THE RELEVANCE OF THE USE OF SOLAR ENERGY AS WELL AS THE EFFECTIVE USE OF SOLAR ENERGY

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Annotation: *This article highlights the needs and relevance of using solar energy. There are also recommendations for improving the performance of solar air collectors with flat surfaces. The methods of operation of a newly developed solar air collector of a new type have been researched. The issues of accelerating the processes of heat exchange by giving the air flow in the working Chamber of the solar air Collet are considered.*

Key words: *Solar air collector, absorber, temperature, convective heat discharge, bottom pipe, Reynolds number, laminar, turbulent.*

Currently, the problems of energy conservation in the use of fuel and energy resources remain especially relevant due to the decrease in the reserves of conventional fuel and energy resources and the increased environmental negative impact on the environment. Currently, 20% of the energy spent in the world is obtained from non-traditional energy sources, as well as 30% from fossil fuel sources.

Therefore, the implementation of comprehensive measures to solve the problems of energy conservation and the development of the use of unconventional renewable energy sources is considered very urgent. In a sharply continental climate, 49.6% of total energy consumption per year falls on agricultural processing systems.

In agriculture, more than 50% of primary energy is consumed annually [1].

Currently, a number of important national economic problems in the Republic of Uzbekistan also include problems related to the development of the fuel and energy complex and the solution of environmental problems.

In the performance of these tasks, which require immediate resolution, it is required to expand the use of renewable energy sources. The use of solar energy in reasonable harmony with other energy sources will help to significantly save fuel and energy resources in many cases [3-4].

Typically, at the limit of the Earth's atmosphere, solar energy is characterized by its intensity, and this amount is called the solar constant. The solar constant can be defined as follows: taking the sun's radius R and the distance from its center to the Earth R, then looking at the sphere whose center corresponds to the center of the sun. The surface of such a sphere is equal to $4\pi r^2$ and from it within a unit of time

$$4\pi r^2 \cdot I \qquad (1)$$

the amount of energy passes. Where I is the intensity of solar energy within the Earth's atmosphere boundary. The above amount of Energy (1), in turn, is the amount of energy radiating from the surface of the sun within a unit of time

$$4\pi R^2 \cdot E \qquad (2)$$

equal to (1) and (2) let,

$$4\pi r^2 I = 4\pi R^2 E \qquad (3)$$

from this $$E = \frac{Ir^2}{R^2} \qquad (4)$$

we get. On the second hand, if we look at the sun as an absolute black body, then according to the Stefan-Bulgarian law

$$E = \sigma T^4 \qquad (5)$$

As a result, from (4) and (5)

$$I = \frac{R^2}{r^2}\sigma T^4 \qquad (6)$$

origin. (6) the values of the quantities entering the formula are as follows:

$R = 6{,}95 \cdot 10^8 \, м$ $\qquad r = 1{,}5 \cdot 10^{11} \, м,$

$\sigma = 5{,}67 \cdot 10^{-8} \, Вт/(м^2 K^4)$ $\qquad T = 5800 \, K.$

If the values of these magnitudes are calculated by putting (6) in the formula,

$I_{\perp} = 1,4\,\kappa Bm/\text{м}^2$

it follows that is equivalent to [5].

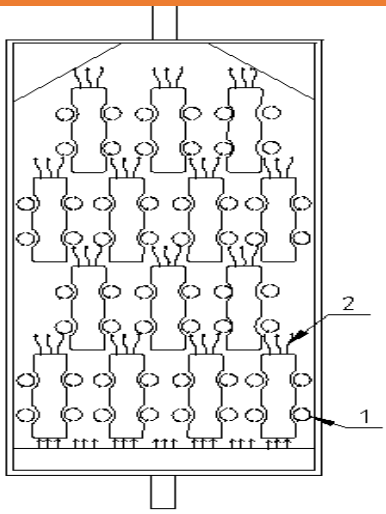

Figure 1. In tubular air heaters, the movement of air flow in the pipes.

The first row of pipes in the set is washed by an unpaired stream of liquid, and therefore in this row the groove is the smallest. In the next rows, the heat dissipation is much more intense, and the third and subsequent rows are almost the same as the heat dissipation. For α set of pipes, giving heat at $10^3 < \mathrm{Re} < 10^5$ va $0,7 < \mathrm{Pr} < 500$ is determined from the following equation

$$\overline{Nu} = C\,\mathrm{Re}^m\,P_r^{1/3}\left(\frac{\mathrm{Pr}_c}{\mathrm{Pr}_g}\right)^{1/3}\varepsilon_S\cdot\varepsilon_i \qquad (8)$$

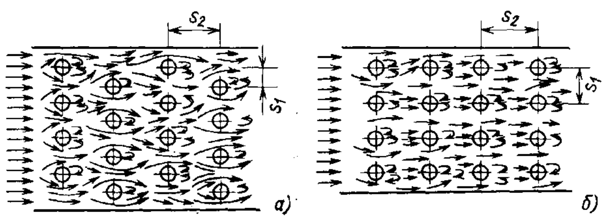

Figure 2. Description of the movement of air flow in a set of pipes.

a-shape positioning; b-lane positioning

Pipes are c=0,41, m=0,65; when they are located in chess; c=0,26, m=0,65. When they are located in pavement. As a determining linear size, the outer diameter of the pipe is obtained. The Re number is calculated through the average velocity of a liquid or gas in the narrowest cross section of the set. Correction factor take into account the transverse S_1 of the set and the longitudinal step of the set of ε_s:

Expected efficiency

- Compared to the common Full-Channel solar air heater, the consumption of air ducts is reduced by two

-Through the geometric shape given to the air duct, a circular motion is given to the air and an opportunity is created for the air temperature to rise to its maximum.

- The local resistance coefficient of the device is reduced compared to the common Full-Channel solar air heater.

- As a result of the reduction of local resistance, the device can work effectively even at low speeds.

Conclusion: It is required to carry out experiments at all times of the year using a solar air missionary developed in a new way, as well as to develop a mathematical model of the device based on the results obtained.

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