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**Transfer of Scattered Energy of the Ambient Air
in the Format of Energy Heat and Mass Transfer
and Energy Inversion for Autonomous Full-Fledged Operation
of the Energy Complex of an Air Heat Pump System**

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Abstract. At present, the process of converting potential energy concentrated in the surrounding air is of considerable interest when using its active component. For many years, searches have been made for ways to increase the efficiency of existing energy sources, the continued study of which would not lead to environmental consequences for mankind. Much attention of scientists is attracted by the problems of energy inversion. And the most acute issue is the control of energy inversion, which is a single process of energy transformation from one state to another, occurring simultaneously in the “concentration-dispersion” format in the surrounding air. This kind of opportunity to use ambient air as renewable energy sources is provided by air heat pump systems, the heat supply of which is practically the only effective, environmentally friendly source of heat supply in buildings at present. However, modern air heat pump systems cannot be attributed to systems operating only on renewable energy sources, since their operation requires, according to the technology, a certain amount of electrical energy to start the compressor engine, which ensures the operation of a closed compression cycle of the evaporative-condensation unit. At present, it is not possible to achieve a full autonomous mode of operation of an air heat pump system without the use of an additional energy source. Continuing the innovative and effective way of developing the extraction of the surrounding air for the purpose of obtaining thermal and electrical energy, scientists propose to use the capabilities of modern quantum wave technology, based on thermodynamics and electrodynamics. To solve this problem, they followed the path of development of modern electronics, realizing that electrons – “quanta” determine the vast

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majority of the physical and chemical properties of the bodies around us. Such a process of heat and mass transfer, in the conditions of the surrounding air, under the influence of external forces of the energy field, is the environment in which natural and artificial electric currents propagate.

Keywords: energy inversion, concentration, ambient air, dissipation, electrical energy, heat pump systems.

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Передача рассеянной энергии окружающего воздуха в формате энергетического тепло- и массообмена и инверсии энергии для автономной полноценной работы энергетического комплекса воздушно-теплонасосной системы

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Аннотация. В настоящее время значительный интерес представляет процесс преобразования потенциальной энергии, сосредоточенной в окружающем воздухе, при использовании его активной составляющей. На протяжении многих лет ведутся поиски способов повышения эффективности существующих источников энергии, дальнейшее изучение которых не привело бы к экологическим последствиям для человечества. Большое внимание ученых привлекают проблемы инверсии энергии. И наиболее остро стоит вопрос управления инверсией энергии, представляющей собой единый процесс преобразования энергии из одного состояния в другое, происходящий одновременно в формате «концентрация-рассеяние» в окружающем воздухе. Такого рода возможность использования атмосферного воздуха в качестве возобновляемых источников энергии обеспечивают воздушные теплонасосные системы, которые в настоящее время являются практически единственным эффективным, экологически чистым источником теплоснабжения зданий. Однако современные воздушные теплонасосные установки нельзя отнести к системам, работающим только на возобновляемых источниках энергии, так как для их работы требуется, согласно технологии, определенное количество электрической энергии для запуска двигателя компрессора, что обеспечивает работу замкнутого цикла сжатия, испарительно-конденсационной установки. В настоящее время невозможно добиться полного автономного режима работы воздушной теплонасосной системы без использования дополнительного источника энергии. Продолжая инновационный и эффективный путь развития экстракции окружающего воздуха с целью получения тепловой и электрической энергии, ученые предлагают использовать возможности современной квантово-волновой технологии, основанной на термодинамике и электродинамике. Для решения этой

проблемы они пошли по пути развития современной электроники, поняв, что электроны – «кванты» – определяют подавляющее большинство физических и химических свойств окружающих нас тел. Таким процессом теплообмена и инверсии энергии для автономной полноценной работы энергетического комплекса воздушно-теплонасосной системы в условиях окружающего воздуха под действием внешних сил энергетического поля является среда, в которой распространяются естественные и искусственные электрические токи.

Ключевые слова: инверсия энергии, концентрация, окружающий воздух, рассеивание, электрическая энергия, системы тепловых насосов.

Цитирование: Федосов С.В. Передача рассеянной энергии окружающего воздуха в формате энергетического тепло- и массообмена и инверсии энергии для автономной полноценной работы энергетического комплекса воздушно-теплонасосной системы / С.В. Федосов, В.Н. Федосеев, С.А. Логинова // Журн. Сиб. федер. ун-та. Техника и технологии, 2023, 16(1). С. 22–28. EDN: UJNFMW

Introduction

In modern advanced energy technology, the main method of obtaining energy, thermal, mechanical or electrical, is based on the combustion of hydrocarbon fuels. On the one hand, this method has several disadvantages. This is environmental pollution and an increase in carbon dioxide in the planet's atmosphere. According to forecasts, if the systemic combustion of hydrocarbons continues at the same pace, then we will soon feel a serious lack of oxygen. The transfer from hydrocarbon energy, even partially to alternative energy: solar, water, geothermal, hydrogen, etc., shows that everything is not so simple here.

