

**DESIGN HARNESSING HOT SPRING'S ENERGY SYSTEM FOR COCOA
BEANS DRYING**

By

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CERTIFICATION OF APPROVAL

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CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

MUHAMAD IZDAN ZUL IZZI B. MAHAMAD REZALI

ABSTRACT

Geothermal energy is a one type source of alternative energy. Countries like United Stated, Australia, New Zealand, China, Canada and Turkey have used this energy for some applications such as for electricity generation, space and district heating, air conditioning, greenhouse heating and others. The presence of volcanoes, hot springs and other thermal phenomena lead people to explore and study energy produced inside earth. In Malaysia, there are also some places have the hot springs in Tambun, Sungkai, Pengkalan Hulu, Manong and others and currently use for recreation and tourism. For this project, the author wants to study and understanding this one type of alternative energy and design suitable system to harness hot spring's energy and used for cocoa beans drying (industrial application). The problems that are being created from energy price hiking and our equator climate lead the author to find the solutions. The target is to design a suitable system which can harness hot spring's energy and applied it on cocoa beans drying process. Since the energy is free and continuously produced inside the earth, the author wants to find the way how to commercial the energy. The important elements that need to be determine before starts the design is the behaviour of cocoa beans while drying and the unknowns related to the design that must being determine using the experiment and engineering calculations. The design must be in details for future works. This project can solve the problems of inconsistently weather condition and high price for fuel and gas that being used for artificial drying. This project also can make improvement with maximizing the quantity of the dried cocoa beans without affecting the quality.

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The Author,

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