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Patent Search

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Abstract:

A thermal collector (100) comprising: a bifacial photovoltaic module (102) to generate an electrical energy and a thermal energy such that the generated electrical energy is stored in a battery (108) connected to the bifacial photovoltaic module (102) and the generated thermal energy is used to heat water; parabolic concentrators (104a-104b) to concentrate incident solar radiations onto the bifacial photovoltaic module (102); and an insulation box (106) connected to the bifacial photovoltaic module (102) and the parabolic concentrators (104a-104b), wherein the insulation box (106) comprises: a tube in a plate collector (110) to hold the water heated; and an insulating layer provided at a bottom surface of the tube in the plate collector (110) to reduce bottom thermal losses.

Complete Specification

[001] Embodiments of the present invention generally relate to a thermal collector and method for generating energy and particularly to a thermal collector and method for generating a thermal energy and an electrical energy.

Description of Related Art

[002] Solar energy i.e. a radiant light and heat from sun is one of the simplest and commonly available energy sources amongst all available renewable energy sources. The solar energy is harnessed for variety of uses, including generation of electricity, providing light, keeping a comfortable interior environment, and heating water for domestic, commercial, or industrial use. Various solar energy devices such as photovoltaic cells, solar water collectors, solar air collectors, solar cookers, solar furnaces and so forth are available that utilizes the solar energy for performing desired functions. Conventional solar energy devices are designed to operate in hot and arid climate where a temperature is in a range of 25o - 30o Celsius (C). However, the conventional solar energy devices are incapable to produce enough electrical and thermal energy in cold climatic conditions where the temperature lies between 12oC -15oC.

[003] Moreover, the traditional solar energy devices available in the market mainly uses opaque-back sheeted photovoltaic modules that are mono facial. The mono facial photovoltaic modules are designed specifically to harness solar energy from only one side facing the sun thus resulting in low efficiency.

[004] There is thus a need for a thermal device for generating a thermal and an electrical energy in every climatic condition in a more efficient manner.

SUMMARY

[005] Embodiments in accordance with the present invention provide a thermal collector comprising: a bifacial photovoltaic module to generate an electrical energy and a thermal energy such that the generated electrical energy is stored in a battery connected to the bifacial photovoltaic module and the generated thermal energy

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