

Utilization of Renewable Energy (Microhydro) as Alternative Energy Sources for Integrated Lighting Systems in Tourism Village Locations

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ABSTRACT

The purpose of this community service activity are: to develop, to know the performance, and to find out the feasibility of renewable energy sources based on river hydro power (micro hydro) which can be used as an alternative source of electrical energy for lighting and education in the tourist area of Pelang River, Joho, Condongcatur Village.

The problem solving framework in this community service activity are: conducting initial coordination, need assessment, designing, preparing all the devices, carrying out manufacturing, testing the performance, evaluating, and documenting hydro electric power plants (micro hydro) as alternative sources of electrical energy for lighting and education in Pelang River tourist area. The target audience for this community service activity are the community of RT 08/RW 60 in Joho, Condongcatur, Depok, Sleman. Methods that have been used in community service activities include: lectures, questions and answers, feasibility studies, observations, practices, focus group discussions, and fieldwork.

The results of community service activities show: (1) product has been developed for the development of renewable energy sources based on river water (micro hydro) with a specific diameter of 120/140 mm pipe, 2.5 m high water drive, 41,000 Cm/s water discharge, 220 V voltage, 1.36 A current, 300 W power, 1500 rpm turbine rotational speed, and 50 Hz frequency; (2) Hydroelectric power plants can work in accordance with their work functions, however, because the plants are installed in the dry season so that the Pelang River has a small water discharge, the resulting voltage is not optimal, ranging from 146 Volts to 174 Volts. still below the nominal voltage of 220Volt; and (3) overall community service activities in the form of hydroelectric power products for lighting and education in the Pelang River tourism area in Joho, are stated in the reasonably feasible category.

Kata Kunci: *renewable energy, micro hydro, lighting, tourist village.*