

Evaluation of Electricity Product by Increasing Water Volume During Freezing

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Abstract: Electricity production process by the use of water expansion during freezing. By use of a closed volume such as piston and cylinder. The volume increase of ice could be transformed linearly and cause piston displacement, by the use of cold resource and heat resources. This process is possible where boarding temperature difference is high and water temperatures reach below 0°C this method uses a cylinder and piston which passes a complete cycle. The piston is driven upward due to the ice expansion and when the ice is melting it returns to its initial position. All rights reserved.

Key words: Electricity product, water volume increasing

INTRODUCTION

Water is an important and fundamental substance in technology and other systems. One of the important characteristics of water is its volume increase during freezing. Most of the industrials regard to the expansion. The force of water during freezing as a demolishing force and try to avoid its damages in industries (it can crack water pipes and car engines)^[1]. In this article we want to explain the electricity production process by the use of this force.

EXPERIMENTAL SETUP

In the beginning of the water cycle, the cylinder is placed near a cold resource. As the water turns to ice, it will gain a volume increase about 10%^[2] and gradually the piston will move upward amount of h' . ($h' \cong 0.1h$).

When the ice is melted it returns to its initial position (Fig. 1).

This displacement is small, but it contains a lot of energy, by altering this linear displacement and using gears to increase the rotation speed. We can turn a generator shaft and though produce electricity (Fig. 2). The produced electricity is not consumed continuously and we can use it to charge a battery.

The importance of this method of electricity production become more apparent, when we use natural environment energy instead of heat and cold resources, especially in the regions, that have high temperature variations during the day and night in these regions, like

arid and cold regions, the temperature would vary from beneath 0°C to positive, during time intervals.

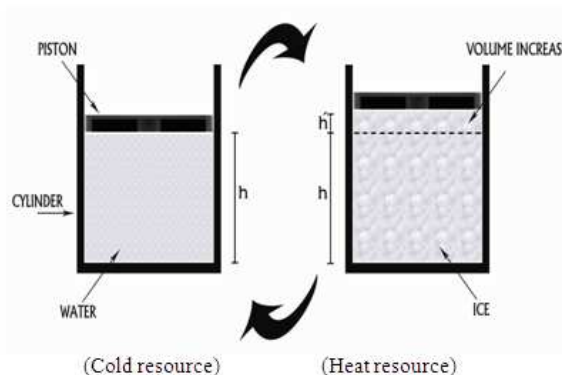


Fig. 1: Water cycle in cylinder

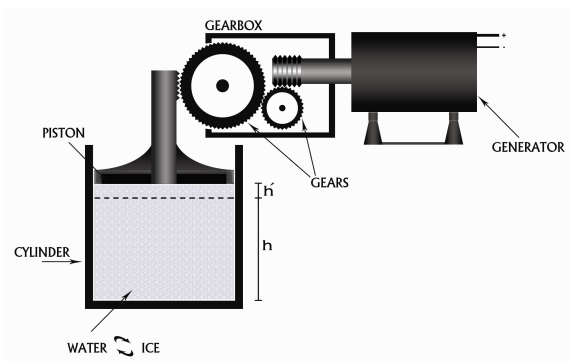


Fig. 2: Electricity production process

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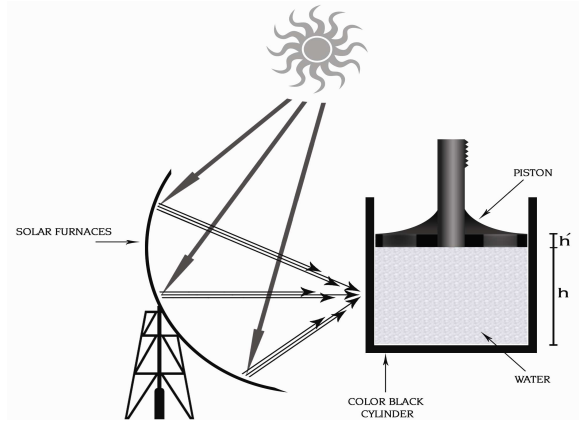


Fig. 3: Ice melting process

In cold regions the energy of cold resource is supplied by night temperature that is beneath 0°C and the energy of heat resource is supplied by temperature in a day and cylinder black coating is used to achieve the maximum solar energy; the cylinder is located at the focus of a solar furnace. Solar furnace mirrors are in relation with the sun displacements (Fig. 3).

One of the advantages of this electricity production method is the clean energy, which is used, so that it has no menace for the environment. The other advantage is its low costs.

CONCLUSION

This project is based on water expansion during freezing. By using an appropriate cycle, we can produce electricity. The system should be placed in regions that have high temperature variations during day and night, like arid and cold regions.

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