(AKTOR) *Resistor Accessories*

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Abstract. Along with the progress of development, the use of lamps as a source of lighting is also increasing. The use of more and more lights also has an impact on the amount of electronic waste that is difficult to process. Therefore, it is necessary to take action to process the waste from the lamp so as not to disturb the cleanliness of the environment. One way is to reprocess the components of the lamp in the form of a resistor. Resistors are electronic components that have two pins and are designed to regulate electrical voltage and electric current. These resistors are mini, but contain a variety of colors that can be a special attraction if arranged in such a way. One technique for managing resistor waste accessories is to process them into, among others, brooches and bracelets. Bros is an object that becomes a decoration for women's clothing. Brooches worn on the hijab or attached to clothes to make it look more graceful and elegant. Although made of resistors, this brooch is also equipped with additional knitted fabric to enhance the appearance. This knitted fabric is knitted to form flowers and ribbons with a resistor placed in the middle. Then based on this writing, some conclusions are obtained that these resistor accessories are accessories made of resistors with the help of knitting formed into flowers. These accessories work to decorate clothes, to reduce waste from lamps in particular, and can be more useful and have a high selling value. With the "(Actor) Accessories Resistor" it is hoped that the surrounding community can be more creative with the garbage that has accumulated around them. So that the environment is protected from the danger of garbage.

Keywords: Lamp · Resistor · Accessories · Brooch

1 Introduction

Quoted from the data portal page [1], the Ministry of Environment and Forestry (KLHK) noted that Indonesia produced 21.88 million tons of waste in 2021. This is in accordance with one of the news presented on the detik.com online news page (9 June 2022) [2], the coastal part of Jakarta is being surrounded by garbage. Of course, this number will certainly increase along with population growth in Indonesia. The accumulation and management of waste is one of the main problems faced by Indonesia. This is partly because people still like to litter, which can eventually lead to piles of garbage. The

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large number of people in Indonesia and the various activities carried out make the waste problem a major problem. Garbage that enters waterways can affect water quality. The paradigm until now in its management is Kumpul-Angkut-Buang. However, it is estimated that only about 60% of waste in big cities in Indonesia can be transported to the TPA. This paradigm has consequences for high operational costs in waste management because most of the waste management costs are used for transportation costs, which is around 50–60% of the total cost of waste management [3].

Garbage is a waste generated from a production process that has no economic value both from industrial and domestic/household production. This pile of garbage if left unchecked can cause various kinds of diseases. Not only causes disease, piles of garbage can also pollute air, water and can cause flooding. Based on the results of observations made by Putra [3], one of the factors that cause flooding during the rainy season is the accumulation of garbage in river flows which also causes unpleasant odors. Basically, there are 2 types of waste, namely waste that can be managed and waste that cannot be re-managed. Waste is divided into two types, organic and inorganic. Organic waste comes from biodegradable materials, while inorganic waste comes from non-biological materials that cannot be decomposed (it takes a very long time) and cannot be reused. One example of inorganic is electronic waste.

Electronic waste in the form of cell phones, refrigerators, washing machines, air conditioners, computers and household appliances such as lights [4]. In Indonesia, the use of lamps as a source of lighting has become a basic need of the people. Not only in residences but also in large buildings. The use of the lamp for a long time and is turned on continuously, will shorten the life of the lamp and can no longer be used. This situation will increase the amount of electronic waste. Electronic waste is waste that comes from electronic items that are no longer used. Electronic waste is a serious problem for all Indonesians. Not only in Indonesia, every year electronic waste reaches 5% in the category of the largest contributor of electronic waste where the growth of electronic waste in Asia reaches 63% in 5 years. This is due to the quality of components that are often damaged [5].

Electronic waste is categorized as hazardous and toxic (B3) waste because it contains components made of hazardous materials such as lead, mercury, cadmium and others. B3 is a substance, energy and/or other components whose nature, concentration and/or amount can directly or indirectly pollute or damage the environment, endangering the environment, health and survival of living things [5].

Seeing the impact of electronic waste, it is necessary to have an environmental care movement that can help minimize the effects of electronic waste. However, it is not only an act of caring for the environment, it is necessary to have good management techniques. Communities can take creative actions in processing waste so as not to disturb the environment. Like recycling inorganic waste that is processed into goods that can be used again. Therefore, we need activities that can reduce the impact of waste and waste. One of them is by reusing inorganic waste that is difficult to decompose by using used resistors as accessories.

