

fuels. It is well known that when fossil fuels are burnt, they let CO₂ into the atmosphere. Nevertheless, harnessing renewable energy sources is considered to prevent global warming and stabilize the climate. Environmental benefits of alternative energy are clear, and our government feels strongly about building more than thirty power plants using alternative energy technologies in 2013. Indeed, we have to realize that the Earth has enough for every man's need, but not for man's greed.

УДК 504-062

**ECONOMIC & ENVIRONMENTAL BENEFITS
OF ALTERNATIVE ENERGY**

Хмара И.А. (АТФ), Богданова Л.И.

Белорусский национальный технический университет
Минск, Беларусь

Alternative energy sources provide many benefits. Renewable energy can create new jobs and promote economic development. If used to diversify utility energy sources, alternative energy technologies can provide a hedge against rising fuel prices and can be valuable risk management tools. While some renewable energy resources are not always available (the wind doesn't blow or the sun doesn't always shine), the technologies perform reliably when the "source" is available. Where they come from, solar and wind technologies are emissions-free. This makes them attractive from an environmental standpoint. Finally, selected applications of energy efficiency and renewable energy technologies can enhance the disaster resiliency of communities and individual structures. In fact, countries that import electricity, or utilities that import fuel for power plants from other countries, lose their vital financial resources because those payments leave the state and local economies. Renewable energy and energy efficiency can help revitalize rural communities. Farmers on windy lands can lease space to wind developers, earning thousands of US dollars for each turbine every year. Renewable energy technologies can be an economical addition to an energy supplier's resources. Even though wind is an intermittent resource, it's predictable and can be planned by utilities as part of their generating portfolios.

The benefits of alternative energy are clear and the fact that the public and the government feel strongly about moving to a greener economy only makes them that much more compelling. Solar and wind technolo-

gies are emissions-free at the point of use; emissions from biomass are lower than comparable conventional fuels; and energy efficiency, by definition, reduces energy consumption, which results in fewer emissions. Renewable energy technologies have minimal impact on water resources. In future environmental regulations are sure to include carbon dioxide, renewable and energy efficiency technologies that can provide cushion for states and utilities. The most efficient design of a wind generator for areas with low velocity of wind streams is a so-called “rotary” wind turbine or one of a swing type with a vertical axis. In April, 2011 the first Belarusian MW wind generator was installed in Hrabniki village, Hrodna region. Its capacity amounts to 1.5 MW, its altitude is near 20 meters and each blade has 40 meters in length. This project is being developed with the help of the Chinese company, HEAG that has delivered the appropriate equipment. They state that the mid-annual energy production may save about 3.8 ml kW/h, or 1.1 – 1.25 thousands of tons of standard fuel.

УДК 620.3:61

NANOMEDICINE

Кузнецова Л. Н. (МСФ), Кипнис И. Ю.

Белорусский национальный технический университет
Минск, Беларусь

Many countries are adopting the programs for the development of nanotechnology and there has been much debate on the future implications of it. Nanotechnology may be able to create many new materials and devices with a vast range of applications in medicine (nanomedicine). The use of nanotechnology in medicine offers some exciting possibilities. Some techniques are only imagined, while others are at various stages of testing, or actually being used today. The use of nanotechnology in the field of medicine could revolutionize the way we detect and treat damage to the human body and disease in the future, and many techniques only imagined a few years ago are making remarkable progress towards becoming realities.

Nanomedicine is the medical application of nanotechnology seeking to deliver a valuable set of research tools and clinically helpful devices in the near future. It ranges from the medical applications of nanomateri-