Double Speed Electric Rotary Machine As Technology In Making Remitan Crafts

Jayanti Putri Purwaningrum\textsuperscript{1}, Imaniar Purbasari\textsuperscript{2}, Gilang Puspita Rini\textsuperscript{3}, Nur Fajrie\textsuperscript{4}
\textsuperscript{1,2,3,4}Universitas Muria Kudus, Indonesia

\textsuperscript{1}jayanti.putri@umk.ac.id

Abstract. Remitan Crafts are traditional children's toys made from clay in the form of miniature kitchen utensils that are handmade with human power as the main driving force for their manufacture. The double speed electric rotary machine is a product creation that created to support remitan handicraft businesses and the comfortable of making remitan, with rotations that human can manage it adjusted to the level of need. The methods and stages used in machine manufacturing are field observation and review, designing machine prototypes, identifying product specifications, manufacturing and testing of double speed electric rotary machine. As for the results of the study, it was found that the double speed electric rotary machine is a machine in the form of a circular rotary table used to make pottery or remitan using electric power with 1 Phase 0.5; Rpm 1400 electro motor. This machine uses an electric control which can directly adjust the rotation. Engine with two speeds, high speed and low speed. This double speed electric rotary machine is a simple machine which is easy to install in people's homes or educational institutions, tourist attractions, and so on because of its low electricity consumption.

1. Introduction
Mayong Lor Village is a village in Jepara Regency, Central Java, Indonesia which has a regional advantage, that is remitan craft center. Remitan crafts are traditional children's toys made of clay in the form of miniature kitchen utensils. The excellence and uniqueness of remitan crafts are the process of hand crafting which has aesthetic value from its practical, uncomplicated form and colourful. The potential of the remitan handicraft business is the source of the village economy and most of the surrounding residents. Remitan is an art craft that has its own function and beauty value so that it has a very good selling. Thus, this craft needs to be preserved. This is in accordance with the opinion of that cultural preservation in the midst of globalization between cultures is very necessary as a form of identity [1].

The existence of the clay craft industry in Mayong Lor Village, not only producing aesthetic works of art but also become a cultural identity as well as a source of the economy of the village and its members of the community between generation [2]. This is accordance with the cultural factors of the Mayong Lor Village community, the community where most of their lives depend on the management of trade and industrial potential [3]. The phenomenon of clay handicrafts, although inseparable from the challenges of the modern products on the market, still available and continues [4]

Remitan have many various forms. Individual creativity in remittance craft is anonymous [5]. The development of product innovation by craftsmen is only carried out in accordance with the craftsmen's
competence and market desires. As a cultural product, remitan craft are traditional toys that are related to social facts that represent social values and behavior, customs and habits. Besides that, it also contains mental facts, which are related to creative and highly efficient thoughts and ideas for the development of Indonesian children and the growth of the national economy [6][7].

Remitan handicrafts are usually marketed in various Indonesian cultural events, such as dhandhangan, sawalan, dukderan and so on. The making of remitan has been going on for generations using simple equipment that relies on human labor as the main source of energy. The craftsmen manually by using their hands or feet rotate a wooden disk on which there is clay which will be formed into remitan. The remitan maker tool is felt to be less comfortable for its users and does not have a sufficient level of security. This can be seen from how the remitan tool that uses manual labor of craftsmen and the form of the tool is very simple [8].

Based on the above background, modern technology is very important to replace human technology in making remitan. The double speed electric rotary machine is an electric machine that is expected to be a breakthrough to replace human power and simplify the remitan production process. In addition, with this machine is expected to be able to increase production both in terms of quality and quantity.

The problem formulations for a double speed electric rotary machine are (1) How is the prototype design for a double speed electric rotary machine? (2) What is the source of the driving force? (3) How is the transmission system on a double speed electric rotary engine? (3) What is the frame structure for the double speed electric rotary machine?

2. Methods

Machine construction planning must have a more effective and efficient so that it can get maximum results with better capacity. The planning step focuses on needs analysis that is able to meet needs and is able to provide ease of production. Based on the background, a double speed electric rotary machine is needed to replace human power, simplify the remitan production process, and increase production output both in terms of quality and quantity. From this planning approach it can be seen that target oriented planning is used in the planning method. By using this method, it is hoped that the planning carried out will be useful in the field of remitan especially in Mayong Lor Village, Jepara Regency, Central Java, Indonesia.

The purpose of target oriented planning is to get the steps that are in accordance with the products produced, as well as to improve the quality that is more effective and more efficient, because this tool is planned to really play an active role in helping the continuity of the production process desired. In getting better results, of course, there are still advantages or disadvantages. Previous tools were makeshift tools used with human power. Manual remitan printing process takes a long time and the results obtained are not able to meet the needs so that a machine is needed that can help the craftsmen in carrying out the remitan production process. The flowchart of the activity implementation plan is as follows (Figure 1).
3. Results
The implementation process starts from observation and field review. From these activities, it was found that the manufacture of simple and manual crafts meant that the production of remitan was not optimal because it took a long time. Therefore, a rotary tool or machine with an appropriate technology system is needed to increase production results more efficient and efficient.

