

Solar thermal essay example

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The sun is already shining for several billion years. It gives us light and heat without sending a bill every month. In less than an hour, the sun radiates as much energy to Earth as the entire population of the planet utilizes in one year.

The principle of operation of the solar concentrator is based on sunlight focusing on the tank with coolant. The coolant acts as the absorber of solar energy. The temperature in the receiver is high enough, however, the hub is capable of focusing only direct solar radiation, This greatly reduces their effectiveness in foggy or cloudy weather. In order to effectively use the solar radiation, it is necessary to ensure the orientation of the hub in the direction of the sun. (Norton)

Today the most widely used method of converting solar energy is photothermal. In this case, the coolant, usually water, is heated to a high temperature and is used to produce electricity using steam turbine that rotates to generator.

Photovoltaic method. According to experts, this is the future of solar energy. This method provides direct conversion of solar radiation into electricity using semiconductor solar cells — solar panels. Silicon additives of other elements is used in the photovoltaic transformation of solar energy. But the cost of obtaining pure silicon is quite large. Silicon, where 10 kg of product contains not more than 1 gram of impurities has the same price as uranium for power plants. The modern efficiency of silicon solar cells is quite high, and, by the way, the higher it is, the less is the right size of solar panels. Photothermal method is more widely used, photovoltaic is more high-tech and of course more expensive. Photovoltaic conversion of solar energy is one

of the fastest growing technologies in the world of renewable energy sources.

Solar energy has the greatest potential for long-term growth. According to the forecast of the European Association of photovoltaic industry (EPIA), by 2030 the solar panels will produce up to 2646 TWh of electricity, meeting from 8.9 to 13.8% of the world demand. (EPIA).

Reference page

Market Report 2013 (02). EPIA-publications. European Photovoltaic Industry Association.

Norton, Brian (2013). Harnessing Solar Heat. Springer Verlag