Fig. 1. Tools and Materials.

2 Method

The research method used in making this scientific work is literature study and experiment. Literature study by reviewing the relevant literature needed, and conducting experiments with direct product manufacture. The stages that the author goes through in writing this scientific work, among others:

a. Observing the existing problems, namely the accumulation of electronic waste and the increasing need for accessories for women.
b. Formulate the problem regarding the right solution to take.
c. Determine the data collection techniques to be used.
d. Conduct analysis and draw conclusions.

To obtain the data and information needed, we use data collection methods or the internet (journals or books) to support this article. After getting the journals from the internet we can determine the final results or conclusions.

In making "Actor", several tools and materials are needed such as used resistors, cotton knitting thread, safety pins, scissors, knitting tools, glue gun, hooks, and cloth. As for the steps in the process of making "Actor". There are two types of accessories that will be made, namely resistor brooches and resistor bracelets. For resistor brooches, the first step is to knit the yarn using the knitting tools provided. Then the second installs a resistor on the knitting as a decoration. The last step is to put a pin on the knitting using hot glue. In making a resistor bracelet, the steps are first to prepare some used resistors. The two hook the ends of the resistors to each other. The third installs hooks at the start and end ends to connect (Fig. 1).

3 Result and Discussion

3.1 Utilization of Resistor Waste as Material for Making Accessories

Indonesia is currently concerned about the waste problem. Not only in Indonesia, which has many problems with waste, waste is a problem that is often faced by almost every country in the world. Because everyone throws trash every time. Problems about the environment are a constant threat [6]. Therefore, it will gradually lead to piles of garbage and heaps of waste. Garbage that accumulates will cause various new problems in the community, for example problems related to health and environmental sustainability. The most common environmental problem is flooding. Floods are catastrophic events that often occur in an area caused by overflowing water that exceeds capacity [7]. It takes character cultivation in order to create a peaceful, peaceful, and safe environment [8].

Inorganic waste is waste that requires a long period of time in its decomposition by bacteria. Therefore, activities that can reduce the impact of waste and inorganic waste are needed. One of them is by reusing inorganic waste that is difficult to decompose. Electronic waste is one type of inorganic waste whose utilization is still not optimal. An example of electronic waste is a resistor. Used resistors are usually thrown away and not used anymore. Therefore, we use used resistors as accessories. Accessories made using used resistors as raw materials and decorations. We also take advantage of hand-crafted knitting yarn as a complement to the accessories we make. The accessories are brooches and bracelets. It not only has aesthetic value but can also be a selling point if it is used as well as possible and can be promoted for its unique benefits and can make inorganic waste, especially useful electronic waste.

3.2 ACTOR Design Results (Accessories Resistors)

The results of the design for making accessories that utilize resistor materials used for electronic waste can be seen in the following Figs. 2, 3, 4 and 5.

3.3 Implications of "ACTOR" Resistor Accessories to the Environment

"Actor or Resistor Accessories" are accessories that utilize electronic waste from used lamps. Then disassemble and take the resistor. In addition to resistors, other components are also used for accessories. Because, if this waste is allowed to accumulate, it can have negative impacts for sustainable life. These accessories basically function as accessories to decorate clothes. Not only that, these accessories can reduce electronic waste and can also increase the use value of goods were starting from electronic waste can become products that have a selling price. In addition, the manufacture of these accessories can be done by anyone because the manufacturing process requires creativity and these resistor accessories can be sold at an appropriate price. This activity is also expected to educate the public regarding waste management and raise awareness to protect the environment.

4 Conclusion

In this article, which discusses the use of electronic waste, namely the resistor, it can be concluded that:

Fig. 2. Knitted.

Fig. 3. Resistor Bracelet.

a. This Resistor Accessories are accessories that utilize waste resistors combined with knitwear that is formed into flowers. These accessories serve to decorate clothes.
b. The manufacture of these resistor accessories serves to reduce the accumulation of inorganic waste, especially those from lamps. In order to become goods that are more useful and of high value.
c. With the "Actor" it is hoped that the surrounding community can be more creative with the garbage that has accumulated around them. So that the environment can be avoided from the dangers of garbage accumulation

Fig. 4. Resistor Brooch.

Fig. 5. Example of a Resistor Brooch.

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