

Development of the Far North Coast by wind hydrogen energy

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The aim of this work is to create a project that will solve the following main problems:

- Decoupling of the fuel and energy complex of the Russian economy from the traditional mineral resources (of coal, oil, gas, et al.);
- Qualitative and quantitative development of alternative energy industry;
- Stimulate the development of energy-intensive industries by providing a large amount of energy;
- Saturation energy of the Far North and the development of industry clusters that are directly tied to the Northern Sea Route. This will allow to do fragmentary development throughout the coastal territory.
- Getting on an industrial scale clean energy source - hydrogen through the electrolysis of water, using the energy retrovodorodnyh complexes.
- The transfer of hydrogen to the southern, densely populated areas of the country through the existing network of transcontinental gas mains.

The development of wind energy - one of the most important areas of technological evolution of energy worldwide.

Leader of wind energy development in 2014 was China, which has overtaken by the number of generators in operation GIVING US and the EU.

From the report of the Global Wind Energy Council, the following statistics on the overall functioning of wind power stations:

- US - 35.16 million KW.
- Germany – 28.78 million KW.
- China 35.04 million KW.

- Spain 26.1 million KW.
- Russia - 17 million KW.

According to preliminary estimates, WES power in Russia is about 2000 times less than in the lead. At the same time, the technical potential of wind energy Russia estimated 50,000 billion kilowatt-hours / year. This project involves the use of the territory of the Far North to accommodate wind farm complexes. Practical benefit based on the fact that the length of the rugged coastline of the Russian Arctic coast is more than 25 thousand kilometers, with an average annual wind speed of 5 m / sec. In the case of the creation of effective systems of WES, Russia will get attractive in terms of investment and economic and technological advantages of "energy cluster", which has the potential to become a competitive feature of Russia on the world stage.

To date, the largest wind farm in Russia are located in the Kaliningrad region (5.1 mW.), Chukotka (Anadyr wind farm capacity of 2.5 MW (10 wind turbines of 250 kW)), in Bashkortostan (2.2 mW), Kalmykia and Komi . Creating a wind farm in the North Coast attract investments into the Russian economy and to realize the economic potential of the northern regions of Russia.

However, we must recognize that in most Russian regions the average annual wind speed is less than 5 m / s, and therefore the usual wind turbines with a horizontal axis of rotation is practically applicable - their starting speed starts from 3-6 m / s, and to receive them from, substantial amounts of energy will not succeed.

This project proposes to use rotor installation or wind turbines with a vertical axis of rotation to solve this. The fundamental difference is that the vertical generator enough 1 m / s to start generating electricity. Development of this area removes the restrictions on the use of wind energy in order to power supply. The use of such systems ensures the production of sufficient power for all areas and in all weather conditions, including the area to the North Coast.

The amount of electricity produced will be enough, for example, for street lighting and power facilities engineering infrastructure (observation points, weather and meteorological stations, and so on).

In addition, the creation of wind oxygen energy complexes give impetus to the development of iron and steel (alloy steel) and metal industry, automotive (ecological vehicles),

design and project teams, and others. There will be widely used patriotic achievements in aerospace technology for the development of innovative energy projects.

In addition to creating individual WHES, the project involves the creation of energy pier. Such technology will enhance the effect of the use of alternative energy sources.

As already mentioned, the project involves getting on an industrial scale clean energy source - hydrogen through the electrolysis of water, using the energy WH complexes.

Hydrogen generation will stimulate the development of environmentally friendly production, including encourages the widespread use of engines based on hydrogen, for further distribution.

As a result, North Coast will be an effective region of Russia. Providing clean energy hydrogen stably provide an opportunity for centuries to protect the northern border and shelves, the rejection of expensive imported fuel oil, gas, wood, oil shale, and small nuclear energy. Industry northern regions receive large amounts of electricity for the economic growth of the region. In this case, it will be possible almost free heating homes, including the realized dream northerner - "housing under the dome", with minimal contact with the harsh climate.

Thus, this project represents an extremely relevant for the further development of Russian energy industry and the economy of our country.