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The mechanism of using solar and wind energy

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Abstract: In the article, the mechanism of using solar and wind energy and their main advantages are analyzed and a number of statistical data are reflected. A number of measures have been implemented to develop the renewable energy sector in our country.

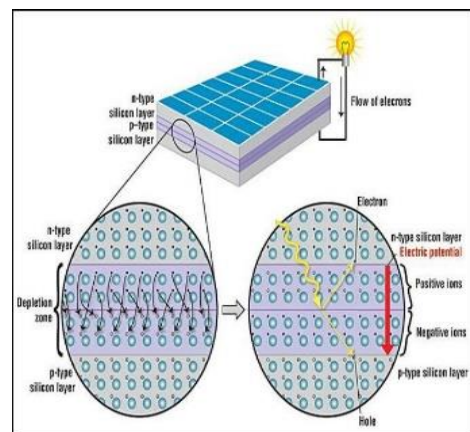
Keywords: Solar panel, Microchip, Solar cells, Silicon crystals, Wind turbines, Aerodynamic surface technology.

1.INTRODUCTION

The use of alternative energy sources is widespread in developed countries. This system is distinguished by its environmental, economic and energy efficiency. Environmental protection, toxic reduction of substances, efficient use of hydrocarbons, etc. has advantages such as Alternative energy sources at the modern level of technology economic indicators of use are somewhat expensive. A number of international institutions have adopted decisions in this direction. And the work in the direction of technology development continues rapidly. The use of wind energy is more suitable than solar energy. Thus, wind energy is considered more acceptable, especially in the territory of the country, both from an economic and technological point of view, and due to the fact that it can be used at any time of the day. Wind energy has some major disadvantages. These include: unpredictability, noise, even at low levels, threat to or from wildlife, limited availability of suitable sites for wind turbines Lugu, non-aesthetic image, etc. And the dependence on weather conditions can be added to the negative features. Solar technologies are technologies that convert the rays from the sun into electricity with the help of photovoltaic panels, mirrors. Wind and solar energies have a complementary effect on each other. Wind energy is available at any time of the day or night. But solar energy needs bright time of day to produce. Wind generators and solar panels can be connected with a wire. Solar energy is environmentally friendly and cost-effective. The conversion of solar energy into electricity does not cause harmful effects on the environment. The technology of obtaining electricity from the sun in the ready state is a very expensive process. The purchase of electricity directly from the sun is more widely

used in world practice. This is one of the main directions of advanced energy.

In Azerbaijan, certain institutes are preparing project plans for the use of solar and wind energy. The state has done a number of things in this direction. New power plants were built. And it has been used. Here, the specific weight of solar energy will be 73 percent. Thanks to environmentally friendly energy projects, there is an expectation of a completely clean environment in the future. The period of transition from traditional energy to "green energy" has begun in the world. Our country has also made its contribution in this direction. By 2030, work in this direction will be strengthened, the use of renewable energy will be 30 percent, and a number of similar works will be carried out. Austria ranks first in the use of renewable energy sources in Europe. Biomass, geothermal heat, water, wind and solar energy are used in these countries.

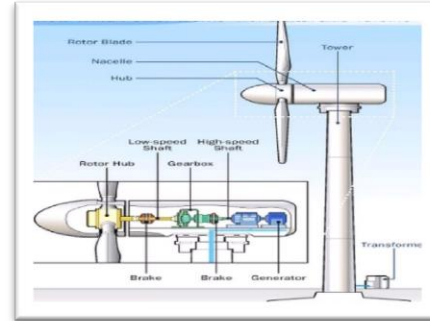


Fuel and energy balance table for 1995-2016

Year	Production of electricity mln. kW/h	TPP	HP	WPP	SPP
1995	17.043	15.400	1.554		
2000	18.698	17.068	1.533		
2001	18.968	17.520	1.300		
2002	18.700	16.557	2.019		
2003	21.285	18.680	2.469		
2004	21.743	18.590	2.756		
2005	22.273	19.345	3.010		
2006	24.544	21.408	2.517		
2007	21.848	19.050	2.365		
2008	21.644	19.089	2.233		
2009	18.868	16.290	2.307		
2010	18.711	15.002	3.445	0,6	
2011	20.295	17.318	2.677		
2012	22.990	19.538	1.822		
2013	23.355	20.064	1.490	0,9	0,9
2014	24.729	21.402	1.299	2,4	3,0
2015	24.690	20.906	1.638	4,7	4,7
2016	24.953	22.934	1.960	22,8	36,0

$$V_{\text{relative}} = V_{\text{wind}} - V_{\text{wing}}$$

The description of the wind turbine and brake box is as in the picture



3. CONCLUSION

According to the indicators of 2015, the share of solar and wind energy in the world energy consumption by fuel was 1.88%, which is a very low indicator. The diagram below shows the exact figures of world energy consumption by fuel for 2015.

Appropriate laws and normative legal acts have been adopted in order to develop the field of renewable energy in our country, to improve the legislation and institutional environment in this field. In recent years, the works carried out in the field have been continued and the Law No. 339-VIQ dated May 31, 2021 of the Republic of Azerbaijan "On the use of renewable energy sources in the production of electricity" which makes a special contribution to the development of renewable energy, has been approved.

Indicators of the world's leading countries on the use of wind energy

N	Countries	Potential MW
1	2	3
1	USA	1795
2	Germany	1566
3	India	821
4	Denmark	784
5	The Netherlands	304
6	England	263
7	Spain	217
8	Sweden	106
9	Italy	72
10	PRC	58

Wind turbines can convert the energy in the wind into electricity. Wings play a key role in this. Each wing consists of a large number of aerodynamic surface cross-sections of various shapes and sizes from start to finish. Thanks to simple aerodynamic surface technology, the blade of wind turbines starts to rotate. A moving wind turbine blade moves the wind relatively.

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