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### Research Article

# Training On Repairing Household Electrical Equipment In Pare Pare Community, South Sulawesi

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**Abstract.** This community service activity was carried out for the people of Pare Pare South Sulawesi. This service activity is carried out in the form of training in the maintenance and repair of household electrical appliances. The purpose of this community service activity is to provide community service by providing training on: how to maintain household electrical appliances in general, diagnose damage, and repair damage based on diagnosis. Materials provided in this training include: maintenance of household electrical appliances, repair of damage to household electrical appliances, operation of household electrical appliances, and installation of household electrical devices. The implementation of community service regarding household electrical appliances ran smoothly. This community service activity has yielded results; increasing participants' knowledge of the benefits of maintaining electrical appliances, increasing participants' knowledge of damage diagnosis, and increasing participants' knowledge of correct repairs of household electrical appliances..

**Keywords:** Training, Maintenance, Electrical Equipment

## INTRODUCTION

Electrical equipment is any equipment that requires electrical energy to operate. The current use of electrical energy is less effective because many household electronic devices use electrical energy and use it excessively (Abdul Kadir, 2015: 33). Excessive use of electrical energy will cause a shortage of electricity. Today's technology has penetrated into human life, such as the development of smart home applications that can provide convenience, security and efficiency for users. This technology is common for the elite, with the various facilities in it, it can provide convenience in controlling electronic equipment at home remotely (Aly S, 2022: 15). Remote control is a much needed control considering the efficiency obtained from remote control. Control will be carried out automatically according to the control carried out by the user (Bambang Soepatah, 2018:7).

Existing facts show that the development of the quality of human resources, especially in the electronics industry, the maintenance and repair sub-sector is still not as expected (Banyamin Stein, 2003: 48). The quality of the workforce/workshop technicians providing after-sales service for household electrical products such as electric irons, electric rice cookers, electric water heaters, electric dispensers and vacuum cleaners that are currently available are not in accordance with the required competencies (Brian Scaddan, 2002: 11). Competence is urgently needed in dealing with rapidly changing technological developments, increasingly selective domestic and global market demands. It is this fact that demands efforts to develop competency-based human resources that are aligned and harmonious between national and international needs (Brian Scaddan, 2019: 8).

Efforts to develop the quality of human resources are intended to create a workforce that is competent and professional in their field, mastering and having the ability to apply technology in accordance with the expectations of the electronics industry within the scope of after-sales service work for household electrical products (Bernhard Boehle, 2002: 6). Definition of Work Competency according to RI Law No. 13 of 2003 concerning Employment is the work ability of each individual which includes aspects of knowledge, skills and work attitudes in accordance with established standards (PUIL, 2000). Work competence is needed in order to empower the workforce optimally, precisely and humanely. The varying abilities of each individual workforce require the existence of a work competency standard that can place the workforce according to the qualifications they have. In order to obtain a workforce that has work competence in accordance with the needs of workshops for maintenance services and repair of household electrical products, it is necessary to develop national work competency standards which are expected to become a reference in building a competent workforce. The development of National Work Competency Standards for technicians of household electrical products is an important part of the strategy for developing small and medium industries in the electronics sub-sector (Abdul Kadir, 2014: 42). This is very necessary because the electronics industry is a technology-intensive branch of the industry and the market

for this product is still controlled by imported technology and its technological development is very rapid. For this reason, through a system of standardizing technological competence at the level of maintenance and repair, technicians in the small and medium industry, especially those engaged in technical services (repair workshops) can improve their abilities according to the needs and developments in electronics world technology (McDonald, John, 2011: 34).

With the mastery of technology at this level, it is hoped that it will become the basis for further development of the strength of the small and medium electronics industry. In accordance with the stages of application technology development, if repair technology has been well mastered, it will encourage creativity to produce replacement components/parts, then efforts to carry out production activities based on "copy and develop" and it is possible to develop innovation. One of the most frequently used electrical tools by the public is the electric iron (Cekdin, Cekmas, 2014: 17). Electric irons are used to smooth/smooth clothes so they can be worn neatly, generally after washing and drying (Pandjaitan Bonar, 2012: 33). Sometimes the folds of clothing are difficult to remove and require a little water to wet the folds, especially for woolen fabrics. At times like this the presence of an iron with a steam spray is very necessary.

