

Improving Efficiency the Tofu Baxo Industry through Engineering of Tofu Production Tools

Wirawan Sumbodo¹ and Karsono²

^{1,2}Mechanical Engineering, Semarang State University, Semarang, Indonesia
wsumbodo2@yahoo.com¹, me_karsono@yahoo.com²

Abstract— This study aims to get the cutting tools which are more effective and efficient. So far, the industry tofu baxo Ibu Pudji does the cutting out the tofu manually by using the kitchen knives and help tools wooden ruler as a reference of cutting measure. the tofu cutting tools that are developed consists of six knives that are permanently mounted on the transverse carriage. Tofu that passes a row of knives will be automatically cut into seven parts, so that the cutting speed becomes two times faster than manually. Cutting speed will be faster when it is performed by a trained operator.

Keywords—cutting tools, know, effective, efficient

I. INTRODUCTION

One typical food of Ungaran city which is well known in Central Java, among others “Tofu Baxo Mrs Pudji”. The domestic tourists who pass through Ungaran City will try to enjoy Tofu Baxo Mrs Pudji which is easily accessible from the highway Ungaran to Solo or Yogyakarta. The menu is served in diverse types of tofu baxo or just baxo with a wide selection of flavors. There is Baxo chicken flavor, the flavor of shrimp, and the fish flavor all that can be enjoyed in a special restaurant Tofu Baxo Mrs Pudji which is clean and modern. Besides enjoying tofu baxo which is hot, ready to serve, visitors could also buy out baxo which is already packaged specifically for the purposes of souvenirs. Various tofu baxo and baxo are packaged in various forms of packaging from small to large to tofu / baxo portability for souvenirs when without cooler can only hold two days, and when inserted into the engine coolant Tofu Baxo Mrs Pudji can hold up to one week.

During this time the need of tofu to meet the needs of Tofu Baxo Mrs Pudji is supplied by industry “Tofu Lestari” located in the Kalisidi village Gunungpati District Semarang City. The production process of “Tofu Lestari” was felt still not efficient because of some production processes are still manual. One was in the process of tofu cutting still manual by a kitchen knife with a wooden ruler. The process of tofu cutting that should be solved by a single worker eventually handled by three to four workers. The process of tofu cutting which is still manual has the impact on the tofu dimensions which are not the same, as it is done with ordinary knife with a steering bar of wooden ruler. Kitchen knife will cut the complete tofu sheet directly with dimension (390x390) mm into small parts with dimensions (25x45) mm so that there is the tofu rest that cannot be used. As a result, there are tofu products were wasted approximately 3 to 5% of unused (reject) because it has a dimension that is too

small. Tofu Baxo Mrs Pudji product marketing has been already through the internet but not using marketing and product information systems that can provide information to managers / leaders regarding marketing conditions in the production process on line.

Tofu which has been produced by the tofu industry “Lestari” is then sent to industry Tofu Baxo Mrs Pudji located in the Susukan village Ungaran City. In the installation process of baxo, ripening and marketing requires 75 workforce . The number of workers totaling 100 people, so it is not as efficient as expected. Business owners expect that the production process of tofu making will be more streamlined, especially in the process of tofu cutting and screening process is still manual. It is expected that by the engine and more modern equipment will save the cost of production and the production capacity could be increased.

The purpose of this study among others: (1) To improve product quality Local Tofu Baxo SMI in order to conform to industry standards; (2) To improve the efficiency of production process of Tofu Baxo, (3) To increase Tofu Baxo product marketing via the internet. Results of this research has been beneficial to the industry know Tofu Baxo Mrs Pudji in improving product quality and marketing.

II. METHODOLOGY

A. Aspect of production

The production process of tofu cutting do require assistance through the help of Unnes engineering technology that is expected to improve the efficiency of the overall industry. The existence of tofu cutting machine engineering would speed up the process of cutting in accordance with the desired dimensions. When this process is done by machine and the right equipment will reduce the number of workers with optimum results.

Methods of design making by using design methods of CAD / CAM through the following steps:

1. Conduct a preliminary survey on industry partners in the tofu industry that “sustainable” in the Kalisidi village Gunungpati districts, and the processing industry “Tofu Baxo Mrs Pudji” in the Susukan village Ungaran. After that it is generated the concept of the machine, then embodiment is made, and the design of three-dimensional images is created for simulation analysis of assembly and manufacturing in the Computer Laboratory and CAD/CAM/CAE

- Having produced the final design three-dimensional, then detailed drawings is made, assembly drawings in computer labs and CAD/CAM/CAE

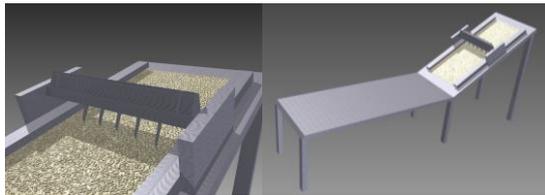


Figure 1. Tofu Cutting Tool Design

- To create a tofu cutting tool components then assemble to become component units in Unnes Mechanical Engineering Laboratory.
- To perform the assembly process between the component units of the tofu cutting tool and frame, and end the process of finishing paint in the laboratory of welding and fabrication.
- To test the performance of the tofu cutting tool in Lestari tofu factory industry in the Kalisidi village Ungaran Semarang District.
- To do training, improvement, and development and in partners industry locations.

