Основой операторского интерфейса служит цифровая карта и накладываемые на нее интерактивные панели управления.

В качестве примеров проводимых исследований можно привести аэрофотоснимки участка леса, полученные в инфракрасном (ИК) диапазоне (рис. 4), а также сшивку аэрофотоснимков территории Ленинградской области (рис. 5). Состояние растительного покрова вследствие влияния техногенного воздействия горного предприятия также можно оценить по ИК-снимкам. Измерение полей температуры позволяет определить тепловые потери теплотрасс, городской застройки и т.д. В результате проведённых исследований решена актуальная научно-производственная задача разработки состава комплекса измерительных средств и проведены экспериментальные исследования новых методов дистанционного контроля качества состояния компонентов окружающей среды на территориях горнопромышленных агломераций:

Выявлено, что наземные методы мониторинга не позволяют получить все необходимые данные о состоянии поверхностных вод, атмосферного воздуха, почвенно-растительного покрова, поскольку территории расположения горнопромышленных агломераций отличаются сложным рельефом, что не позволяет обследовать труднодоступные места – территории хранилищ отходов производства, карьерных выемок и др.

Проведена разработка состава комплекса измерительных средств для мониторинга атмосферного воздуха, установленных на беспилотных летающих аппаратах, позволяющая решать актуальные задачи оперативного экологического мониторинга за состоянием окружающей среды.

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ВАЖНОСТЬ ЯДЕРНОЙ ЭНЕРГЕТИКИ ДЛЯ ЛЮДЕЙ

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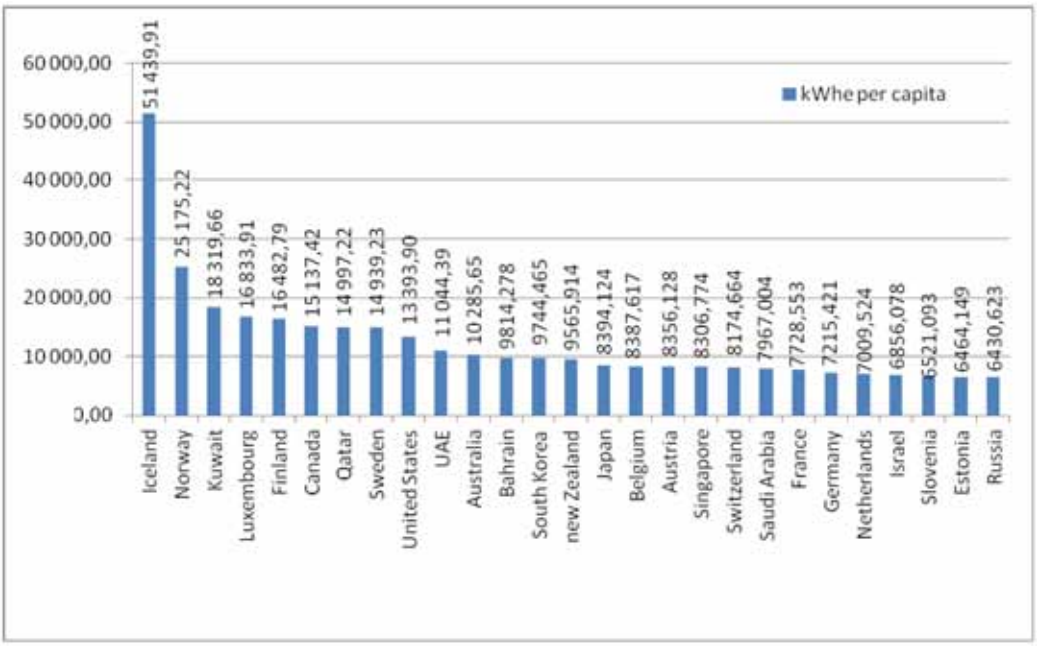
Nuclear power energy is one of the major sources of energy, which have long been included in the lives of people and there have not still been found another alternative.

Nuclear energy is used in nuclear power of stationary and non-stationary types and plays a very significant role in the production of electric power. Nuclear energy has a great advantage over other forms of energy, especially chemical one due to very high concentration of fuel per unit mass. Nuclear fuel (uranium) is the most expensive type of fuel for power plants because of its high specific concentration and is used despite the complexity of its production and a very low content of uranium in the ore.

