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STUDY OF WIND FROM SUN POWER

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ABSTRACT

Wind from the Sun could be a new technology for manufacturing wattage from a solar/wind hybrid system. an oversize solar furnace transforms energy from daylight to heat. The solar furnace heats the air on top of it and therefore the heated air will increase.Cooler air moves in to exchange the rising hot air and a cycle begins. The solar furnace frequentlyHeats the air, that rises and is changed by cooler air. The heated rising air decreases the gas pressure on top of the collector. The increasing hot air over the collector contains a lower gas pressure than the cooler air over the land removed from the collector.A large diameter pipe (or "air channel") connects the lower gas pressure, close to the center of the collector, to the upper gas pressure, a brief distance removed from the collector. Air moves from high to low gas pressure through the air channel. within the air channel, pressure-staged wind turbinesConvert the wind's energy into electricity.

Keywords: Air Channel, Solar Collector, Wind Turbine,

I. INTRODUCTION

In nature it's solar energy that generates alternative energy. think about the instance of the ocean breeze. The sun heats each land and ocean, however the land heats up additional fast and reaches a better temperature than the ocean. The air over the land becomes hotter than the air up the ocean and therefore the hot air rises, generating a vicinity of less gas pressure .Air moves from the realm of additional pressure to the realm of less pressure over the land. The cool ocean air heats up because it moves up the land then it rises, generating a cycle. The results of this cycle could be a steady wind moving from the ocean to the land In this land is behaving sort of a solar furnace, dynamic daylight into heat. The heated land heats the air and generates a wind. Wind turbines will harvest this wind energy.Wind from the Sun could be a new technology for manufacturing power by the sun and wind. This hybrid system transfers the sun's lightweight to heat, then uses that heat to get a wind among an oversize diameter pipe. The wind within the pipe is equipped to wattage employing a series of wind turbines a wind from the sun power station would assume this same variety of system that happens in nature, however with an oversize degree of management. This leads to a additional reliable wind with a better average wind speed.

II. THE SOLAR COLLECTOR

2.1 Materials:

an oversize space of land is roofed with a fabric with less reflectivity. This material collects the sun's energy within the kind of heat, and is so famous the collector. the realm of land coated is circular.More of the sun's lightweight changes to heat once it strikes a dark material. If the fabric were a light-weight colour, like white,

then abundant of the sun's lightweight get mirrored. Black is that the best colour to use for this purpose. The collector ought to be black ceramic gravel. Tiles of black ceramic work, however it'd be time intense to layout all of the tiles. Gravel permits water to undergo into the bottom once it rains. This material ought to be straightforward to cover the bottom and permits rain to undergo to the bottom. The solar furnace transforms the energy from daylight to heat. the warmth by the collector causes the air up the collector to additionally rise in temperature. the aim of the solar furnace is to heat the air that it will rise, generating a wind. The energy within the wind is transferred to electricity mistreatment wind turbines. Any however black colour absorbs, instead of replicate, actins radiation. However, so as to transfer the maximum amount of the sun's energy to heat as potential, the solar furnace should additionally absorb lightweight higher within the ultraviolet and infrared wavelength. The energy from daylight is around five-hitter actins radiation, a quarter mile actins radiation and fifty one actins radiation. A carbon dependent material absorbs larger than ninetieth of the energy from lightweight across the spectrum of ultraviolet. Soot could be a common pigment employed in industrial paints.

Black ceramic gravel is best materials for the solar furnace. The black colour should come back from soot pigment painted on the ceramic. A100 power unit star chimney power station is foretold to own a rise in air temperature of 35.7 degrees Centigrade.

III. AIR MOVEMENT

3.1) Hot Air Increases:

A number of things build the rising column of air on top of the collector considerably precise than the collector's diameter:

(1) Hot air rises. the warmer the air, relative to the temperature of the encircling atmosphere, the quicker air will increase. The collector is hotter in its center creating the air within the center additionally hotter. The air by the center of the collector rises quicker, as a result of it's hotter. the warmer air towards the center of the collector rises quicker than the air by the perimeter, inflicting the air by the perimeter to curve inwards furthermore as upwards. This impact precise the rising column of air by the collector.

(2) because the cooler air moves inward from the perimeter towards the center of the collector, it slowly will increase in temperature because it spends longer over the new collector. the warmer air gets, the quicker it will increase. The cooler air, that moves largely horizontally whereas at the perimeter, because it moves nears the center and rises in temperature. The result's that the trail of the air curves moves upwards direction because it moves inwards direction, then the rising column of air is far precise than the collector itself. Thus there square measure 2 cases that build the air hotter by the center of the collector, first, that the center of the collector itself is hotter and second, that the air within the center has spent longer by the collector.

(3) The rising air within the center meets with minimum resistance because it rises, as a result of it's enclosed by air that's additionally rising. This issue causes the air nears the center to lift quicker, drawing in air from the perimeter, and once more precising the rising column of air.