B. Aspect of Management

The management system which is applied to the partners industry is still relatively traditional. Business management still based on the management of the family, so it needs to be developed by applying a bottom-up management to achieve quality of products and services to the maximum. Marketing process is more to the conventional system.

Problematic of management on both industry partners has been overcome by the application of the principles that focus on the grass roots which covers all components of the industry, ranging from employees, managers, and network development to expand cooperation between Tofu SMI with the industry Tofu Baxo in Central Java. The implementation of management theory has been able to improve the efficiency of production, so that partners industry have increasingly more qualified and able to empower local communities in the process of its production and marketing.

III. RESULTS OF RESEARCH AND DISCUSSION

Tofu cutting tools is indispensable for improving efficiency of tofu cutting form manually using a knife lettuce one by one, into a mass cutting directly into several parts. Manual cutting process requires three or four workers to be one or two workers. Tofu cutting tools consists of three main parts, namely the tofu cutting unit which is equipped with five blades lined up transversely, so that when the tofu unit that through it will be cut directly into six parts.

As for how to operate the tofu cutting machine the results of the design team IBM Unnes 2015 is as follows:

- Choose a tofu width that approach the size of the machine with a width of 39 cm with a tofu foundation which has the same thickness and smooth surface.



Figure 2. Election of Tofu Dimensions That Conform

- Put slowly out the tofu and the foundation the foundation to the grooved table that has been provided. Slide the holder out downwards simultaneously, automatically tofu will pass through the tofu cutting tool which consists of 5 blades which are mounted transversely lined fit out the desired length.



Figure 3. Procedure of Mass Cutting

- Tofu will shift / slide down by itself after passing the cutting blade, because the runway is made of ceramic which is slippery, do the cutting on the next out continuously as needed.



Figure 4. Procedure of Quality Control

- Do a check the tofu which has been cut off, if there is still not perfect can be refined manually. the results of the experiment, when the average surface of the foundation, then the quality of the cuts will be perfect in accordance with the desired dimensions.

Researchers provide training in the use, maintenance and repair of tofu cutting machine cut out and tofu production management repair. The success of this cooperation program depends on good communication and feedback from partners industry with the researchers. Completion of the tofu cutting tool will continue to be made during this IBM completed within the program schedule, but The team will do an evaluation and assistance for the sustainability of the program.

IV. CONCLUSIONS AND RECOMMENDATIONS

The efforts to improve the quality of the products have been carried out by engineering tofu cutting tools in mass. From several previous description, it can be concluded, among other things:

1. Cutting tofu using the mass tofu cutting tool can save tofu cutting labor as much as 50%.
2. The operation of this tool requires workers who are trained first, so that the tofu cutting speed can be faster and qualified.
3. Tofu cutting tools require regular maintenance, especially on the sharpness of the knife should always be controlled.
4. The quality of products and marketing can be developed through training in the use of tofu cutting tools in mass, and marketing of products on line.

From the previous description, the research team delivered some suggestions, among others:

1. Quality of product tofu baxo Mrs. Pudji as good as using modern production equipment considering the ever-increasing number of requests.
2. Website for marketing tofu baxo Mrs Pudji via the internet, should continue to be up to date on a regular basis, in order that the look and the content are always interesting.

REFERENCES

- [1] Sumbodo, dkk, 2008. Teknik Produksi Mesin Industri, DitSMK, Jakarta, BSE.
- [2] Sumbodo, dkk, 2013. CAD/CAM, Dikti, Jakarta, Pusat Pengembangan Buku Depdiknas
- [3] UNSEC. 2012. Visi & Misi Unsec. <http://unsec.unnes.ac.id/tentang-kami/visi-misi/>. 10 Agustus 2014. Jam 20.00 WIB.
- [4] *Wikipedia*. 2014. Tanggung Jawab Sosial Perusahaan. http://id.wikipedia.org/wiki/Tanggung_jawab_sosial_perusahaan. 10 Agustus. Jam 20.15 WIB.
- [5] Balekemas. 2011. Fungsi Kemasan dan Pengemasan. <http://balekemas.wordpress.com/2011/01/10/fungsi-kemasan-pengemasan/>. 10 Agustus 2014