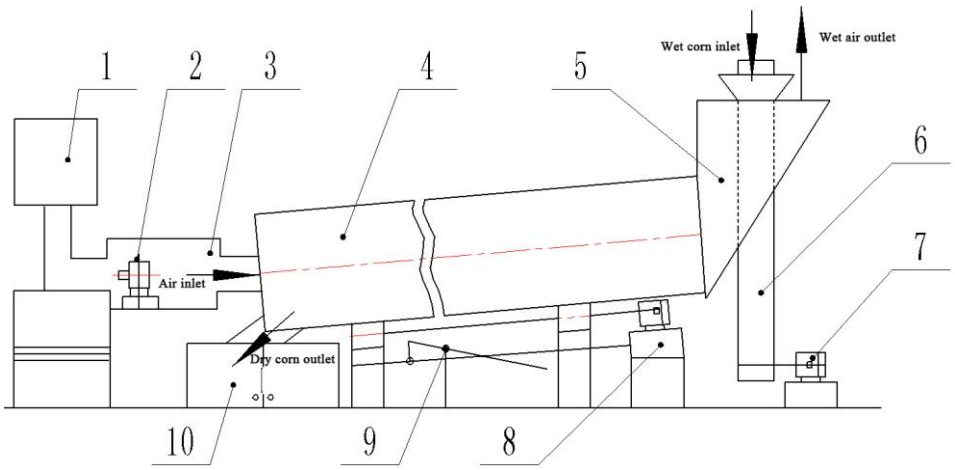
Abstract. In order to solve the rural small-scale farmers for grain drying equipment needs during farming season, three-dimensional modeling of community drying equipment of grains was established with Solidworks, and focus working segment in oven was designed. The design of community drying equipment for the dry storage of materials in rural areas is significance.

Introduction

Corn is most important and high-yielding planting crops in the word [1], corn kernels can be used as food, feed and industrial raw materials [2]. To protect the safe storage of corn harvest, accelerate the velocity of corn, coupled with the current grain drying mainly rely on sun and mechanical drying food has not been large-scale popularization. Corn harvest moisture content, generally between 28% to 30%, storage slightest mistake, it will make the food rotten, spoiled, dried corn moisture can be reduced to safe moisture below to inhibit microbial activity; Because corn grains larger than the surface area of the smaller units, skin structure, the surface of the capillary less, this structure is not conducive to the discharge of water from the corn [3]; China the main producing areas of corn with high moisture content and low maturity, so that thermal stability poor, could easily lead to thermal damage temperature drying. In the mature grain drying equipment from home and abroad on the basis of [4-5], for the design of a suitable plot of maize corn drying operation curtain roller oven. Solved Gansu Province by the sun to dry after harvest of corn, low efficiency, influenced by the weather and other issues.

Community drying equipment of grains

Shown in Figure 1, the cell drum drying apparatus cereal curtain machine 1 from the fuel entrance fan 2, combustion chamber 3, a curtain roller 4, the feed inlet 5, corn belt 6, the transport motor 7, the drum rotating motor 8, roll angle adjusting mechanism 9, dried corn exports 10; air under the action of the inlet fan 2 entrance from the hot air into the curtain rollers, corn driven by the conveyor motor 7 in the feed inlet 5 into the oven, rotating the drum motor 8 led curtain roller along the axis of rotation, the curtain wall under the action of the curtain to dry the corn maize. After a certain time, after drying, the exhaust gas inlet port 5 in the exhaust gas outlet near the seed. Maize drying drum can be adjusted at any time during the reclining mechanism 9 to change the curtain at an angle of the drum 4 and the drying process to accommodate different stages of the process.

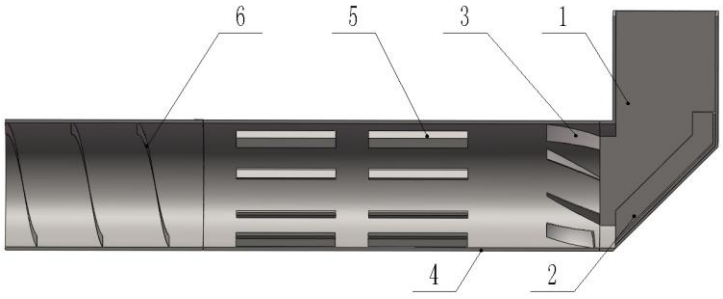


1.Fuel machine; 2. Inlet fan; 3. Combustion chamber; 4. Curtain roller 5. Feed inlet 6. Corn belt 7. Transport motor 8. Drum rotation motor 9. Drum angle adjustment mechanism 10. Dried corn exports

Fig.1 Community drying equipment of grains

The structure of drying oven

Shown in Figure 2, double spiral in drying roller box is composed of corn chute 2, the rotary plate 3, the cylinder 4, the curtain plate 5, the screw conveyor 6. Which cover an entrance with corn chute 2 will enter the oven-oriented, while corn can be discharged into an exhaust gas after drying. Rotary plate 3 based on the principle of the screw conveyor screw corn entrance oven corn, corn inside the drum 4 under the effect of the curtain panel 5 to facilitate the curtain of hot air corn drying corn. Complete drying of the corn through the screw conveyor 6 transported to dry corn exit.



1. Corn entrance, 2.Corn chute, 3.Rotating plate, 4.Cylinder, 5.Curtain plate, 6.Screw conveyor

Fig.2 double spiral in drying roller box

Summary

The design of community drying equipment for the dry storage of materials in rural areas is significance.

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