

Rapid deployment of renewable energy and energy efficiency is resulting in significant energy security, climate change mitigation, and economic benefits. In international public opinion surveys there is strong support for promoting renewable sources such as solar power and wind power.

The Russian Wind Energy Association predicts that if Russia achieves its goal of having 4.5% of its energy come from renewable sources by 2020, the country will have the total wind capacity of 7 GW. The first Russian solar plant was opened in Belgorod Oblast in November 2010. The southern parts of Russia, especially the North Caucasus, have the greatest potential for solar energy. Russia plans to set up an overall solar capacity of 150 MW by 2020.

At the national level, at least 30 nations around the world already have renewable energy contributing more than 20 percent of energy supply. National renewable energy markets are projected to grow strongly in the coming decade.

ПРИМЕНЕНИЕ ПАРОВОЙ ТУРБИНЫ

Виноградов В.Э., Кохан О.В.

*Комсомольский-на-Амуре государственный технический университет, Комсомольск-на-Амуре,
e-mail: olga_kokhan@mail.ru*

A steam turbine is a device that extracts thermal energy from pressurized steam and uses it to do mechanical work on a rotating output shaft. Its modern manifestation was invented by Sir Charles Parsons in 1884.

Because the turbine generates rotary motion, it is particularly suited to be used to drive an electrical generator – about 90% of all electricity generation in the United States (1996) is by use of steam turbines. The steam turbine is a form of heat engine that derives much of its improvement in thermodynamic efficiency from the use of multiple stages in the expansion of the steam, which results in a closer approach to the ideal reversible expansion process.

An ideal steam turbine is considered to be an isentropic process, or constant entropy process, in which the entropy of the steam entering the turbine is equal to the entropy of the steam leaving the turbine. No steam turbine is truly isentropic, however, with typical isentropic efficiencies ranging from 20-90% based on the application of the turbine. The interior of a turbine comprises several sets of blades or buckets. One set of stationary blades is connected to the casing and one set of rotating blades is connected to the shaft. The sets intermesh with certain minimum clearances, with the size and configuration of sets varying to efficiently exploit the expansion of steam at each stage.

Steam turbines are used to transfer energy to drive a machine. They are used to create electricity from various energy sources that produce the raw material steam. These energy sources include fossil fuel, nuclear energy, geothermal energy and even solar power. Steam turbines have also been used to power locomotives and ships. Steam turbines convert heat energy into kinetic energy and from there can create electric energy via a generator.

The steam turbine system is used to create over 80 percent of the world's electricity supply. In order for the turbines to work, steam must first be created from an energy source.

СТАНОВЛЕНИЕ ГОСУДАРСТВЕННОЙ СЛУЖБЫ

Власенко Ю.Ю., Латина С.В.

*Комсомольский-на-Амуре государственный технический университет, Комсомольск-на-Амуре,
e-mail: lat-sveta@yandex.ru*

The history of the public service comprises several centuries. Its survival in the difficult geopolitical conditions depended on the service of all social groups.

The system of departments called «Prikaz» was created during the reign of Ivan the Terrible. They carried out management of individual branches of government. The beginning of the Russian bureaucracy is associated with the era of Peter the First. The Table of Ranks was approved on the 24th of January. It became the basic law on the procedure for the public service in the Russian Empire and lasted until the revolution of 1917.

The beginning of the professional public service is associated with Speranskiy. He was the first who touched upon the problem of the education and training of officers of government machine.

The ranks of the public service were cancelled after the October Revolution of 1917. Then the system of the recruitment and placement was accepted.

«The regulation of the federal public service of the Russian Federation» was approved in 1993 by President's decree. It revealed the general concepts and constitutional principles of public service. The system of public service has undergone several changes during reforming. These changes are connected with the emergence of a priority to improve the professionalism of public service and the efficiency of interaction of the executive authorities and civil society, the creation of new personal services and educational institutions. Let's take, Komsomolsk-on-Amur State Technical University. It is an example of such establishment. The priority of our university is to training technical personnel. But there are also humanities in our university. «The public administration» is among them. It shows that our state needs reliable and well-trained public officers. I think our university can provide these highly qualified personnel.

