

262,062,092 บาท มีระยะเวลาคืนทุน 4.1 ปี และมีอัตราผลตอบแทนภายในเท่ากับ 23% จุดสุดท้ายตั้งอยู่ที่ ตำบลสันกลาง อำเภอพาน ซึ่งควรมีกำลังการผลิตไฟฟ้า 2.6 MW และมีอัตราผลตอบแทนทางการเงิน คือ ที่อัตราลดค่า 5% ค่าปัจจุบันสุทธิเท่ากับ 98,429,171 บาท มีระยะเวลาคืนทุน 4.9 ปี และมีอัตราผลตอบแทนภายในเท่ากับ 19%



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ABSTRACT

Biomass is one of energy sources which is highly possible to produce alternative energy. The limitation of this kind of energy source is that it spreads all over in wide area and the energy intensity is low. This results in high transportation cost from the source to the energy transforming site. Therefore, it is necessary to select energy transforming site for economic suitability for reduction in transportation cost. A model to select energy transforming site was developed into 3 parts; 1) logistics system section: to search for electricity generation site from biomass source that has lowest cost. 2) two-stage fluid bed pyrolysis and gasification unit: to study the most suitable electricity generating power for the site, and 3) power-plant lifetime financial assessment using information of Chiang Rai as model test.

It was found that there are three proper sites in Chiang Rai which can be utilized as the energy transformation sites as mentioned below.

1) The first site is located at Tha Sai Sub-district in Mueang Chiang Rai District where there should be 1.6 MW of electricity production capacity for this site and the discount rate throughout the utilization life is at 5%. In addition, net present value (NPV) should be set for 51,132,920 Baht, while pay-back period must be within 5.7 years, and internal rate of return is 16%.

2) The second site is located at San Sai Sub-district in Mae Chan District where there should be 5.2 MW of Electricity Production Capacity for this site and the discount rate is 5%. Moreover, net present value (NPV) should be set for 262,062,092 Baht, while pay-back period must be within 4.1 years, and internal rate of return is 23%.

3) The final site is located at San Klang Sub-district in Phan District where there should be 2.6 MW of Electricity Production Capacity for this site and the discount rate is 5%. Besides, net present value (NPV) should be set for 98,429,171 Baht, pay-back period must be within 4.9 years, and internal rate of return is 19%.