The main parts of an electric iron include: heating element, base plate/base (sole plate), iron weight, lid, holder, terminal and connecting cable. The iron requires heat to make it easier to smooth the clothes. This heat energy is obtained from electricity (Supardi Agus, 2015: 9). Strictly speaking, electric power is converted into heat energy. The high heat produced depends on the amount of power used. The greater the electrical power used, the higher the heat obtained. Through this training activity for repairing household electrical appliances, in addition to meeting maintenance and repair standards, it will also be possible to develop a cooperative network between technicians and workshops. It is this collaboration that is expected to become the foundation of the market for these small and medium industrial products.

Based on the results of observations, the problems faced by partners in developing the competencies possessed by the community are limited knowledge and skills to repair household electrical appliances (Asep Mulyana, 2013: 45). Competency standards recommended by labor users and for independent work do not meet the requirements. On the other hand, understanding of household electrical appliances is also minimal, so there is a need for upgrading or developing competence to meet the required standards.

Household electronic equipment that will be controlled in the form of lights, air conditioners and televisions. Lamps are lighting devices in dark places or at night, lights are needed by the community so negligence often occurs in controlling lights (Tobing, 2017: 36). Often the light is still on during the day or a bright place, it's because the user forgot to turn it off. Likewise with the air conditioner, this air conditioner often forgets to turn it off when the user is out of the room, and television, which is a well-known telecommunications medium that functions as a receiver for broadcasts of moving images and sound, often forgets to turn it off when the user leaves the room or leaves the house. Various problems in the maintenance and repair of household

electrical appliances that are often experienced by the community as described above are partners' problems

## **RESEARCH METHODS**

The method of implementing science and technology activities for the Community (IbM), and the solutions offered are as follows:

1. Teaching household electrical appliance technicians (partners) about knowledge in repairing and repairing household electrical appliances that are practical and economical, the methods used are lectures, discussions and questions and answers.
2. Train household electrical appliance technicians (partners) to diagnose damage to household electrical appliances in a practical and economical manner, the method used is demonstration.
3. Train household electrical appliance technicians (partners) to repair damage to practical and economical household electrical appliances, the method used is demonstration.
4. Train household electrical appliance technicians (partners) to repair damage to practical and economical household electrical appliances, the method used is demonstration.
5. Train household electric appliance technicians (partners) to maintain practical and economical household electrical appliances, the method used is demonstration.
6. Teaching household electrical appliance technicians (partners) about entrepreneurial knowledge of repairing and repairing practical and economical household electrical appliances, the methods used are lectures, discussions and questions and answers.

The main methods adopted in this Science and Technology for the Community (IbM) activity are:

1. When presenting counseling materials on repairing and repairing household electrical appliances that are practical and economical, the methods used are; lectures, discussions, questions of Java, and simulations.
2. When practicing repairing and repairing household electrical appliances that are practical and economical, the methods used are; demonstration

Science and Technology Evaluation for the Community (IbM) is carried out after completing the training which consists of two types of evaluation, namely:

1. Evaluation of practical and economical knowledge of technicians for household electrical appliances, carried out after finishing lectures, conducting discussions, and asking questions.
2. Evaluate practical and economical ways of diagnosing damage to household electrical appliances, using demonstration methods.
3. Evaluate practical and economical ways to repair damage to household electrical appliances, using demonstration methods.
4. Evaluate practical and economical ways to repair damage to household electrical

appliances, using demonstration methods.

5. Evaluation of the entrepreneurial knowledge of practical and economical household electrical appliance technicians, carried out after finishing lectures, conducting discussions, and asking questions.

## **RESULTS AND DISCUSSION**

Community service activities are carried out at the Pare Pare Community, South Sulawesi. The service was attended by 20 participants accompanied by a service team. Participants were divided into 3 groups with 6-7 group members. The activity was carried out by delivering material followed by direct practice of repairing household electrical appliances (iron, fan, and rice cooker). The implementation of community service activities with the theme of repairing household electrical equipment includes; electric iron repair, fan repair, and rice cooker repair. This activity was attended by people who already have basic knowledge and skills about household electrical appliances so that their implementation does not experience significant obstacles. The results obtained at each stage were shown by the participants with enthusiasm and high motivation to be able to know each part being taught.