Reforming in this sphere is conducted taking into account the new social realities, national traditions and specific features of state structures. Specialists in the sphere of public administration consider that reforming should have a positive impact on the activity of the state apparatus.

ВОЗРОЖДЕНИЕ ТИТАНИКА

Гибрадзе М., Першина Е.Ю.

*Комсомольский-на-Амуре государственный технический университет, Комсомольск-на-Амуре,
e-mail: marie-91@mail.ru*

One of the richest people in Australia, billionaire Clive Palmer will realize his dream and build the exact copy of the cruise liner «The Titanic» that drowndown during her first flight on April 14, 1912 after the fatal collision with an iceberg in the Atlantic Ocean. She will be more beautiful and glorious than the original one, assured the 58-years-old businessman [1, 59].

«But the «stuffing» will be new; she will be equipped with navigation and security systems according to the latest technology.» According to Palmer's plan the new vessel will be similar like two drops to her predecessor, which was launched on the shipyard «Harland and Wolfe» in Northern Ireland, Belfast over a century ago. However, bear in mind the sad fate of «The Titanic», the new version of the passenger liner is decided to equip with the most modern marine equipment. So, cabins will be equipped with air conditioning, a small hospital and a helipad will be presented on board of the ship. But Palmer wishes there was not Internet and TV on board.

According to the multimillionaire's plan passengers will be able to find clothes in the style of early XX century in each cabin, which will allow them to «experience on board the original liner». The new ship will have cabins of three classes as well as «The Titanic» had. The gymnasium and swimming pool are expected to be identical to those areas that were on the ship in 1912. However, «modern

alternatives" will be added to a new replica. Security system will carry out significant changes on board the liner according to Palmer's plans [2, 22].

It worth mentioning that on the night of 15 April 1912, when "The Titanic" drown down after collision with an iceberg there were 2224 persons, but there were only 16 lifeboats. They could fit only 1178 people. As a result, about 1500 people sank that night. Recently Palmer has presented drawings of the future liner. The vessel's length will be up to 270 meters (269.1 – of "The Titanic"), 9 decks will accommodate 850 cabins. The capacity of "The Titanic II" will be up to 2.6 thousand passengers. "The Titanic" seated 2556 people, which were served by 908 crew members. Approximately 900 employees will serve the new ship. On the modern ship the heating pipes will be left, but they will not be used.

In general, Mr. Palmer cannot be called a superstitious man. Presentation of drawings was opened by the song of Celine Dion from the famous James Cameron's movie. The company which is the owner of the mines on extraction of iron ore, coal and nickel in Australia will serve the operation of the future liner. It is called the Blue Star Line. In 1912 "The Titanic" owned to the White Star Line. It is expected that construction of the new ship will be completed in the second half of 2016. She was produced in China. According to Palmer's plan the demand for tickets to the liner is very high, many of people are already ready to give \$1 million to get on the first flight to New York [3, 139].

Moreover, the new liner will completely repeat the route of the old one. She will come from the English port of Southampton and in six days, of course, if everything is well, will come to New York. "We will complete the journey. We will sail to New York on the ship that is designed for this purpose", said Palmer to journalists. The Australian was not brave promising to the new ship long life: "Any ship will sink if she gets the hole". However, global warming has done its work, and icebergs on the route of the liner cannot be found [4, 119].

Список литературы

1. Воробец, Л.В. Проблема политкорректности в аспекте межкультурной коммуникации. – Вестник Костромского Государственного университета им. Н.А. Некрасова, 2012. Основной выпуск. – Т.18. – № 2. – С. 57-60.
2. Першина, Е.Ю. Английский язык для кораблестроителей. Часть 1. Бакалавриат : учеб. пособие / Е.Ю. Першина. – Комсомольск-на-Амуре, ФГБОУ ВПО «КнАГТУ», 2014. – 128 с.
3. Першина, Е.Ю. Научная иноязычная речь магистров технических направлений: компетентностный подход. – Филологические науки. Вопросы теории и практики. – Тамбов: Грамота, 2014. – № 9. – Ч. 1. – С. 138-142.
4. Тарануха, Н.А. Английский язык для транспортных специальностей вузов. В 2 т. Т. 1. Базовый профессиональный курс : учеб. пособие / Н.А. Тарануха, Е.Ю. Першина. – М.: СОЛОН-Пресс, 2011. – 280 с.

