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Permanent Magnet Generators (PMG) for Wind Turbines and Micro Hydro Turbines

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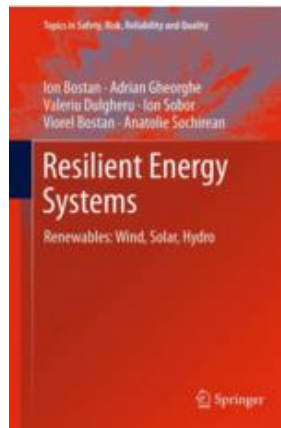
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Abstract

There are essential differences in the design of systems for water/air flow kinetic energy conversion into mechanical energy. First of all, speeds of rotation of the turbine rotors are different: the speed of those which operate in open current does not exceed a few rev/min, for example, flow turbines (water current turbines); hydraulic turbines of low pressure rotate at speeds of tens to hundreds rev/min; small power wind turbines (up to 50 kW) rotate at speeds between 100 and 500 min⁻¹; high-power wind turbines – 20 to 40 min⁻¹. However, both systems are classified as low-speed systems having important similarities: the physical processes that occur at the interaction of the turbine rotor with an open water or air current are similar; due to variations in water or air current speed, the systems function under random; the power cubic dependence of water or air current speed, etc. Therefore, studies on electrical generators, which follow below, refer to both conversion systems, hydraulic and wind as well.

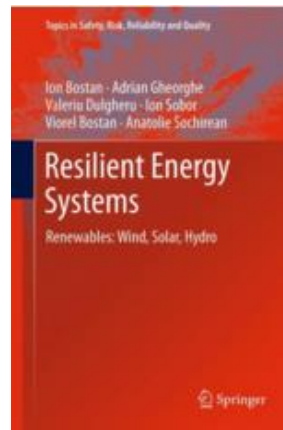
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