In our time, electricity has become a vital factor in human activity. This primarily applies to developed countries and several smaller developing ones.

The value of electrical energy for humanity is unusually large. It is impossible to imagine a factory or manufacturing without electrical energy, as well as a dwelling house without electricity and water. Life of modern people is impossible without electricity. [1]

Rating of level of consumption electricity per capita of population in some countries is represented as proof of it:



Rating of level of consumption electricity per capita of population in some countries [4]

According to the graphic data electricity consumption in Russia is significantly less than in other countries. But the traditional use of fossil fuels is accompanied with the formation of large quantities of waste, polluting the human environment.

Nuclear fuel cycle

Nuclear fuel cycle is the entire sequence of repetitive production processes, from extraction of fuel (including electricity) and the disposal of radioactive waste [3].

Uranium is nuclear fuel for reactors. Today, there are prospects for the development of reactors for thorium fuel. There are already experimental results and while this method is not economically profitable, because thorium is only raw material, fuel cycle is not closed, as well as a significant amount of harmful emissions into the atmosphere.

Today Russia is not only the world nuclear-armed power, but also the undisputed leader in the creation of the necessary conditions for performing closed nuclear fuel cycle (NFC) reactors such as operating reactor on the Beloyarskaya nuclear power plant (NPP) with BN-600 reactor and new reactor BN-800 the development of which is not completed because of financial problems. [4]

Risk and issues

Protection of humans from the harmful effects of noise, gases, etc. gets serious attention in each industry. A huge role is given to prevention of possible serious illnesses and injuries. In the nuclear industry protection from harmful effects compared with other production is given great attention. However, many people are cautious about nuclear energy.

Here is a list of those fears and anxieties that are associated with the fuel cycle of nuclear power plants:

1 – thermal pollution of the environment;

2 – development of uranium deposits, increased radioactivity in these areas;

3 – normal leakage of radioactivity in one of the chain loop;

4 – processing and disposal of radioactive waste;

5 – transportation of waste from the station to the place of burial;

6 – accident reactor;

7 – the spread of nuclear technology [2].

The most important current problem is the preservation of blocks the period for which is ended. However, atomic scientists in all countries are tired to solve the problem of radioactive waste (RAW), so as the quantity of accumulated waste is not reduced. So there is more than 500 million cubic meters of radioactive waste of different degree kept in Russia at the moment. Mostly there are RAW accumulated of during covert war and they are wastes of atomic stations, research and medicine centers and laboratories.

But its generating capacity is rendered inoperative and uneconomical in any country and technical lifetime of reactors is increased. For example, life extension program of the fourth power generating unit at the Kolskaya NPP, which has worked for 30 years and was developed by the open joint stock company (OJSC) “Atomproekt” which was realized in 2014 year. It is polar NPP that has allowed to get a licensed Rostehnadzor on life extension program on 25 more years. Extensive work on estimating resource characteristics of the equipment, followed by the replacement or modernization was preceded by getting a license, and also a range of activities aimed at improving the safe and reliable operation of involving many projects and engineering organizations. [4]

Conclusion

The future of humanity is inseparable from nuclear energy. You can seriously say that the standard of living of the country directly depends on the amount of the energy that it consumes. Any source of nuclear or conventional of energy creates dangers for a man and threatens the environment. Virtually all areas of human activity, even in a society with highly developed production technologies, are always associated with some risk. This process is explained by the increase in energy demand to ensure a rising standard of living. Society must determine the level of life that it would like to have, and to decide whether it is compatible with the preservation of environmental quality. Practical application must receive a new, diverse energy sources and methods of its transformation. A visionary approach to the use of nuclear energy taking into account the associated risk and great potential is needed to meet the growing energy.

Atomic energy was connected with anxiety and experiences about the safety of production and storage of nuclear waste for long. Today Russia can and should be a world leader and a monopolist in the production of cheap and practically unlimited in amount of energy on the basis of closed nuclear fuel cycle.

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