The result of the process of manufacturing a double speed electric rotary machine is as follows

3.1. Determine the prototype design of the double speed electric rotary machine
A prototype image of a double speed electric rotary machine is as follows (Figure 2).
3.2. Determine the specifications of double speed electric rotary machine

Model: double speed electric rotary machine
RPM:
- Low Speed 30RPM
- High Speed 100 RPM
Drive:
- Electric Motor with Mechanic Reduser 1:15 1PHASE 220 VAC 0.5 HP RPM 1400 which is controlled by INVERTER 1 HP

3.3. Manufacturing of double speed electric rotary machines

Double speed electric rotary machine is a machine in the form of a circular rotary table used to make pottery or remitan using electric power with 1 Phase 0.5 HP Rpm 1400 electro motor. This machine uses an electric control that can directly regulate the engine speed at high speed and low speed. The high speed is not directly obtained which can cause stomping, but is set according to the time of reaching the target rotation. This makes the rotation obtained in the rotary engine is a smooth rotation that does not stomp. The motor rotation on this machine is double speed which is divided into low speed and high speed. The rotation movement of this double speed electric rotary machine can be varied according to the rotation. This double speed electric rotary machine is a simple machine that is easy to install in people's homes or educational institutions, tourist attractions, and so on because of its low electricity consumption.

The manufacturing machine making documentation is as follows (Figure 3).
3.4. Testing of double speed electric rotary machines

The picture of a double speed electric rotary machine is as follows (Figure 4)

Figure 4. The picture of a double speed electric rotary machine

The operation of the double speed electric rotary machine is very easy, namely as follows.

a. The user plugs in the power cable
b. The user sits in the chair provided
c. The raw material in the form of clay is placed on an electric rotary machine (on a plate table)
d. The user turns on the MCB lamp. If the green light indicates the machine is ready to run.
e. In order for the engine to rotate, the user's press the run button with right foot. In this position, the user uses high speed. The user can change the speed to low speed by pressing the low button with the left foot on the rear stop. If you want to turn off the machine, the user steps on the rear stop. The existence of the run high button makes it easy for users to freely use their hands to shape the product as desired
f. While the plate table rotates, the user's hand is ready to hold the clay raw material that is already on the plate table to be rotated and shaped as desired, for example making remitan
g. The table plate can be cleaned because of the available drain cap.

The documentation of machine testing activities is as follows (Figure 5).
The advantages of the double speed electric rotary machine are as follows.

a. Practically can be used at home, tourist attractions, educational institutions, and others because of low electricity consumption

b. Easy to use because it does not require skill to rotate the table with your feet. The user just sits in front of the table while the raw materials can be placed in the space provided (only the feet turn on at the desired speed)

c. Operation is very easy especially for beginners or who are learning to make pottery or remitan. This is partly due to the fact that the rotation has been programmed and is not too fast and the rotation has been programmed and the feet just need to adjust the desired speed button.

d. The resulting rotation is a smooth rotation that can be adjusted.

e. Machine can be moved easily

f. More efficient because this machine does not require much power and can be done sitting down

g. Easy to modify

h. Feet not tired

While the weaknesses of the double speed electric rotary machine are as follows

a. Because the machine uses electricity, there are additional costs incurred to pay for electricity

b. For the specification of the production of a table rotation that is not tight enough, a speed control stamping button is required
4. Conclusion
Based on the results that have been achieved from the entire manufacturing and testing process of a double speed electric rotary machine, it can be concluded that the double speed electric rotary machine is a circular rotary table machine used to make pottery or ceramics using electric power with 1 Phase 0.5 HP electro motor. Rpm 1400. This machine uses an electric control which can directly adjust the engine speed at high speed. The high speed is not directly obtained which can cause stomping, but is set according to the time of reaching the target rotation. This makes the rotation obtained in the rotary engine is a smooth rotation that does not stomp. The motor rotation on this machine is double speed which is divided into low speed and high speed. The rotation movement of this double speed electric rotary machine can be varied according to the rotation. This double speed electric rotary machine is a simple machine which is easy to install in people's homes or educational institutions, tourist attractions, and so on because of its low electricity consumption. Based on the above conclusion, it can be suggested that the double speed electric rotating machine needs improvement, including the addition of speed, not only low speed and high speed.

References

[1] Betaubun, R. J., Latar, S., & Maelissa, N. (2019). Ibm Mesin Pengolah Tanah Lempung Untuk Pembuatan Gerabah. Jurnal Pengabdian Masyarakat Iron, 1(1), 39–49. file:///C:/Users/Asus X201/Downloads/272-994-1-SM.pdf
[2] Chambers, R. (1988). Pembangunan Desa Mulai dari Belakang. LP3ES.
[3] Hendro, E. . (2000). Ketika Tenun Mengubah Desa Troso. Penerbit Bendera.
[4] Jazuli, M. (2001). Manajemen Produksi Seni Sebuah Pengantar. Yayasan Lentera Budaya.
[5] Kartodirdjo, S. (1987). Kebudayaan Pembangunan dalam Perspektif Sejarah. Gadjah Mada University Press.
[6] Kayam, U. (1981). Seni, Tradisi, Masyarakat. Sinar Harapan.
[7] Mahbub, J. (2010). PERKEMBANGAN INDUSTRI KERAJINAN KERAMIK DAN PERANANNYA TERHADAP KEHIDUPAN SOSIAL EKONOMI MASYARAKAT DESA MAYONG LOR MAYONG JEPARA TAHUN 1980-2005.
[8] Triyanto. (2015). Perkeramikan Mayong Lor Jepara: Hasil Enkulturasi Dalam Keluarga Komunitas Perajin. Imajinasi : Jurnal Seni, 1(1), 1–10. https://journal.unnes.ac.id/nju/index.php/imajinasi/article/view/8850