

Mikhail Krasnyansky,
Independent Scientist, PhD (USA)

Producing of Electrical Power, Decrease of Global Warming, and the Struggle against Hurricanes with help of the Giant Heat-Pumps

Abstract

It is suggested to produce electrical power, to pump out superfluous heat from environment, and to struggle against hurricanes by way of utilization of so-called "secondary" solar energy with help of the giant heat-pumps.

Keywords: secondary solar energy, heat-pump, global warming

Introduction

Unfortunately, the human civilization stepped on a dangerous way of energy production by incinerating carbonic and hydrogen natural fuel (coal, gas, oil) . That is why, firstly, the natural deposits of accessible hydrocarbons become exhausted; secondly, the environment gets contaminated by toxic combustion gases and dust; thirdly, the negative change of the climate ("global warming") takes place. Today world financial expenses of customers for payment of energy-resources are about six trillion dollars per year; it is 1/10 part of the world gross national product.

Now many countries have begun realization of large programs in area of "renewable energy" among which the Sun takes the "foremost place". However I would like to pay attention to the fact that **the nature has created other grandiose thermal energy source for mankind - it is so-called "secondary" solar energy** (i.e. utilization of heat of the upper layers of oceans, seas, rivers, lakes, ground or the lower layer of the atmosphere). This "secondary" solar energy can be utilized with the help of large heat-pumps and Stirling-engines (it is engine of external combustion).

If to combine in a united cycle a heat-pump, the Stirling-engine and heat-exchanger (Fig. 1, 2) - we shall have so-called "non-fuel power station" (NFPS), where transformation of heat to useful mechanical work will occur with efficiency up to 80% (Fig. 3).

Herewith:

- a) Natural resources of organic fuel will not burnt;
- b) There will be no negative change of a climate;
- c) There will be no pollution of the environment by toxic smokes;
- d) In addition, during a work of such NFPS (in atmosphere) take place a condensation of a water vapor from air; for example, the big NFPS (1000 Megawatt) will manufacture about 3-4 millions tons of the pure (condensed) water per year, that there is enough for all needs of city in desert with the population of 50 thousand people;
- e) The NFPS with the capacity of 1000 MW will cool off the air volume in the square of approximately 10x5 km and up to 150 m upwards for 10-20 degrees (or will be cooling of proportional volume of a upper layer of sea waters). If to imagine, that such NFPS is installed on a some marine platforms (or on large tankers), which will stand nearby of coast on the way of possible hurricane (cyclone, tornado), this hurricane getting in the "cold square" of NFPS will lose a considerable part of its destructive force. In fact, the using of the NFPS is a unique way for struggle with the "global warming" because it will pump out superfluous heat from environment. **However it should be understood that the question is about the GIANT heat pumps and GIANT thermodynamic cycles.**

