



เครื่องกำเนิดไฟฟ้าเพื่อผลิตกระแสไฟฟ้าได้ประมาณ 15 วัตต์ และมีปริมาณเพียงพอต่อการนำไปใช้  
สำหรับส่องสว่าง และสามารถใช้เทคนิคการต่อเข้ากับโคมประหยัดไฟชนิดพิเศษ คือ Super LED  
ซึ่งใช้กำลังงานไฟฟ้าเพียง 2 วัตต์ หรือสามารถประจุเข้าแบตเตอรี่เพื่อนำไปใช้งาน



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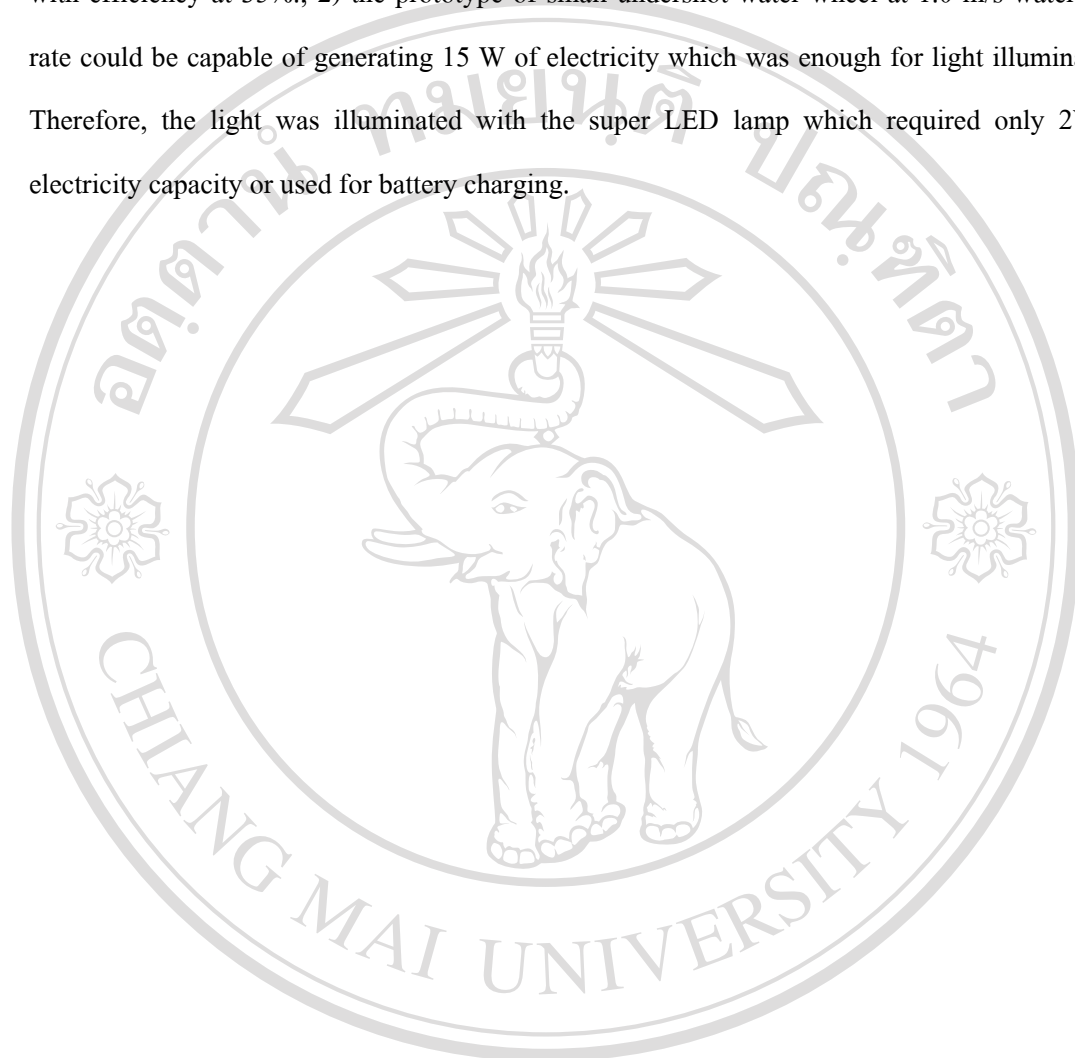
<b>Thesis Title</b>	Performance Evaluation of Small Undershot Water Wheel for Electricity Generation
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<b>Degree</b>	Master of Engineering (Energy Engineering)
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**ABSTRACT**

The main objective of this research was to study the feasibility and the potential of undershot water wheel with difference 3 paddles. The cross-section areas perpendicular to the water flow, of those 3 paddles were the same. The design and prototype construction of small undershot water wheels was aimed for electricity production. The structural design was to be simple and appropriated for installation, service and maintenance. The research methodology was focused to the model of under shot water wheel with difference 3 paddles, i.e., flat paddles shape, end of paddle to bend shape and curve paddle shape. There were designed for the diameter of 40 cm, 8 cm width and height of 6 cm. Experimental was conducted on the open canal at water flow rate between 0.5-2.0 m/s. After that, designed and constructed the prototype of small undershot water wheel was constructed with the size of 200 cm diameter with 1.2 m<sup>2</sup> blade areas (width 40 cm, height 30 cm) and the diameter of permanent magnet generator of 40 cm by using the permanent magnet to rotate inside an armature stator. Rational speed was between 100-200 rpm, approximately.

The results were found that: 1) the model of small undershot water wheel with curve paddle shape was the best and could convert the energy in moving water to mechanical power

with efficiency at 35%.; 2) the prototype of small undershot water wheel at 1.0 m/s water flow rate could be capable of generating 15 W of electricity which was enough for light illumination. Therefore, the light was illuminated with the super LED lamp which required only 2W of electricity capacity or used for battery charging.



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