Environmental Engineering and Management Journal

August 2011, Vol.10, No. 8, 1027-1032
http://omicron.ch.tuiasi.ro/EEMJ/

"Gheorghe Asachi" Technical University of Iasi, Romania

DEVELOPMENT, MANUFACTURING AND TESTING VERTICAL AXIS WIND TURBINES WITH HELICAL BLADES

Ion Bostan[1], Ion Vişa[2], Valeriu Dulgheru[1], Rodion Ciupercă[1*]

[1]Technical University of Moldova, 168 Ştefan cel Mare Street, Chişinău, 2004, Republic of Moldova
[2]Transylvania University of Braşov, 29 Eroilor Street, Braşov, 500036, România

Abstract

Under the circumstances of the total energetic recourses deficit in the Republic of Moldova appears the problem of non-traditional sources utilization. An important source of renewable energy is the wind energy. This paper deals with two new concepts of vertical axis wind turbine (VAWT) with helical blades, elaborated by the authors.
The main element of the wind turbine is, certainly, the rotor. It is directly subdued to the action of the air flow and transforms the kinetic energy of the air-masses into mechanical energy, having as basis the forces of interaction among the active elements of the rotor and the air flow, which attack it with a certain speed. In authors' opinion, the constructive solutions of the wind turbines presented in this work correspond to a great extent to the requirements advanced to the wind turbine. This fact imposes design and execution of some experimental prototypes, which would validate the expectations.
The industrial models of vertical axis wind turbines with helical blades and with indicated power of 1500W have been designed and fabricated. At present they are at the testing stage.

Key words: helical blade, renewable energy, VAWT, wind turbine

Received: April 2011; Revised final: August, 2011; Accepted: August 2011

[*] Author to whom all correspondence should be addressed: e-mail: rodionciuperca@gmail.com; Phone: +373 22 509 988; Fax: +373 22 509 939