

Richard Tytko, *Renewable Energy Sources*, Publisher OWG,
Warsaw 2011, 576 p.



The book is a true compendium of knowledge about renewable energy in Poland. This publication is particularly valuable for the further reason that the author is not only a great theorist in the field of renewable energy, but also a practitioner. All this makes the book's large readership among students, people who want to deepen the theoretical knowledge on renewable energy sources, as well as to invest in renewable energy.

In terms of the content the publication is very broad. In the first chapter the author discussed solar energy. Here one can find a description of photovoltaics, solar collectors, solar thermal components, the results of research into the use of solar energy in solar installations at the Electrical School No. 1 in Krakow and technical information regarding the assembly of flat-plate collectors and vacuum collectors. In the second chapter the author presented geothermal energy. The author presented here the basic information on geothermal energy and then he discussed the size and distribution in Poland of geothermal resources and geothermal installations in our country. He described here a heat pump, installation of the lower and upper heat source, selected examples of devices for heat pump systems, economic aspects and advantages and disadvantages of heat pumps. In the third chapter he discussed the wind power. The author included here information about energy resources and the construction, operation, and installation of wind turbines. Author also described the various stages of the investment associated with the construction of wind power plants, the distribution of power working in Poland

and discussed small wind turbines, micro-wind turbines as well as selected results. In the fourth chapter, the author presented the power of water. He described here hydropower construction solutions, characterized small hydropower and micro hydropower and discussed water turbines, electric generators and controls water turbines. In the fifth chapter he presented the biomass energy. After defining the concept of biomass, the author discussed wood, straw, sewage sludge, biogas and liquid biofuels. He described here the stoves, cogeneration, incineration, biomass power plants and the economic effects of such solutions. The sixth chapter discusses the energy of hydrogen. The author described here how to receive hydrogen, fuel cells and measurement results obtained in the laboratory RES ZSE No. 1 in Krakow. In the seventh chapter the impact of the use of renewable energy sources on the environment is presented, especially air. The author discussed here in detail the carbon dioxide pollution and the greenhouse effect. In the final, eighth chapter, the author described the optimization of devices powered from renewable energy sources in agriculture. He concentrated here on heat pumps, biomass and solar energy. He also presented the installation costs of RES on the farm, the recovery time of the proposed investment and the resulting environmental effect.

In my opinion the book "Renewable energy sources" is an extremely valuable position on the Polish market. Such a large value of knowledge presented in a clear, understandable way, makes it virtually a publication for everyone.

Małgorzata Piaskowska-Silarska