(4) because the hot air by the collector rises, new cooler air should move in from the perimeters round the collector to exchange the rising air. The cooler air at the perimeter approaches inward from 360 degrees round the collector. This end in a wind moving inwards nears the center of the collector. Air shift by the perimeter of

the collector is additional horizontal than vertical. This wind pushes the rising column of air inwards, once more doing the column of air precise than the collector itself. For the on top of reasons, most of the draft over the collector shows round the center of the collector. Therefore, the gas pressure also will be lowest towards the center of the collector. The gas pressure by the solar furnace is minimum than the gas pressure by the land. the rationale is that the collector is heating the air on top of it, however the encircling land remains at temperature. The heated, rising air leads to a vicinity of lower gas pressure. The depression by the collector is maintained as long because the collector is being heated by the sun. Air moves from a vicinity of high to a vicinity of minimum pressure. The rising hot air considerably lowers the gas pressure by the collector relative to the encircling land. The air from the land round the collector moves in nears the center of the collector and additionally rises vertically. during this path, the solar furnace generates wind. This wind moves from 360 degrees round the collector in towards its center and upwards. The draft generated ought to be quite sturdy, since it's the results of air occupancy from 360 degrees. The impact is such the air by the center of the collector rises even as if it were joined round the chimney. A star chimney-like result's got while not the reducing of the tall vertical structure. This virtual chimney impact depends on the diameter of the collector and therefore the changes in temperature from the center to the perimeters of the collector. The impact of this method is larger with a bigger collector and a bigger increase in temperature nears the centre. the warmer the air, the quicker it rises; the quicker it rises, the additional the air from the perimeter is drawn in towards the center. The draft generated by this impact developing a vicinity of low gas pressure within the center of the collector.

IV. AIR CHANNEL

A very giant diameter pipe or air channel connects the realm of low gas pressure over the solar furnace to a vicinity of upper gas pressure removed from the warmth of the collector. Air moves from high to depression, making a wind among the pipe. the number of alternative energy generated by this technique depends on the gas pressure distinction from the center of the collector to the encircling land. Associate in Nursing gas pressure distinction of concerning four hundred Pascal's ought to generate a wind speed of fifteen meters per second (m/s). Associate in Nursing gas pressure distinction of concerning 700 Pascal's ought to generate a wind speed of twenty m/s. The diagram below shows four pipes, every of that is 2000 meters long and a hundred seventy five meters in diameter. The solar furnace contains a diameter of 4000 meters. The pipes extend 1500 meters into the collector as a result of the inner portion of the collector has all-time low gas pressure. The pipes extend solely five hundred meters removed from the collector. Cool air is continually occupancy towards the collector, therefore maybe the pipes might extend an excellent shorter distance removed from the collector. However, they may be rectangular in crosswise .This form could also be less costly and easier to make. It ought to additionally take higher advantage of the warmth from the collector, since it'll be nearer to ground level. to get constant cross-sectional space, these rectangular air channels (instead of pipes) would want to be concerning sixty meters high by four hundred meters wide. Pipes of constant cross-sectional space would have a diameter of concerning a 175 meters.

Air flows into the air channel (blue rectangles below) from the perimeter of the collector. Air flows out of the air channels near the centre of the collector and increases upward. The air increases for two reasons. First, a strong

updraft occurs in the centre of the collector. The updraft results from the solar collector heating the large volume of air which does not travel through the air channels. Second, the air which does travel through the air channels is heated by the collector as it travels through the air channels and after it exits the air channels.The figures above show an example of 4 pipes per collector and an example of 2 air channels per collector. However, the optimum number has not been determined yet. Perhaps such a power plant would only need one air channel to produce sufficient power. A test plant would have to be built and measurements taken in order to have sufficient data to make such a determination. The hot air increasing from the centre of the collector creates and maintains a low pressure area in the centre of the collector. The pipes have a constant difference in air pressure from one end to the other. The air pressure is higher away from the collector and lower towards its centre. This difference in air pressure moves air through the pipes.Each pipe has pressure-staged wind turbines which present a kind of obstacle to the air movement. The wind turbines remove mechanical energy from the wind in the pipes and convert it to electricity. Even so, air continues to move through the pipes because the increasing hot air in the centre of the collector maintains a significantly lower air pressure at one end of the pipe. The wind speed can be controlled by increasing or decreasing the size of the collector. Such a change can even be made after the power plant has been built, by covering or uncovering part of the collector's surface with a white material. In summer, the collector will tend to reach a higher temperature and produce a higher wind speed. It is possible to reduce the wind speed by covering part of the collector, thus reducing the effective size of the collector. In winter, the collector will not reach as high a temperature and so the collector can be completely uncovered to obtain maximum wind power.

V. WIND TURBINES

A series of very large wind turbines within the pipe turn the wind into electricity with a high degree of efficiency. Each pipe can contain several turbines and each collector can support several pipes.

For a power plant with a collector diameter of 4000 meters, the interior diameter of the pipes would be 175 meters and the cross-sectional area would be about 24,050 square meters. A pipe of that size could support multiple wind turbines in a variety of configurations. One possible configuration is shown below. Seven large turbines, each with a diameter of about 55 meters, can fit within a pipe of this size.

Of course, the pipes do not have to be round in cross-section. They can certainly be rectangular, as shown below. Again, seven large turbines, of about 55 meters in diameter each, can fit within a rectangular pipe with the same cross-sectional area as the round pipe.

VI. CONCLUSIONS

At this point in time, two conclusions are clear. First, this type of system will produce some power. The sun will heat the collector, which will heat the air. The higher air temperature will expand the air, reducing air pressure. Air must move from high to low pressure, through the air channel and past the wind turbines, producing power. A sea breeze works much the same way and produces significant wind. Some power can certainly be produced in this way. Second, the system has not been built and tested to a large enough scale to determine how much power will be produced. Will the air pressure difference be large enough to produce significant air velocity

through the air channel? Will the system produce enough power to be economical? What are the possible ecological effects of such a large solar collector? Further study is needed to answer these and other questions.

VII. ADVANTAGES& DISADVANTAGES

ADVANTAGES

1) It use for generate electricity in desert land.

2) The power plant is very easy in construction.

3) At 20 m/s wind will generate about 4660 Watts per square meter.

DISADVANTAGES

It has needed very high flaming environment.

During rainy session it could not developed energy.

This power plant requires more space.

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