Part 8

RENEWABLE ENERGY SOURCES

8.3. Solar power plants and heat supply systems

8.3.2. Solar thermodynamic installations

8.3.2.1. About the history of thermodynamic installations

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Historically the first technology of transforming solar energy into electricity was consisted in application of thermodynamic cycles, in which the heat was brought to the working substance in the "solar boiler", heated by concentrated solar radiation. Such experimental installations appeared at the beginning of 20^{th} century, but they were ineffective.

In eighties of the previous century in the USA, France, Japan and in the USSR solar steam-turbine power plants of the tower type with capacity from 1 to 10 MW were constructed. At these plants the concentrating solar energy system consisted of flat mirrors - heliostats, which focus the solar radiation on the steam boiler, installed in the tower.

The best technology of thermodynamic transformation of energy was realized in module solar power plants, constructed by the firm LUZ in California (USA) at the end of eighties and at the beginning of nineties with total capacity of 354 MW. Modules, which include paracylinder concentrators and pipe bins were applied at these plants. For sun tracking modules circulated relatively to the horizontal axis, oriented north-south. Nevertheless, the most technically advanced solar installations did not overcome the barrier of competitive ability. However, because of sharp growth of prices for oil in the world market, this situation can change in favor of solar installations [30.31].