Renewable energy technology from ambient air is primarily:

- 1) uneven production of useful energy during the day;
- 2) low density of energy flows, which is very important.

Such alternative energy cannot yet fully compete with fossil fuels. Economically, it is more profitable today to use highly concentrated hydrocarbon energy than dispersed alternative energy. Humanity's hopes for such a source as "thermonuclear fusion" and the development of hydrogen energy are the future, although the first experimental results are already there. Therefore, today it is necessary to make more efficient use of the energy sent by a natural thermonuclear source, such as our sun. Unfortunately, all the same, such an amount of free energy, "scattered" in the air around us, is practically not used residually and, of course, it must be mined.

Today, the issues of development and implementation of energy-saving systems using renewable energy sources (RES) are of particular relevance. Systems of large-scale use of environmentally friendly energy sources, distributed renewable energy are becoming necessary [1, 2]. Scientific and practical research conducted by the authors in the climatic conditions of the Central Federal District of the Russian Federation indicates the possibility of using air heat pump systems as renewable energy sources [3]. Heat supply by such systems is currently practically the only effective, environmentally friendly source of heat supply in buildings, especially if it is impossible or expensive to bring central heating and main gas to the building, and the use of imported devices (devices) based on alternative (renewable) energy sources is expensive or insufficiently effective at low outdoor temperatures [4–7]. However, modern air heat pump systems cannot be classified as operating only on renewable energy sources, since their operation requires, according to the technology, a certain amount of electrical energy for the VTH compressor engine, which ensures the operation of a closed compression cycle of the evaporative-condensation unit. The development of a technology for obtaining electrical energy

from the ambient air by renewable energy sources to ensure the fully autonomous operation of air heat pump systems in the present and future is extremely relevant. The problem of a complete autonomous operation of an air heat pump system without an external energy source has not yet been solved, which is an incentive for further research in this area. According to the authors, complete autonomy can be achieved by using the principles of energy inversion, that is, extracting dissipated heat from the surrounding air and achieving the necessary electrical energy for an air heat pump system, based on the direction of work of Academician P.K. Oshchepkov [8, 9] the development of the idea of energy inversion with the justification of the electron-quantum approach.

It is known that the surrounding air through physical fields has the following properties:

- 1) Electromagnetic oscillations.
- 2) Gravitational influence.
- 3) Magnetic fields.
- 4) Microwave range of electromagnetic waves.
- 5) Tesla radiant energy.

You need to understand:

- 1 – dissipated heat is the distribution of radiation intensity;
- 2 – scattering and concentration always exist together.

The mechanism of “pumping” the low-potential thermal energy of the ambient air is based on the interaction of the air exhaust fan VTH in the form of a flow – electromagnetic radiation that interacts with the radiated surface of the freon heat exchanger (evaporator) together with the overpass – the main line directed to the compressor which absorbs, converting liquid (freon) in this line into a heated gas [10–12].

The development of advanced electronic technologies today requires highly efficient energy-efficient solutions, raising the performance of various kinds of heat-refrigeration systems with a wide range of outdoor temperatures [13, 14].

Research methodologies

Continuing the innovative and effective way of developing the extraction of the surrounding air for the purpose of generating electricity, scientists propose to use the possibilities of modern quantum-wave technology, based on thermodynamics and electrodynamics [15, 16].

With this approach, the process of heat and mass transfer in the conditions of the surrounding air under the action (influence) of external forces of the energy field, for example, on a special kind of metal conductor, the composition of which is a combination of an aluminum-copper alloy with a smooth transition of the state of materials from one end to the other, in which, in addition to thermal motion caused by molecular kinetic energy, an ordered motion of electrons “quanta-electronic energy” occurs, that is, an electric current flows.

We believe that this approach can be attributed to breakthrough technologies in terms of their development and practical use.

To solve this problem, scientists have followed the path of development of modern electronics, realizing that electrons – “quanta” determine the vast majority of the physical and chemical properties of the bodies around us. Moreover, electrons are also interesting because of all the elementary particles known to us so far, only they continue to move even at absolute zero temperature, when

any other movement of atoms and molecules in the crystal lattice, according to the general laws of thermodynamics, practically stops [17].

It is known that in each atom the electrons are, as it were, “attached” to the energy levels corresponding to the given chemical nature of the substance and its temperature. When an electron passes from a conductor of one chemical nature to a conductor of another chemical nature, a mutual exchange of energies occurs between the moving electron and the crystal lattice of the substance, and the electron that came from copper to aluminum cannot remain with the same average energy as it had in copper, because the average speed of the kinetic movement of electrons in aluminum is much lower; therefore, it gives off excess energy, and this is “inversion”. And when an electron in motion, according to its wave technology, crosses the aluminum-copper boundary in the opposite direction, it increases its energy potential, since the average energy of conduction electrons in copper is much higher.