ИСПОЛЬЗОВАНИЕ ЭНЕРГИИ МОРСКИХ ВОЛН

Грушин С.С., Андросова И.С., Першина Е.Ю.

Комсомольский-на-Амуре государственный технический университет, Комсомольск-на-Амуре,
e-mail: grushinss@mail.ru

At the present stage of civilization the need for renewables increases. In difference from many other types of energy (nuclear power, industrial power system and others), energy of sea tides doesn't run dry as it is supported by gravitation forces of the Moon and the Sun and doesn't depend on climate changes. The main problem of non-traditional renewables is the low density of energy. So the density of energy less than 1 kilowatt per square meters is typical for wind, solar, geothermal installations. Wave energy possesses the more high density of energy. Sea waves accumulate wind power on the considerable space of acceleration. There are favorable climatic conditions for development of wave power engineering

on the coast of the Far East. Annual average potential of wave energy on the east coast is estimated approximately at 40 kilowatts per square meter [1, 59].

Our attention was attracted by wave power plants of Oyster. The wave energy installations containing a vertical platform (leaf) which consists of the floats hinged to the base lying at the bottom and the piston pump are known. Waves move a vertical platform which puts into action the power-take-off device in the form of the pump forcing water in the pipeline to the hydro turbine connected with the electric generator. The OWSC advantages (Oscillating wave surge converter) are small costs of construction, ecological purity, and high efficiency. Shortcomings of the OWSC: the effective usage only on large waves when there is an intensive swinging of leaf, the possibility of shift and corrupting of constructions by the storm waves [2, 22].

The first technical contradiction is formulated due to the shortcomings. The floats of the leaf can have insufficient buoyancy for creation of the recovering forces. Their rigidity is possible to regulate by tension or weakening. Small natural frequency of oscillations of the flaps causes that on short waves it swings far from resonance and insufficiently intensively. In this case it is necessary to increase significantly natural frequency of the system; however, it is technically difficult to make it only due to buoyancy increase. During using tide the leaf can be in deepening that reduces wave action, and in case of a low tide the leaf either sticking out significantly above water level, reducing the wave pressure area, or has inclined position from equilibrium that leads to reduction of dynamic pressure of waves to its surface. Even in the absence of essential tides the leaf has insufficient efficiency as when passing a wave trough it sticking out above from water, and when passing wave crest it is deepened. In both cases hydrodynamic pressure is less on the leaf, than on a wave surface. Besides, in some oscillating phases the wave crests can shock on the leaf sticking out above water. It is dangerous for durability. As a result reliability of the construction decreases. System itself provides the highest efficiency of wave's energy conversion in different conditions [3, 139].

We have used 40 standard techniques of TRIZ and marked out the most suitable for our installation. Principle of dynamism – characteristics of object shall change so that to be optimum at each stage of operation (in roll forward and rollback of a wave); to divide object into the parts capable to move relatively each other. Principle of sampling action – natural frequency of system oscillations is to be changed with the change of wave's parameters in order to get resonance with waves. The system of reactive forces controlling is necessary for this purpose. In the installation of OYSTER it can be done by controllable water filling or by air blowing of floats tanks. But it is too slowly. Principle of the continuity of the useful effect – all parts of object shall work with full loading at each phase of wave passing. The leaf slides along the guide frame, automatically falling and rising, tracing water level and waves profile by buoyancy forces [2, 119]. Improvement of wave converters goes on the way of receiving more controllable technical systems which according to the law of increasing vepol degree: have to more complex vepol (substance – field) model. Wave's energy converters in the form of hinged arm rafts (Kokkerell's raft, Pelamis) are known. They have rather low efficiency and at least 3-4 hinged float sets are required for it increasing. Besides there is a problem of devices fixing on anchors. It is offered to combine systems with a vertical flap and a horizontal raft for efficiency increasing of wave's energy.

Список литературы

1. Воробец, Л.В. Проблема политкорректности в аспекте межкультурной коммуникации. – Вестник Костромского Государствен-