

# DESIGN of RED CRACKER (KERUPUK MERAH) DOUGH MIXING MACHINE in THE DEVELOPMENT of INDUSTRY in LIMAPULUH KOTA DISTRICTS

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## INTRODUCTION

Kerupuk merah is a kind of red crisp which is made by a flour and the color is red. It is one kind of snack which use as complementary foods and it can add more taste and aesthetic value on the main meals. In West Sumatra, the located of kerupuk merah industrial centre is in Piladang, Akabiluru region, Lima Puluh Kota district. The total of industrial area of the kerupuk merah increase into 14,19% in 2011 together with the increasing of the demand for the kerupuk merah. However, the problem of the kerupuk merah industry comes from the processing technology which very simple not only in upstream but also downstream in the production process, so the capacity of production and hygiene factors become a major issue in every process of Kerupuk Merah. The capacity of Kerupuk Merah production is determined by a process of mixing the dough (first process) which is using a rectangular box that made by wood and 3-4 people power as a stirring power with the 500 kg capacity of dough/ day and only do the mixing dough 1-2 quantity and quality of production. Therefore, the mixing machine was designed to increase the capacity of production, time efficient and more hygienic so directly it can increase the income of kerupuk merah industry.

The purpose of this research are :

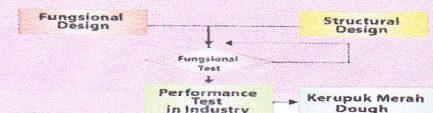
1. to design and to make a mixing machine (mixer) for kerupuk merah
2. to test the performance base the work capacity of stirrer tools

The specification of kerupuk merah dough mixing machine

- frame mixer : made of angle iron with a height of 120 cm and a width of 100 cm
- Drum mixer : made of stainless steel plate with a thickness of 2 mm
- Drum dimension (cm) : 80 x 80 x 60
- Electric power max : 900 w
- Transmission : gear box, pulley, v-belt, 27,2 rpm
- Capacity : 906,34 kg/hour

## MATERIAL AND METHODE

This research was conducted in workshop of Agricultural Polytechnic State of Payakumbuh, argon workshop in Lima Puluh Kota District and kerupuk merah's industrial in Payakumbuh city for four months starting from March to June 2015



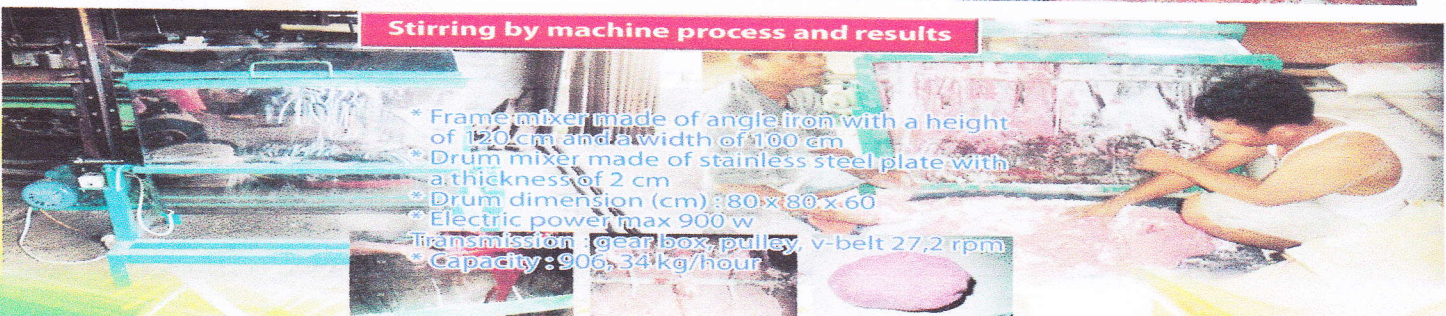
## RESULT AND DISCUSSION

- \* The process of stirring (stirring time) faster than manually
- \* Automatic stirring system, thus saving energy
- \* The Results of stirring is better (softer texture) and homogeneous than manual mixing process and can be done in a single mixing process
- \* The results of motor mixer is more hygienic
- \* To provide comfort for workers because it is not in direct contact with the hot dough

### Stirring by manual process and results



### Stirring by machine process and results



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- \* Drum mixer made of stainless steel plate with a thickness of 2 mm
- \* Drum dimension (cm) : 80 x 80 x 60
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## CONCLUSION

- \* Kerupuk merah's kneading Machines are made in length, width and height of each drum stirrer 80 cm, 80 cm and 60 cm with a drum mixer optimum capacity for each time the mixing process is 150
- \* The performance of Kerupuk merah's dough mixing machine as seen from the mixing rate is 906.34 kg/ hour more effective and efficient than manual stirrer
- \* The use of this mixing machine can increase the production capacity of kerupuk merah with better quality and more hygienic



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Jointly certify that,

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PRESENTER

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