If you make a closed circuit of conductors of different chemical nature, then you can “force” electrons – conduction quanta to move in them mainly in one direction.

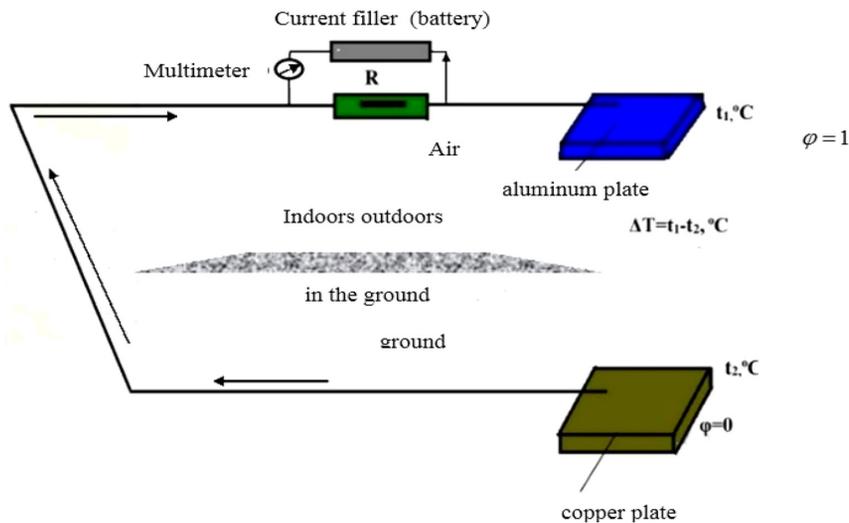


Fig. 1. The movement of electric current in a closed circuit

The essence of the effect is that inversion is a reverse movement, that is, energy passes from a less heated body to a more heated body (Fig. 1).

Interpretation and discussion of research results

Under the action of an external energy field in a metal conductor, in addition to thermal motion, an ordered motion of electrons occurs, i.e. there is an electric current. The instantaneous appearance of an electric current in the conductor is additionally associated with the speed of the temperature gradient ΔT of the heat and moisture state of the environment.

The meaning of the experiment is that the wire is made of a special property – from an alloy of copper and aluminum (Fig. 2).

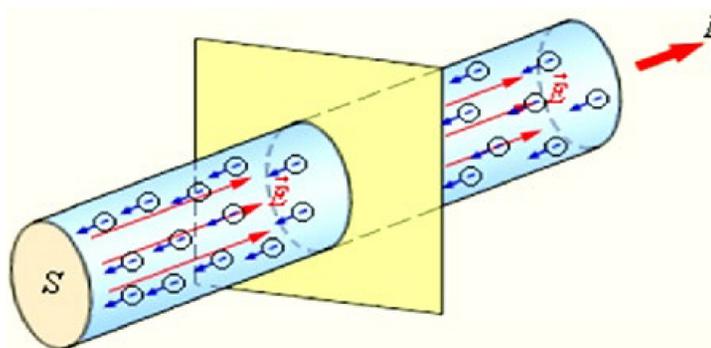


Fig. 2. Orderly movement of electrons

The left end is pure copper, the right end is pure aluminum. The electron is forced to run with acceleration from aluminum to copper. The average speed of electrons in copper is much higher than in aluminum, which means that current flows without violating the laws of thermodynamics. Getting accelerated, the electron draws energy through its metal crystal lattice and from the influence of the surrounding air – which is an energy inversion.

In the future, scientists believe that an important condition for the implementation of such an idea is the creation of a technology for obtaining a microwire – a conductor of the smallest possible cross section, about 10 micrometers (micromaterial), while maintaining the single-crystal properties of the material composition. Currently, nanoelectronic elements are being created that consist of only a few atoms (graphenes) [16]. Their dimensions are quite consistent with the requirements for nanoparts of future electron-quantum energy inverters [17].

Presenting this as a future reality, that is, if you take a couple of materials such as aluminum and copper, make an ultra-thin wire out of them and create (make) a semiconductor that provides one-way movement of electrons from copper to aluminum, plus, to ensure the desired temperature regime, then you get a “free mini-power plant”, which will operate on the created or participating difference in ambient temperatures.

It is more correct to call such devices “free” energy sources, because the electron draws energy from the crystal lattice of the material for additional acceleration, and it, in turn, from the surrounding air.

Summary and Conclusions

1. The magneto electric properties of the surrounding air, as well as the characteristics of the spatial distribution of these properties, are the most important source of extracted energy and information that makes it possible to judge the structure, state, functions and other properties that affect the objects under study.

2. The authors are aware that the problem raised in this publication contains not only the design and orientation and organizational and technological aspects of the operation of air source heat pumps, but also requires understanding and development of the natural science concepts of the classical sciences: physics and partly the philosophy of natural science. Therefore, the authors invite colleagues working in related fields of scientific research to the discussion.

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