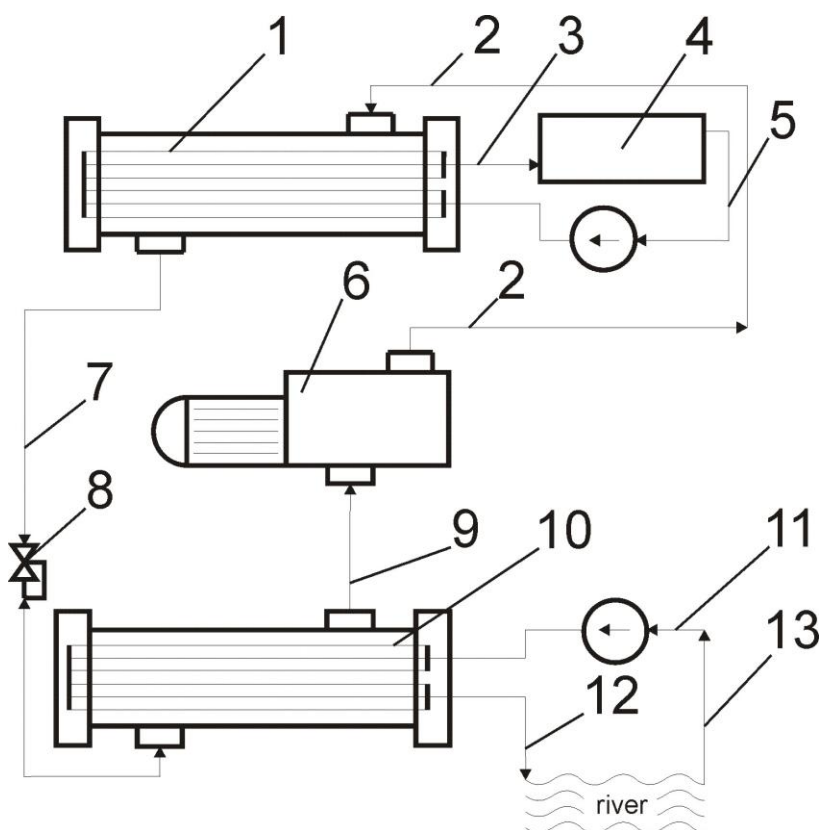


Fig. 1. The scheme of a “non-fuel” power station (NFPS):

1 - condenser; 2 - compressing of the more hot gasiform-ammonia (+80 °C); 3 - more hot water (+70 °C); 4 - heat-exchanger, combined with the Stirling-engine and the electric-generator; 5 - less hot water (+30 °C); 6 - compressor; 7 - compressing of the less hot gasiform -ammonia (+30 °C); 8 - choke; 9 - fluid-ammonia (-40 °C); 10 - evaporator; 11 - less cold water (+ 10 °C) from river; 12 - more cold water (+ 5 °C) into river.

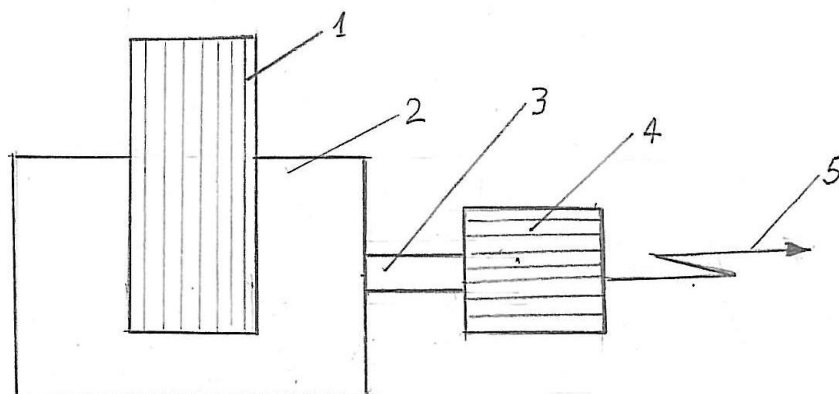


Fig. 2 - Position 4 of the Fig. 1 (in detail):

1- external combustion chamber of the Stirling-engine (it is engine of external combustion); 2 – heat-exchanger of the NFPS; 3 – shaft of the Stirling-engine; 4 - generator of an electric current; 5 – electric current for consumers.

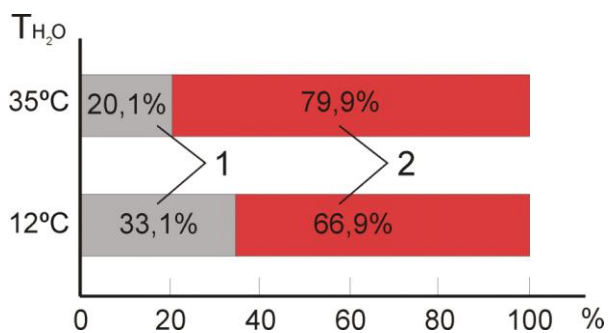


Fig. 3. Heat-pump efficiency:

1 -energy spent for work of the heat-pump; **2** - energy received from work of a NFPS.

This idea suggests to use of «secondary» solar energy (i.e. of low-potential heat of the upper layer of oceans, seas, rivers, lakes, the ground or lower layer of the atmosphere) with the help of the large heat-pumps and Stirling-engines for created «non-fuel power stations» (NFPS) for manufacturing of electrical power, pumping out of the superfluous heat from an environment with purpose to decrease of global warming and struggle with hurricanes.