

2. wood pellets are a renewable energy source and thus fit well in government directions in this area;
3. there are significant environmental advantages of wood waste pellets; these vary from reduced leaching of waste wood piles to reduced air pollution problems (low greenhouse gas emissions);
4. one of the major advantages of pellets - a high and constant bulk density, which allows relatively easy to transport this product free flowing on long distances;
5. thanks to the regular form, small size and uniform consistency of the product granules can be poured through a special hose which allows you to automate the processes of loading and unloading and also burning this fuel.

Thus wood pelleting is an established commercial process, and has great potential as a fuel, particularly as the marketplace itself changes from the rapidly varying pricing of other fuels and the impact of environmental concerns.

Pellet mills in Belarus are few. All pellets factories were set up with very tough budget limitations. As a result most or all of them are using domestic, second hand equipment. According to the managers of the Belarusian companies there is no domestic market at the moment. Belarusian consumers are not ready yet to use pellets as a fuel. The point is that special equipment is needed for burning pellets and pellets boilers are still rather expensive. Most companies export pellets to Europe and mostly through Baltic states.

УДК 621.039.512:45

### **SPACE ENERGY**

Алуф Г.В., Булавко А.Н. (ЭФ), Острейко С.В.

Белорусский национальный технический университет

Минск, Беларусь

There is one place where the power of the sun remains unattenuated by the messy conditions on the surface and uninterrupted by the day-night cycle. The Earth's orbit receives a solar flux of 1,400 watts per square meter, and a space-based solar power system would take full advantage of this energy source.

The idea of space-based solar has been under development since the 1970s.

An orbital solar power plant consists of two huge mirrors, a huge satellite, with mirrors or collecting surfaces and photovoltaic panels with a transmission antenna. The mirrors collecting solar radiation transfer it to photovoltaic cells, which generate power into an electromagnetic beam. This beam is aimed at a receiver on the ground, where it would be converted back into usable electricity and then fed into the grid for consumption.

The Lunar belt consists of lunar solar cells (to ensure continuous generation of power, an array of solar cells will extend like a belt along the entire 11,000 km lunar equator), electric power cables (transfer the electric power from the lunar solar cells to the transmission facilities), microwave power transmission antennas, laser power transmission facilities, transportation route along the lunar equator (materials needed for the construction and maintenance of the belt will be transported along this route) and finally solar cell production plants.

There are two ways of power transmission to the Earth: microwave and laser methods.

Main advantages of Space Solar Power:

- does not emit greenhouse gases;
- is available 24 hours a day;
- does not produce hazardous waste which needs to be stored and guarded for hundreds of years.

Disadvantages:

- space debris are a major hazard to large objects in space, and SBSP systems have been singled out as a particularly hazardous activity;
- high development cost.

Space-solar energy is the greatest source of pure energy which could solve the world's energy and greenhouse gas emission problems. In recent years China and Japan and a number of new companies in the United States and abroad have developed space energy projects. For example, California Corporation Solaren is to launch a solar power plant (200MW) into space in 2016, which will be the first in the history.