

ALTERNATIVE ENERGY SOURCES IN THE MODERN WORLD
Tashmatov H. K.¹, Kanyazov K. A.², Umarova N. R.³ (Republic of Uzbekistan)
Email: Tashmatov533@scientifictext.ru

¹*Tashmatov Hayit Karshievich – PhD in Engineering Sciences, Associate Professor,
ACCOUNTING DEPARTMENT OF ALTERNATIVE ENERGY SOURCES;*

²*Kanyazov Kurbaniyaz Ajiniyazovich – student,
ACCOUNTING DEPARTMENT THERMAL ENERGY;*

³*Umarova Nilufar Ravilevna – assistant,
ACCOUNTING DEPARTMENT OF ALTERNATIVE ENERGY SOURCES, FACULTY OF POWER ENGINEERING,
TASHKENT STATE TECHNICAL UNIVERSITY NAMED ABU RAYHAN BERUNI,
TASHKENT, REPUBLIC OF UZBEKISTAN*

Abstract: *in today's world, with growing rates of consumption and as a consequence - the limited energy resources, rapid development momentum gaining energy production technologies of alternative and renewable sources. Alternative energy sources are already widely used for solving energy problems, not only commercially, but also in the private sector. The availability of these technologies for producing energy from inexhaustible sources allows you to build a house with volatile environmentally friendly infrastructure in remote areas, and to solve energy problems of the existing facilities. In this article, the consideration of the prospects of alternative and renewable energy sources.*

Keywords: *alternative energy sources, solar power, collectors, heat accumulators.*

АЛЬТЕРНАТИВНЫЕ ИСТОЧНИКИ ЭНЕРГИИ В СОВРЕМЕННОМ МИРЕ
Ташматов Х. К.¹, Каньязов К. А.², Умирова Н. Р.³ (Республика Узбекистан)
Email: Tashmatov533@scientifictext.ru

¹*Ташматов Хайит Каршиевич - кандидат технических наук, доцент,
кафедра альтернативных источников энергии;*

²*Каньязов Курбанияз Ажиниязович – студент,
кафедра тепловой энергетики,*

³*Умирова Нилуфар Равильевна – ассистент,
кафедра альтернативных источников энергии, факультет энергетики,
Ташкентский государственный технический университет имени Абу Райхана Беруни, г. Ташкент, Республика
Узбекистан*

Аннотация: *в современном мире, с растущими показателями потребления и как следствие - ограниченными энергоресурсами, стремительные обороты набирает развитие технологий добычи энергии из альтернативных и возобновляемых источников. Альтернативные источники энергии уже широко используются для решения проблем энергоснабжения не только в промышленных масштабах, но и в частном секторе. Доступность этих технологий для получения энергии из неисчерпаемых источников позволяет строить энергонезависимые дома с экологически чистой инфраструктурой в удаленных районах и решать проблемы энергоснабжения уже существующих объектов. В данной статье подробно рассмотрены перспективы альтернативных и возобновляемых источников энергии.*

Ключевые слова: *альтернативные источники энергии, солнечная энергия, коллекторы, тепловые аккумуляторы.*

Today alternative energy sources (AES) are already widely used for solving energy problems, not only commercially, but also in the private sector. The availability of technologies for producing energy from inexhaustible sources allows you to build a house with volatile environmentally friendly infrastructure in remote areas, and to solve energy problems of the existing facilities.

These alternative sources of energy, as the energy of sunlight and wind are used for energy and water heating, geothermal heat of the earth - for heating and cooling buildings. Converting solar energy into electrical energy takes place by means of photovoltaic wafers of silicon - the most common element on the planet. Solar cells based on silicon wafers have a long resource life - more than 25 years and, depending on the production technology, to retain 80% of its efficiency during the whole life. The amount of energy obtained from solar panels varies and depends on the location and solar activity in different seasons. The efficiency of energy conversion in solar cells up to 20%, depending on their production and the purity of silicon [1]. The technology is developing rapidly and the performance indicator is constantly growing.

