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TECHNICAL AND ECONOMIC EVALUATION FOR
A MICRO-HYDRO POWER SYSTEM FOR
BATTERY CHARGING

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**TECHNICAL AND ECONOMIC EVALUATION OF A MICRO-HYDRO
POWER SYSTEM FOR BATTERY CHARGING**

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Presented to the Faculty of the
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**In Partial Fulfillment of the
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*Technical and economic evaluation of a
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ABSTRACT

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A micro-hydro power system was evaluated for battery charging at the Villa Colmenar Resort in Tambo Kulit, Indang, Cavite. The charging power, charging time, charging voltage and charging current were determined and analyzed. The efficiency of the system was also determined. Performance test of the system was conducted at a head of 10.45 m and at different discharge conditions of the battery.

The system was tested at constant head and four (4) discharge conditions of the battery. The batteries were discharged using four (4) units 12-V, 21 cp, automotive bulbs to reach the different discharged condition of 25%, 50%, 75% and 100%. The batteries were charged individually. Results showed that the system reached an average charging power of 46.61 watts, average charging current of 3.21 amperes, average charging voltage of 14.71 volts, and charging time of 7.63 hours. The system's efficiency with respect to the theoretical water power was on the average of 6.59%. The system was very small to fit the theoretical water power of the head being used.

The system amounted to ₱5,102.50.

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INTRODUCTION

The increasing need for power supplies in many developing countries is now being dealt with by many development workers and agencies. Although large-scale schemes have been concentrated in urban areas which serve more people at minimum expenses and labor, there is also a great promise for small-scale scheme reaching out of rural people who are scattered in remote areas with less income and often deprived of benefits.

The principles of using water to generate mechanical and/or electrical power are well-known and are in wide spread use throughout the world. Hydro power is attractive because it is renewable resource that can never be exhausted and which avoids the pollution associated with burning fossil fuels. The improved economy of larger plants has gradually favored large-scale development, but there are