风力机柔性制动系统设计与仿真 Simulation Experiment on Wind Turbine Soft Braking

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关键词： 风力机 柔性制动 半物理仿真 制动力

摘 要： 在分析风力机制动数学模型的基础上，设计了柔性制动系统，搭建了半物理混合仿真实验台，并在实验台上进行了风力机柔性制动模拟仿真实验。实验结果表明，风力机正常停机时，柔性制动系统通过改变PLC的PWM输出控制高速开关阀通断时间，从而调节制动力，完成柔性制动过程，可以使叶轮转速下降平缓，风力机齿轮箱扭矩波动减小。 A soft braking system was designed based on the mathematic model of wind turbine braking, and a semi-physical simulation test-bed for wind turbine was really formed. Analog simulation experiment for wind turbine soft braking was performed on the test-bed. Experiment results indicated that, when the wind turbine was regularly stopped, soft braking controls the high-speed switch valve on-off time by means of varying the PWM output of PLC, to adjust brake force through, which can make rotor speed fall down gently and minish the gearbox torque wave.

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