The training participants were given material on connection techniques between 2 conductors (cables). The connection techniques include pig tail, twisting, turning back and forth, multi-lined cable connections, plain joints and knotted tap joints. Connections must be installed tightly and correctly in accordance with the National Standardization Agency with the requirements in the General Electrical Installation Requirements (PUIL) 2000. (PUIL, S. N. I. 2000)

Tools and materials used:

- a. NYA cable 2.5 mm and 1.5 mm
- b. Cutting pliers
- c. Combination pliers
- d. Taper pliers
- e. Isolation
- f. Last hubcap

The training participants were given material on how to diagnose damage to unbalanced spinning fan blades, loose fan bolts to the shaft and loose fan housing or contact with the fan blades. Tools and materials used:

- a. Drive motor
- b. Fan section
- c. Fan house
- d. Motorhome
- e. Stand or fan holder complete with speed control
- f. Isolate/last dop
- g. Cutting pliers
- h. Screwdriver/test pen
- i. Plug

The implementation of community service regarding household electrical appliances ran smoothly. Participants were very responsive and enthusiastic about this service activity. In general, they often experience damage to household electrical appliances, but experience problems when they want to determine the type of damage, so many have to bring it to the repairman/service for household electrical appliances. Some of them even tried to disassemble the electrical devices themselves, but not a few failed to diagnose the damage and even the electrical devices were neglected because they were difficult to reassemble. Based on interviews, questions and answers and direct observation during the activity, this community service activity gave the following results:

- 1) Increased knowledge of participants about the benefits of maintaining electrical equipment
- 2) Increased knowledge of participants about how to diagnose damage to household electrical appliances.
- 3) Increased knowledge of participants about how to repair household electrical appliances properly.

Some of the factors that support the implementation of this community service activity are the amount of interest and enthusiasm of the participants during the activity, so that the activity takes place smoothly and effectively. Village officials also support this activity. The inhibiting factors are the limited time for training and the lack of availability of equipment and materials used in this community service

**Figure 1.** Activity Documentation Photos



## CONCLUSION

From this community service activity it can be concluded that:

- 1) Increased knowledge of participants about the benefits of maintaining electrical equipment
- 2) Increased knowledge of participants about how to diagnose damage to household electrical appliances.
- 3) Increased knowledge of participants about how to repair household electrical appliances properly.

## **BIBLIOGRAPHY**

- Abdul Kadir, Distribusi dan Utilisasi Tenaga Listrik. (2015). Penerbit Universitas Indonesia, Jakarta
- Abdul Kadir. (2014). Pengantar Teknik Tenaga Listrik, LP3ES
- Aly S. Dadra. (2002). Electrical Systems for Architects, McGraw-Hill, USA
- Badan Standarisasi Nasional SNI 04-0225-2014. (2014). Persyaratan Umum Instalasi Listrik 2000, Yayasan PUIL, Jakarta.
- Bambang, Soepatah., Soeparno. (2018). Reparasi Listrik 1, DEPDIKBUD Dikmenjur.
- Benyamin Stein cs. (2003). Mechanical and Electrical Equipment for Buildings, 7th Edition Volume II, John Wiley & Sons, Canada.
- Bernhard Boehle cs. (2002). Switchgear Manual 8th edition
- Brian Scaddam. (2000). The IEE Wiring Regulations Explained and Illustrated, 2nd Edition, Clags Ltd., England
- Brian Scaddan. (2019). Instalasi Listrik Rumah Tangga, Penerbit Erlangga
- Cekdin, Cekmas, Siti Sailah. (2014). Medan Elektromagnetik. Yogyakarta: Penerbit Andi
- McDonald, John D. (Editor). (2011). Electric Power Substation Engineering. New York: Taylor & Francis Group
- Pandjaitan, Bonar. (2012). Praktik – Praktik Proteksi Sistem Tenaga Listrik. Yogyakarta: Penerbit Andi
- Supardi, Agus, (2015). Perlengkapan Sistem Tenaga Listrik, Universitas Muhammadiyah Surakarta
- Tobing, Bonggas L.. (2017). Peralatan Tegangan Tinggi, cetakan kedua. Jakarta: Erlangga.
- W. A. Asep Mulyana. (2013). Prototype Sistem Kendali Rumah Otomatis Berbasis Iot (Internet Of Things) Menggunakan Arduino Uno. Bandung: Program Studi Teknik Informatika, STMIK & Ilmu Komputer LPKIA