The leading non-polluting source of energy is the sun. Currently used only an insignificant part of the solar energy due to the fact that the existing solar cells have a relatively low efficiency and are expensive to

manufacture. However, do not immediately refuse from virtually inexhaustible source of clean energy: According to experts, solar power could alone cover all conceivable human needs for energy for thousands of years. It is also possible to increase the efficiency of solar power plants in several times, and placing them on the roofs of houses and with them, we will provide housing heating, water heating and operation of household appliances, even in temperate latitudes, not to mention the tropics. For the needs of the industry, requiring a lot of energy, you can use the kilometer wasteland and desert, completely lined with powerful solar systems. But before solar energy gets a lot of difficulties with the construction, deployment and operation of helio energy installations on thousands of square kilometers of the earth's surface. Therefore, the total share of solar energy has been and will remain relatively modest, at least in the foreseeable future. Over billions of years the sun every second emits enormous energy. About a third of the energy of solar radiation reaching the Earth, it is reflected and scattered in interplanetary space. Many solar energy goes into heating the Earth's atmosphere, oceans and land. Currently, the national economy is often used solar energy - helio energy installations installation (different types of solar greenhouses, greenhouses, desalination, water heaters, dryers). Solar rays are collected at the focus of a concave mirror; most refractory metals are melted. Work is underway to build solar power stations, solar energy for home heating, etc. [2]. Practical applications are semiconductor solar batteries, allowing directly convert solar energy into electricity.

Lack of resources in remote regions, in conjunction with the rapid development of technology has led to a situation where the production of solar cells is rapidly gaining momentum, and the cost of final products with each passing year becomes more and more accessible to consumers with an average income. And if yesterday solar installations the technology was available only for the space program, it is already a mini-solar power plants, like mushrooms, growing on the roofs of houses and garden plots.

Solar power is used for the work solar radiation, transforming it into electrical energy. The solar energy system can be constructed as a circuit on the thermodynamic conversion of solar energy, and direct conversion scheme latter into electrical energy (using photocells). In the first case the first solar radiation is converted into heat and only then (using a heat source) is converted to electrical. [3]. In the second embodiment, the conversion of solar energy into electricity is done at the expense of the electronic properties of solar cells (through the use of "photoelectric effect"), i.e., used solar modules.

The category of solar energy storage can be attributed to the so-called collectors or heat accumulators, which, like the photocells are installed on the roofs of buildings and houses. The collector is a construction of the connecting pipes and tanks, painted in black color. Structures with similar coverage due to strong absorption of solar radiation can heat the water contained in them up to 70 degrees Celsius. And in sunny weather is heating possible even at zero temperature of the ambient air. The number of heated water, its operating temperature, and the period of heat accumulation depends only on the used container size.

Список литературы / References

1. *Джемма Геранц, Глория П. Родригес.* Использование концентрированной солнечной энергии в области материаловедения. Испания: ИНТЕХ, 2010. ISBN 978-953-307-052-0. 399 с.
2. *Виссарионов В. И., Дерюгина Г. В., Кузнецова В. А., Малинин Н. К.* Солнечная энергетика. Учебное пособие для вузов. Москва: Издательский дом МЭИ, 2008. 320 с.
3. *Мирошниченко Л. И.* Физика Солнца и солнечно-земных связей. Учебное пособие. Москва: Университетская книга, 2011. ISBN 978-5-91304-191-3. 174 с.

Список литературы на английском языке / References in English

1. *Gemma Herranz, Gloria P. Rodriguez.* Uses of Concentrated Solar Energy in Materials Science. -Spain: INTECH, 2010. ISBN 978-953-307-052-0, 399 p.
2. *Vissarionov V. I., Deriugina G. V., Kuznetsov V. A., Malinin N. K.* Solar energy. Textbook for high schools. Moscow: Publishing House MEI. 2008., 320 p.
3. *Miroshnichenko L. I.* Physics of the Sun and solar-terrestrial relations. Tutorial. Moscow: University Book, 2011. ISBN 978-5-91304-191-3. 174 p.